



Revisions



ROAD and BRIDGE SPECIFICATIONS



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

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).

COMPILED REVISIONS TABLE OF CONTENTS

— DIVISION I—GENERAL PROVISIONS —1-1

—100 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)—1-2

(cm100a0a) GENERAL PROJECT REQUIREMENTS, SSs, SPs, & SPCNs 7-8-08 (SPCN)1-3

(cm100a1b) LABOR 8-6-08 (SPCN).....1-3

(cm100b0b) OPERATIONS BY STATE FORCES Re. 1-97 (SPCN).....1-3

(cm102a0b) REQUIRED ATTENDANCE OF PROJECT SHOWING Re. 1-97 (SPCN).....1-4

(cm102b0b) PREQUALIFICATION Re. 1-97 (SPCN)1-4

(cm102d0b) SEC. 102.04 EXAM. OF SITE OF WORK AND PROPOSAL Re. 1-97 (SPCN)1-4

(cm102l4b) SECTION 102—BIDDING REQUIREMENTS & CONDITIONS 3-26-07 (SPCN)1-5

(cm103a0b) SECTION 103.06(e) PROGRESS SCHEDULE Re. 1-97 (SPCN)1-6

(cm103d2b) SECTION 103—AWARD & EXECUTION OF CONTRACTS 5-22-06 (SPCN)1-6

(cm104a0b) SECTION 104.04 (a) DETOURS Re. 1-97 (SPCN)1-9

(cm104d0b) SECTION 104.05(b) MAILBOXES AND NEWSPAPER BOXES 6-9-08 (SPCN)1-10

(cm105a1b) NO PLAN PROJECT CONSTRUCTION SURVEYING 4-10-08 (SPCN).....1-10

(cm105b0b) SEC. 105.04—FURNISH. AND ERECT. PRECAST STRUCT. Re. 1-97 (SPCN)1-11

(cm105e0b) SECTION 105.02—PLANS AND WORKING DRAWINGS 6-19-01 (SPCN).....1-11

(cm105f5b) SECTION 105—CONTROL OF WORK 12-4-07 (SPCN)1-11

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



(cm106a0b) SEC. 106.03(c) SOURCES FURNISH. BY CONTRACTOR Re. 1-97 (SPCN) 1-13

(cm108b0b) SECTION—108.01 SUBCONTRACTING Re. 1-97 (SPCN)..... 1-14

(cm108d1b) SEC. 108.12—LIQUIDATED DAMAGES 8-24-07 (SPCN)..... 1-14

(cm108e0b) SECTION 108.12—LIQUIDATED DAMAGES Re. 1-97 (SPCN)..... 1-14

(cm108i1s) SECTION 108.01—SUBCONTRACTING 5-15-08 (SPCN)..... 1-15

(cm108p0b) TABLE I-1 SCHEDULE OF LIQUIDATED DAMAGES 5-27-05 (SPCN) 1-15

(cm109a0b) PG 76-22 ASPHALT CEMENT ADJUSTMENT 12-9-97 (SPCN)..... 1-16

(cm109e7b) SECTION 109—MEASUREMENT AND PAYMENT 6-19-08 (SPCN) 1-16

(cm110a0b) SECTION 110.02 (b) LABOR RATE FORMS Re. 1-97 (SPCN)..... 1-21

(cm110b0b) SECTION 110.02 (b) LABOR RATE FORMS Re. 1-97 (SPCN)..... 1-21

(cm110d0b) SEC. 110.05—CONSTRUCTION SAFETY & HEALTH STAND. 11-22-02 (SPCN).... 1-21

(cm110e0b) SEC. 110.04—USE OF DISADVAN. BUSIN. ENTERPR. (DBEs) 12-12-05 (SPCN) ... 1-22

—100 SERIES SPs (SPECIAL PROVISIONS)— 1-23

SMF001AF - PREDETERMINED MINIMUM WAGE RATES Re. 1-97 1-24

SMF010BF - FHWA 1273 AND MEMORANDUM 8-22-07c 1-26

SMF020AF - ATT. A - EMPLOY. PREFER. FOR APPALACHIAN CONTRACTS Re. 1-97..... 1-46

SMF030AF - NOTICE OF REQUIRE. FOR AFFIRM. ACT. TO ENSURE EEO Re. 1-97 1-47

SM100A2B - THE 1996 ROAD AND BRIDGE STANDARDS 3-4-05..... 1-54

SM100B0B - PROJECT COMMUNICATION AND DECISION MAKING 1-3-05 1-56

SM100D0B - DUAL DATE CONTRACT PROJECTS 1-14-08 1-62

SM100E0B - EMERGENCY CONTRACT PROJECTS 1-14-08 1-65

SM100F1B - NOTICE TO PROCEED 7-31-08 1-71

SM102C0B - USE OF DOMESTIC MATERIAL Re. 1-97..... 1-75

SM102J3B - ELECTRONIC BIDDING 9-12-07 1-76

SM102K3B - ELECTRONIC BIDDING OPTION 9-12-07 1-79

SM105F0B - STATE FORCE CONSTRUCTION SURVEYING 4-18-07 1-82

SM105G0B - CONTRACTOR CONSTRUCTION SURVEYING 4-18-07 1-88

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



SM106C3B - SECTION 106—CONTROL OF MATERIAL 9-30-04c.....1-94

SM107A4B - SEC. 107—LEGAL RELATION & RESPON. TO THE PUBLIC 6-9-08.....1-99

SM107E0B - SECTION 107.08 RAILWAY-HIGHWAY PROVISIONS Re. 1-97.....1-104

SM107F3B - STORM WATER POLLUTION PREVENTION PLAN 11-19-07.....1-106

SM107G1B - SWPP PLAN—CONTRACTOR & SUBCONTR. CERTIF. STATEMENT 11-9-071-109

SM107H1B - VOLATILE ORGAN. COMP'ND (VOC) EMISSIONS CONTR'L AREAS 7-15-081-110

SM108A3B - PROGRESS SCHEDULE FOR CATEGORY I PROJECTS 4-28-08.....1-112

SM108B0B - PROGRESS SCHEDULE FOR CATEGORY II PROJECTS 4-29-08.....1-117

SM108M0B - SCHEDULE OF OPERATIONS FOR CATEGORY M PROJECTS 5-12-08.....1-124

SM109D4B - ASPHALT MATERIAL PRICE ADJUSTMENT 7-30-081-126

SM109F1B - SECTION 109 – PARTIAL PAYMENT 9-25-07c.....1-127

SM109G2B - PRICE ADJUSTMENT FOR STEEL 1-24-05.....1-129

SM109H0B - OPTIONAL ADJUSTMENT FOR FUEL 12-20-05.....1-135

SM110B0S - SECTION 110.04 3-5-97.....1-137

SM110E1F - SECTION 110.04 11-4-04c.....1-140

— DIVISION II—MATERIALS —2-1

—200 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)—.....2-2

(cm202c1b) SECTION 202—FINE AGGREGATE 8-17-04 (SPCN)2-2

(cm203a2b) SECTION 203-COARSE AGGREGATE 8-17-04 (SPCN)2-3

(cm205b0b) SECTION 205—CRUSHER RUN AGGREGATE 9-17-03 (SPCN)2-4

(cm207b0b) SECTION 207—SELECT MATERIAL 6-9-06 (SPCN)2-4

(cm208b1b) SEC. 208—SUBBASE AND AGGREGATE BASE MATERIAL 6-9-06 (SPCN)2-5

(cm211f0b) SEC. 211 SURFACE & INTERMEDIATE MIXES USING RAP 9-24-07 (SPCN)2-6

(cm212a0b) SEC. 212.02(j) ELASTOM. EX. DAM & TOOTH EX. JOINT 1-8-98 (SPCN)2-7

(cm212c0b) SECTION 212—JOINT MATERIALS 2-14-06 (SPCN)2-7

(cm214b0b) SECTION 214—HYDRAULIC CEMENT 1-28-08 (SPCN)2-8

(cm215a2b) SECTION 215—HYDRAULIC CEMENT CONCRETE ADMIXTURES 1-28-08 (SPCN) 2-8

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



(cm216b0b) SECTION 216—WATER FOR USE WITH CEMENT OR LIME 6-12-06 (SPCN)2-8

(cm217a0b) SECTION 217.09(b) READY-MIXED CONCRETE Re. 1-97 (SPCN)2-9

(cm217h1b) SECTION 217—HYDRAULIC CEMENT CONCRETE 8-17-04 (SPCN)2-9

(cm220a0b) SEC. 220.02(d)—LIQUID MEMBRANE-FORMING COMPOUNDS 8-17-04 (SPCN)....2-12

(cm221a0b) SECTION 221.02 DETAIL REQUIREMENTS 1-8-01c (SPCN).....2-12

(cm223a0b) SECTION 223 - STEEL REINFORCEMENT 6-14-00 (SPCN).....2-13

(cm223b0b) SECTION 223—STEEL REINFORCEMENT 12-4-07 (SPCN).....2-13

(cm226c0b) SECTION 226.02 (h) 3. STRUCTURAL STEEL 2-14-01 (SPCN).....2-13

(cm229d0b) SECTION 229 - ALUMINUM ALLOY 10-1-02 (SPCN).....2-13

(cm233a0b) SECTION 233.03 REPAIR OF GALVANIZED SURFACES 4-13-99 (SPCN)2-14

(cm234a0b) SECTION 234.02 - DETAIL REQUIREMENTS 1-1-97 (SPCN).....2-14

(cm237a0b) SECTION 237 – BEDDING MATERIAL & BEARING PADS 4-12-99 (SPCN)2-14

(cm246a0b) SEC. 246.02(a) WHITE & YELLOW PAVE. MARK. MATERIAL 11-23-04 (SPCN) ...2-15

—200 SERIES SPs (SPECIAL PROVISIONS)—2-16

SM200A0B - SECTION 200—GENERAL 4-19-072-17

SM208A0B - CRUSHED HYDRAULIC CEMENT CONCRETE (CHCC) 5-10-00.....2-19

SM211I6B - SECTION 211 ASPHALT CONCRETE MIXTURES (SUPERPAVE) 12-1-06.....2-21

SM212A0B - SECTION 212 JOINT MATERIALS 1-1-972-38

SM213A0B - SECTION 213—DAMP-PROOFING & WATERPROOFING MAT. 6-12-062-39

SM217A0B - LOW PERMEABILITY CONCRETES 12-2-02c2-40

SM224A0B - SECTION 224—CASTINGS 11-15-072-44

SM226A0B - SECTION 226 STRUCTURAL STEEL 6-26-97c.....2-45

SM231C2B - SECTION 231—PAINT 11-29-04c2-47

SM232A0B - SECTION 232—PIPE AND PIPE ARCHES 9-26-06.....2-52

SM236A0B - SECTION 236—WOOD PRODUCTS 9-26-062-59

SM238A4B - SECTION 238—ELECTRICAL AND SIGNAL COMPONENTS 3-4-08.....2-62

SM242A1B - SECTION 242—FENCES 6-21-05.....2-67

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



SM243A0B - SECTION 243—EPOXY-RESIN SYSTEMS 6-12-062-72

SM244A1B - SEC. 244—ROADSIDE DEVELOPMENT MATERIALS 1-27-03cc2-74

SM245A2B - SECTION 245—GEOSYNTHETICS 8-14-062-76

SM246D1B - SECTION 246—PAVEMENT MARKING 2-17-05.....2-81

SM247A2B - SECTION 247—REFLECTIVE SHEETING 6-22-062-90

— **DIVISION III—ROADWAY CONSTRUCTION** —3-1

— **300 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)** —3-2

(cm301b0b) **SECTION 301—CLEARING AND GRUBBING** 6-12-06 (SPCN)3-2

(cm303b0b) **AGGREGATE MATERIAL** Re. 1-97 (SPCN)3-3

(cm307a1b) **SECTION 307 HYDRAULIC CEMENT STABILIZATION** 6-12-06 (SPCN)3-3

(cm308b1b) **SECTION 308—SUBBASE COURSE** 6-12-063-5

(cm309b1b) **SECTION 309—AGGREGATE BASE COURSE** 6-12-06 (SPCN).....3-6

(cm310a0b) **SECTION 310—TACK COAT** 6-13-06 (SPCN)3-6

(cm311a0b) **SECTION 311—PRIME COAT** 6-13-06 (SPCN)3-7

(cm312a0b) **SECTION 312—SEAL COAT** 6-13-06 (SPCN)3-7

(cm314a0b) **SECTION 314—PENETRATION SURFACE COURSES** 6-13-06 (SPCN)3-7

(cm315a0b) **RIDEABILITY TESTING ON ASPHALT** 1-1-97 (SPCN)3-7

(cm315b0b) **SAW CUT ASPHALT PAVEMENT** 11-14-96 (SPCN)3-8

(cm315c1b) MATERIAL TRANSFER VEHICLE (MTV) 6-6-08 (SPCN)3-8

(cm315f0b) **SMA—SURFACE & INTERMEDIATE MIXES USING RAP** 7-17-07 (SPCN).....3-8

(cm316a0b) **RIDEABILITY TESTING ON HYDR. CEMENT CONC.** 1-1-97 (SPCN)3-9

(cm316d0b) **SAW CUT HYDRAULIC CEMENT CONC. PAVEMENT** 8-25-98 (SPCN)3-9

— **300 SERIES SPs (SPECIAL PROVISIONS)** —3-11

SM302B0B - RESTORING EXISTING PAVEMENT Re. 1-97cc3-12

SM302F0B - FLOWABLE BACKFILL 11-30-98.....3-14

SM302G0B - SECTION 302—DRAINAGE STRUCTURES 4-30-073-16

SM303A0B - TURBIDITY CURTAIN Re. 1-973-21

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



SM303C1B - SECTION 303—EROSION CONTROL MULCH 3-15-043-23

SM303F0B - CRUSHED GLASS IN AGGR., EMBANK., DRAIN. & FLOW. FILL APPL. 7-24-073-24

SM303H1B - NO PLAN AND MINIMUM PLAN CONCEPT 12-6-07.....3-28

SM303I4B - SECTION 303—EARTHWORK 4-19-073-30

SM305A0B - SECTION 305—SUBGRADE AND SHOULDERS 6-14-06.....3-48

SM312A0B - BLOTTED SEAL COATS Re. 1-973-50

SM313B1B - ASPHALT STABILIZED OPEN-GRADED MATERIAL 7-11-053-52

SM315I0B - RUMBLE STRIP (ASPHALT) 7-19-993-55

SM315K8B - SEC. 315—ASPHALT CONCRETE PAVE. (SUPERPAVE) 10-3-07.....3-57

SM315L7B - STONE MATRIX ASPHALT (SMA) 6-15-073-67

SM315M2B - SEC. 315 RIDEABILITY FOR ASPHALT CONCRETE PAVEMENT 6-10-04cc3-75

SM316A0B - SEALING SHOULDER JOINTS Re. 1-973-77

SM316B1B - SEC. 316 RIDEABILITY FOR HYDRAULIC CEMENT CONC. PAVE. 8-13-02cc3-78

SM316C0B - SECTION 316—HYDRAULIC CEMENT CONCRETE PAVEMENT 1-5-053-80

— DIVISION IV—BRIDGES AND STRUCTURES —4-1

—400 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)—4-2

(cm401b0b) SECTION 401—STRUCTURE EXCAVATION 6-14-06 (SPCN)4-2

(cm403a2b) SECTION 403—BEARING PILES 6-14-06 (SPCN)4-3

(cm405b0b) SECTION 405—PRESTRESSED CONCRETE 8-17-04 (SPCN)4-4

(cm406a0b) SECTION 406—REINFORCING STEEL 6-14-06 (SPCN)4-5

(cm406b0b) SEC. 406.04 MEAS. & PAYMENT (Corrosion resistant reinf. steel) 12-28-07 (SPCN) ..4-6

(cm408b0b) SECTION 408.03(g) PLACEMENT: 7-28-03 (SPCN).....4-6

(cm420b0b) SECTION 420—PREFORMED ELASTOMERIC JOINT SEALER 6-14-06 (SPCN)4-7

(cm421a0b) SECTION 421—ELASTOMERIC EXPANSION DAMS 6-14-06 (SPCN).....4-8

—400 SERIES SPs (SPECIAL PROVISIONS)—4-9

SM400A1B - WAVE EQUATION ANALYSIS 5-25-99c.....4-10

SM403B0B - DYNAMIC PILE TESTING FOR FRICTION PILES 5-25-99c4-13

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



SM403C0B - DYNAMIC PILE TESTING FOR END BEARING PILES 5-25-99c.....4-15

SM404A0B - CONCRETE SURFACE PENETRANT SEALER Re. 1-97.....4-17

SM404B0B - CONCRETE SURFACE COLOR COATING Re. 1-974-18

SM404C0B - GRAVITY FILLED POLYMER CRACK SEALING Re. 1-974-20

SM404E3B - SECTION 404—HYDRAULIC CEMENT CONCRETE OPERATIONS 6-14-064-22

SM404E0B - SEALING EXPANSION JOINTS 6-14-00.....4-26

SM407A0B - METALLIZATION OF FERROUS METAL SURFACES 1-5-98.....4-27

SM407B1B - SECTION 407—STEEL STRUCTURES 9-20-06.....4-30

SM407C0B - TOOTH EXPANSION JOINT Re. 1-97.....4-46

SM410A0B - SECTION 410—RAILINGS AND PARAPETS 6-14-064-47

SM411A6B - SEC. 411—PROTECTIVE COATING OF METAL IN STRUCTURES 8-8-064-48

SM412A2B - SEC. 412 WIDEN, REPAIR, & RECONSTRUCT. EXIST. STRUCT. 4-17-074-61

SM413A2B - SEC. 413—DISMANTL. & REM. EX. STR. OR REM. POR. OF EX. STR. 8-8-06.....4-63

SM414A0B - SECTION 414—RIPRAP 12-20-064-66

SM416A0B - SECTION 416—WATERPROOFING Re. 1-974-67

— DIVISION V—INCIDENTAL CONSTRUCTION —.....5-1

—500 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)—.....5-2

(cm502b0b) SAWCUT HYDR. CEM. CONC. ITEMS (FULL DEPTH) 12-27-00 (SPCN)5-2

(cm502c0b) SECTION 502.04 - MEASUREMENT AND PAYMENT 5-11-99 (SPCN)5-2

(cm503a0b) SECTION 503—RIGHT-OF-WAY MONUMENTS 4-18-07 (SPCN)5-3

(cm504a0b) EXPOSED AGGREGATE FINISH 1-1-97 (SPCN)5-3

(cm504b0b) SEC. 504—SIDEWALKS, STEPS, AND HANDRAILINGS 1-12-05 (SPCN)5-3

(cm506a0b) SECTION SECTION 506—RETAINING WALLS 6-14-06 (SPCN)5-4

(cm507a0b) TEMPORARY SAFETY FENCE 1-10-00c (SPCN).....5-4

(cm507b2b) SECTION 507—FENCES 6-14-06 (SPCN).....5-5

(cm508c0b) SECTION 508.03 MEASUREMENT AND PAYMENT 5-14-99 (SPCN)5-6

(cm509a0b) SEC. 509—PATCHING HYDRAULIC CEMENT CONC. PAVE. 8-25-05 (SPCN)5-6

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



(cm512a0b) POLICE PATROLS Re. 1-97 (SPCN).....5-6

(cm512h0b) CONTRACTOR PROP. ALTERNATIVE TRAFFIC CONTR. PLANS 7-26-07(SPCN) ..5-7

(cm513a0b) SECTION 513.02 MEASUREMENT AND PAYMENT 1-1-97 (SPCN)5-8

(cm515a0b) SECTION 515—PLANING PAVEMENT 5-5-03 (SPCN)5-8

(cm518a0b) SECTION 518.02(a) NUMBER OF TRAINEES 6-29-92c (SPCN).....5-9

(cm520a0b) SECTION 520.06—MEASUREMENT & PAYMENT 10-7-04 (SPCN)5-9

—500 SERIES SPs (SPECIAL PROVISIONS)—5-10

SM500A1B - REMOVAL OR CONNECTION OF ASBESTOS CEMENT PIPE 11-7-05.....5-11

SM500B0B - MAILBOX POST 7-11-05.....5-13

SM501C1B - SECTION 501—UNDERDRAINS 10-18-055-14

SM502A0B - SECTION 502—INCIDENTAL CONCRETE ITEMS 4-12-99ccc5-17

SM504A0B - CG-12 DETECTABLE WARNING SURFACE 2-12-03c.....5-23

SM505A0B - SECTION 505—GUARDRAIL AND STEEL MEDIAN BARRIERS 6-14-06.....5-25

SM512B1B - PORTABLE CHANGEABLE MESSAGE SIGNS 5-3-02c.....5-27

SM512J3B - SECTION 512—MAINTAINING TRAFFIC 6-29-055-29

SM512K0B - WORK ZONE TRAFFIC CONTROL MANAGEMENT 10-4-075-46

SM514A0B - SECTION 514—FIELD OFFICE 9-28-065-50

SM516A1B - SEC. 516—DEMOLITION OF BUILDINGS & CLEARING PARCELS 8-29-06.....5-55

SM518A0B - SECTION 518—TRAINEES ON CONSTRUCTION PROJECTS 3-7-05.....5-58

SM519A0B - SOUNDWALL COLOR COATING Re. 1-97.....5-61

SM519B0B - SECTION 519—SOUND BARRIER WALLS 9-26-06.....5-63

SM522A0B - PARTNERING 4-3-075-75

— DIVISION VI—ROADSIDE DEVELOPMENT —6-1

—600 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)—6-2

(cm603a0b) SECTION 603.03—PROCEDURES 6-10-04 (SPCN)6-2

—600 SERIES SPs (SPECIAL PROVISIONS)—6-3

SM602A0B - SECTION 602--TOPSOIL 10-10-066-4

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



SM605A0B - SECTION 605—PLANTING 10-10-06.....6-6

— **DIVISION VII—TRAFFIC CONTROL DEVICES** —.....7-1

— **700 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)**—.....7-2

(cm701a1b) **SECTION 701—TRAFFIC SIGNS** 10-26-05c (SPCN).....7-2

(cm702a0b) **SEC. 702.04(B) - BARRIER & GUARDRAIL DELINEATORS** 10-31-01 (SPCN).....7-2

(cm705a0b) **SECTION 705.03(e) CONTROL CENTERS** 3-29-99 (SPCN).....7-3

— **700 SERIES SPs (SPECIAL PROVISIONS)**—.....7-4

SM700C7B - SECTION 700—GENERAL 6-9-08.....7-5

SM701A0B - SECTION 701 - SIGN OVERLAYMENT 6-29-00.....7-17

SM703A0B - SECTION 703—TRAFFIC SIGNALS 2-21-06.....7-19

SM704B0B - TYPE B, CLASS VI PAVEMENT LINE MARKING 1-1-977-20

SM704D1B - SEC. 704—PAVEMENT MARKINGS & MARKERS 10-12-06.....7-23

SM705A0B - ELECT. EQUIP. CONTAIN. POLYCHLORIN. BIPHENYL 1-1-97.....7-30

[◀ BACK TO METRIC TABLE OF CONTENTS](#)

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



1-

— DIVISION I—GENERAL PROVISIONS —

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



——100 SERIES SPECIAL PROVISION COPIED NOTES (SPCNs)——

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



**GUIDELINES - ALL METRIC PROJECTS.
EXCEPTIONS: NONE.**

(cm100a0a-0808) GENERAL PROJECT REQUIREMENTS, SPECIAL PROVISIONS (SPs) AND SPECIAL PROVISION COPIED NOTES (SPCNs)

This project shall be constructed in accordance with: the plans; the *Virginia Department of Transportation Metric Road and Bridge Specifications*, dated January 1997; and the *1996 Road and Bridge Standards*; the *Virginia Work Area Protection Manual*, dated May 1, 2005; and Special Provisions and Special Provision Copied Notes in this contract.

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

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

7-8-08 (SPCN)

**GUIDELINES - ALL PROJECTS. (The Contractor will now go to the VEC website and obtain the local VEC office himself.)
EXCEPTIONS: NONE.**

(cm100a1b-0908) LABOR—Contact may be made in advance of the starting date with the Job Service Office of the Virginia Employment Commission at a location near you to secure referral of available qualified workers in all occupational categories. The closest office near you may be obtained from the VEC website at <http://www.vec.virginia.gov>. Click on "Work Force Centers".

8-6-08 (SPCN)

**GUIDELINES - PROJECTS REQUIRING COORDINATION BETWEEN STATE FORCES AND CONTRACT WORK, SUCH AS SEEDING, PAVEMENT MARKING, SIGNALS, DO NOT USE WHEN DEPT. FURNISHES SIGNS.
EXCEPTIONS: NONE.**

(cm100b0b-0197) OPERATIONS BY STATE FORCES - The Contractor is hereby advised that State Forces will furnish materials for and perform certain items of work, indicated on the plans to be performed by State Forces, throughout the life of this contract. The Department will perform its operations in such a manner as to minimize interference with the Contractor's operations, and the Contractor shall coordinate his activities with the Department in order to prevent unnecessary interference.

In the event the plans provide for seeding operations to be performed by State Forces, such operations will include areas used for stockpiling of topsoil, approved borrow pits and waste areas and will include Department furnished and applied lime, fertilizer, seed and mulch. The Contractor shall prepare the areas to be seeded in accordance with

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



Section 603.03(b) of the Specifications, the cost of which shall be included in the price bid for other items. The Contractor shall coordinate with and notify the Department at such time as each area is ready for seeding operations; thereafter, the Department will assume the responsibility for completing and maintaining such areas. The Contractor will be responsible for all repairing or replacing of any work damage by his use of improper materials or construction methods or because of any damage inflicted by other than normal construction activities. Such corrective work shall be performed at the Contractor's expense. Areas outside the limits of construction, other than those approved by the Department, which are disturbed by the Contractor, shall be restored and seeded at the Contractor's expense.

8-1-91, Reissued 1-1-97 (SPCN)

GUIDELINES - NO-PLAN PROJECTS AND WHEN REQUESTED BY THE ENGINEER (shown on bottom of last price sheet {VA. CONSTR. REG. NO.}).
EXCEPTIONS: NONE.

(cm102a0b-0197) **REQUIRED ATTENDANCE OF PROJECT SHOWING** - Section 102.04 of the Specifications is amended to include the following:

Prospective Bidders are hereby advised that attendance of the Project Showing is a prerequisite for submitting a bid proposal for this project. The "Notice of Advertisement for Bids" will designate the date, time and location for showing the work for interested parties. Prospective Bidders shall register in writing with the Engineer at the Project Showing and all attending parties will be noted in the Project Showing letter. Failure on the part of the Prospective Bidder to attend the Project Showing for this project and to register with the Engineer will be cause for rejection of the Bidder's proposal.

4-1-87c, Reissued 1-1-97 (SPCN)

GUIDELINES - PROJECTS WHERE PREQUALIFICATION REQUIREMENTS ARE WAIVED.
EXCEPTIONS: NONE.

(cm102b0b-0197) **PREQUALIFICATION** - The Contractor is advised that the provisions of Section 102 of the Specifications requiring Prequalification are waived on this contract.

8-1-91, Reissued 1-1-97 (SPCN)

GUIDELINES - PROJECTS ADVERTISED FOR 3 WEEKS OR LESS.
EXCEPTIONS: NONE.

(cm102d0b-0197) **SECTION 102.04 EXAMINATION OF SITE OF WORK AND PROPOSAL** of the Specifications is amended to replace the first sentence of the third paragraph with the following:

In the event a word, phrase, clause, or other portion of the plans, specifications, or other contract documents is alleged to be ambiguous, the Bidder shall submit to the

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



Contract Engineer a written notice of same prior to the date of receipt of bids, and request an interpretation thereof.

8-1-91, Reissued 1-1-97 (SPCN)

**GUIDELINES - ALL PROJECTS.
EXCEPTIONS: NONE.**

(cm102I4b-0407) **SECTION 102—BIDDING REQUIREMENTS AND CONDITIONS** of the Specifications is amended as follows:

Section 102.01—Prequalification Of Bidders is amended to replace the last paragraph with the following:

All bidders shall return Form No. C-48 listing all subcontractors/suppliers that were solicited to supply quotes for work on this project within 10 calendar days after the date designated in the proposal for the opening of bids. This form shall show the vendor numbers, legal names of subcontractors/suppliers, whether DBE or non-DBE, and utilization or non-utilization for work on this project.

Section 102.03—Interpretation of Quantities in Proposal is amended to add the following to the end of the first paragraph:

When all types of pipe of one size are combined into one bid item in the proposal, one bid price shall be submitted for each size of pipe to be used.

Section 102.05—Preparation of Bid is amended to add the following:

The bidder shall acknowledge receipt of all revisions to the contract documents issued prior to receipt of bid by inserting the appropriate Revision Letter date(s) as part of his electronic bid submission. Failure by the bidder to acknowledge the Revision Letter date(s) with his bid when applicable will result in the bidder being considered non-responsive and the bid being rejected.

Section 102.07—Proposal Guaranty is amended to replace the first sentence of the first paragraph with the following:

A bid in excess of \$250,000.00 will not be accepted or considered unless accompanied by a guaranty in the form of a bid bond made payable to the Treasurer of Virginia.

Section 102.08(a) Disqualification of Bidder is revised to replace the second paragraph with the following:

affiliate as used herein shall conform to the definition in Section 101.02 Terms.

3-26-07 (SPCN)

GUIDELINES - PROJECTS HAVING A 90-DAY OR LESS TIME LIMIT. USE WITH SPECIAL PROVISION COPIED NOTE cm102c. ALSO USE ON GUARDRAIL AND RUMBLE

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



STRIP PROJECTS. NOT TO BE USED WITH SPECIAL PROVISIONS FOR WORKING SCHEDULE OR PLAN OF OPERATIONS.

EXCEPTIONS:

- SAAP CONTRACTS: NOT TO BE USED.
- MAINTENANCE PROJECTS: NOT TO BE USED.
- MINIMUM PLAN PROJECTS: NOT TO BE USED (WITH THE EXCEPTION OF GUARDRAIL AND RUMBLE STRIP PROJECTS AS STATED ABOVE).
- NO PLAN PROJECTS: NOT TO BE USED (WITH THE EXCEPTION OF GUARDRAIL AND RUMBLE STRIP PROJECTS AS STATED ABOVE).

(cm103a0b-0197) **SECTION 103.06(e) PROGRESS SCHEDULE** - The provision of Section 103.06(e) of the Specifications requiring the submission of a progress schedule will not apply to this contract.

8-1-91, Reissued 1-1-97 (SPCN)

GUIDELINES - ALL PROJECTS:

EXCEPTIONS: DO NOT USE IN EMERGENCY CONTRACT PROJECTS.

(cm103d2b-0706) **SECTION 103—AWARD AND EXECUTION OF CONTRACTS** of the Specifications is amended as follows:

Section 103.02—Award of Contract is amended to replace the last sentence of the paragraph with the following:

If the Board, or the Commissioner; where permitted by law, has not awarded the Contract within this period, the bidder may withdraw his bid without penalty or prejudice unless the time limit is extended by mutual consent.

Section 103.03—Cancellation of Award is replaced by the following:

The Board, or the Commissioner; where permitted by law, may cancel the award of any contract at any time before the execution of the contract by all parties without liability to the State.

Section 103.04—Return of Proposal Guaranty is amended to add the following to the first paragraph:

When the Contractor withdraws his bid prior to award, after being the low bidder, the bid bond will be forfeited in accordance with the requirements of Section 2.2-4336 of the *Code of Virginia*.

Section 103.05—Requirements of Contract Bond is amended to replace the first sentence of first paragraph with the following:

Within 15 calendar days after notification, the successful bidder shall furnish the following bonds for contracts in excess of \$250,000:

And to replace the second paragraph with the following:

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



Bidders will not be awarded an unbonded contract when their bid plus the balance of other unbonded contracts exceed \$250,000.00 or if their current Ability Factor is less than 8.0, as determined by their prequalification status.

Section 103.06(f) Contractor's Bodily Injury and Property Damage Liability Insurance is replaced by the following:

- (f) **Contractor's Bodily Injury and Property Damage Liability Insurance:**
The Contractor shall procure and maintain at his own expense, until final acceptance of the work covered by the Contract, insurance of the kinds and in the amounts specified herein. The minimum limits of liability for this insurance shall be as follows:

A Combined Single Limit for Bodily Injury Liability and Property Damage Liability

\$1,000,000	Each Occurrence
\$2,000,000	Aggregate

Evidence of insurance in compliance with the above shall be filed on forms approved by the Department within the time specified in Section 103.06(d) of the Specifications. The evidence shall be executed by an approved and authorized insurance company authorized to do business in Virginia and with a minimum "Best Rating" of "B", and shall cover the Contract it accompanies.

The Contractor shall file notice with the Department at least 30 days prior to the cancellation or reduction of the required insurance, and shall cease operations on the date of the cancellation or reduction until new insurance is in force and the same evidence of insurance is provided to the Department.

The Contractor's Bodily Injury and Property Damage Liability Insurance shall cover liability of the Contractor for damage because of bodily injury to, or death of persons and damage to, or destruction of property, which may be suffered by persons other than the Contractor's own employees as a result of the negligence of the Contractor in performing the work covered by the Contract.

Insurance provided in compliance with this section shall include liability of the Contractor for damage to or destruction of property, which may be suffered by persons other than the Contractor's own employees as a result of blasting operations of the Contractor in performing the work covered by the Contract.

If any part of the work is sublet, insurance meeting the same requirements shall be provided by or in behalf of the subcontractors and evidence of such insurance shall be submitted with the sublet request.

Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve the Contractor or subcontractor(s) for liability in excess of such coverage, nor shall it preclude the Commonwealth from taking such actions as is available to it under any other provision of this Contract or otherwise in law.

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



Section 103.07—Execution and Approval of Contract is replaced with the following:

SECTION 103.07—EXECUTION AND CONTRACT AUDIT

- (a) **Submittal and Execution of Contract:** The bid as submitted by the Contractor, including the documents specified in Section 103.06(a) of the Specifications shall constitute the Contract upon submittal of the contract bond, contract bodily injury and property damage liability insurance certificate, and workers' compensation insurance certificate and the final execution by the Department. If the Contract is not awarded within the time limit specified in Section 103.02 of the Specifications, the bidder may withdraw his bid without penalty or prejudice. No Contract shall be considered effective until it has been fully executed by all parties.
- (b) **Contract Audit:** The Contractor shall permit the Department to audit, examine, and copy all documents, computerized records, electronic mail, or other records of the Contractor during the life of the contract and for a period of not less than five years after date of final payment, or date Contractor is declared in default of Contract, or date of termination of the Contract.
1. The documents and records shall include, but not be limited to those that were used to prepare and compute the bid, prepare all schedules used on the project, record the progress of work on the project, accounting records, purchasing records, personnel payments or records necessary to determine employee credentials vendor payments and written policies and procedures used to record, compute and analyze all costs incurred on the project, including those used in the preparation or presentation of claims to the Department.
 2. Records pertaining to the project as the Department may deem necessary in order to permit adequate evaluation and verification of Contractor's compliance with contract requirements, compliance with the Department's business policies, and compliance with provisions for pricing work orders or claims submitted by the Contractor or the Contractor's subcontractors, insurance agents, surety bond agents and material suppliers shall be made available to the auditor(s) at the Department's request. The Contractor shall make his personnel available for interviews when requested by the Department.
 3. Upon request, the Contractor shall provide the Department with data files on data disks, or other suitable alternative computer data exchange format. Data furnished by the Contractor that cannot be verified will be subject to a complete audit by the Department.

The Contractor shall ensure that the requirements of this provision are made applicable to his subcontractors, insurance agents, surety bond agents and material suppliers. The Contractor shall cooperate and shall cause all related parties to furnish or make available in an expeditious manner all such information, materials, and data. The

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

Contractor shall be forthcoming in disclosing all sources and locations of media.

The Contractor shall provide immediate access to records for the audit and provide immediate acceptable facilities for the audit. Failure on the part of the Contractor to afford the Department immediate access or proper facilities for the audit will be considered failure to cooperate and will result in disqualification as a bidder in accordance with Section 102.08 of the Specifications.

Upon completion of the contract audit, any adjustments or payments as a result of the audit shall be made within 60 days from presentation of the Department's findings to the Contractor. Failure to make payment may result in disqualification as a bidder in accordance with Section 102.08 of the Specifications.

If the Contractor disagrees with the findings of the Department, the Contractor may appeal the decision in accordance with Section 105.16 of the Specifications or Section 33.1-386 of the *Code of Virginia* as applicable.

5-22-06 (SPCN)

GUIDELINES - PROJECTS WITH DETOURS (IN MUNICIPALITIES ONLY).
EXCEPTIONS: NONE.

(cm104a0b-0197) **SECTION 104.04 (a) DETOURS** of the Specifications is replaced by the following:

- (a) **Detours:** Detours may be indicated on the plans or in the special provisions or used with the approval of the Engineer. Detours over existing off-project roadways will be designated and the roadways maintained by the Department except municipalities shall be responsible for roadway maintenance within their own corporate limits. Temporary directional sign panels for off-project detours will be furnished by the Department. Responsibility for installation and maintenance of the temporary directional sign panels shall be in accordance with Section 512.03(a).

If any project is located wholly or in part within the corporate limits of a municipality and through traffic is to be detoured at the request of the municipality, the municipality will:

1. Provide and maintain the detours within the corporate limits
2. Furnish, install and maintain the temporary directional sign panels

The provision of detours and signing of alternate routes will not relieve the Contractor of the responsibility of ensuring the safety of the public or from complying with any requirements of these specifications affecting the rights of the public, including those concerning lights and barricades. Maintenance of all other detours shall be the responsibility of the Contractor.

Right of way for temporary highways or bridges required by these provisions will be furnished by the Department.

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

3-1-96, Reissued 1-1-97 (SPCN)

**GUIDELINES – ALL PROJECTS,
EXCEPTIONS: NONE.**

(cm104d0b-0908) **SECTION 104.05(b) MAILBOXES AND NEWSPAPER BOXES** of the Specifications is replaced with the following:

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

6-9-08 (SPCN)

**GUIDELINES—PROJECTS DESIGNED UNDER THE NO-PLAN CONCEPT WHERE MINOR CONSTRUCTION SURVEYING IS REQUIRED. THE DISTRICT SURVEY MANAGER'S APPROVAL MUST BE ACQUIRED PRIOR TO INCLUDING THIS SPCN IN THE CONTRACT.
EXCEPTIONS: None.**

(cm105a1b-0908) **NO PLAN PROJECT CONSTRUCTION SURVEYING**—Construction surveying for this project shall be in accordance with the following:

SECTION 105.10—CONSTRUCTION STAKES, LINES AND GRADES of the Specifications is replaced by the following:

The Contractor shall perform all construction and other surveying which the Contractor deems necessary to construct this project in accordance with the Contract documents. The location of any reference points which may have been established by the Department and any control data which the Department may have will be made available to the Contractor upon request. The Department will be responsible for the accuracy of such reference points and control data. The cost for all surveying performed by the Contractor shall be included in the price bid for other items in the Contract.

4-10-08 (SPCN)

**GUIDELINES - PROJECTS WITH DRAINAGE ITEMS (END SECTION, EW-12, DROP INLET, JUNCTION BOX-TYPE A).
EXCEPTIONS: NONE.**

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



(cm105b0b-0197) **SECTION 105.04—FURNISHING AND ERECTING PRECAST STRUCTURES** of the Specifications is amended to include the following:

Precast units, excluding concrete pipe, prestressed concrete items and soundwalls, conforming to the requirements herein will only be accepted under a Quality Control/Quality Acceptance Program (QC/QA). The Contractor shall have the producer perform quality control functions in accordance with a Department approved QC/QA plan. Each piece, manufactured under the QC/QA program, in addition to the date and other required markings, shall be stamped with the letters (QC), as evidence that the required QC/QA procedures have been performed. Each shipping document shall be affixed with the following:

We certify that these materials have been tested and conform to VDOT Precast Concrete Products Quality Assurance Program.

Signature and Title

9-15-95, Reissued 1-1-97 (SPCN)

**GUIDELINES - PROJECTS HAVING TRAFFIC CONTROL DEVICES:
EXCEPTIONS: NONE.**

(cm105e0b-0402) **SECTION 105.02—PLANS AND WORKING DRAWINGS** of the Specifications is amended to replace the next to last sentence in the ninth paragraph with the following:

The designs shall be in accordance with the specific editions of the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* as required in Section 700 of the Specifications.

6-19-01 (SPCN)

**GUIDELINES— ALL PROJECTS.
[USE BY THE JANUARY 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

(cm105f5b-0108) **SECTION 105—CONTROL OF WORK** of the Specifications is amended as follows:

Section 105.02—Plans and Working Drawings is amended to add the following:

Working drawings and plans submitted for metric projects shall be provided in metric units or in dual units (imperial and metric) at the Contractor's option.

Section 105.03—Conformity with Plans and Specifications is amended to replace the second paragraph with the following:

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



Permissible tolerances for the elevation of subgrade and finished grade, and for the thickness of the various courses of pavement structure are specified in these specifications. If permissive tolerances are exceeded or if consistent deviations from the plans or abrupt changes in grade occur, even though within the tolerances, the affected areas shall be reconstructed to conform to the specified tolerance and provide a smooth riding surface. When it is not feasible to reconstruct the areas, payment will be made in accordance with the requirements of the applicable specification for each material placed.

Section 105.06—Cooperation Of Contractor is amended to replace the first paragraph with the following:

The Contractor will be supplied with two copies of the executed Contract. The Department's *Road and Bridge Specifications* and the Department's *Road and Bridge Standards* will be available for purchase by the Contractor from the office of the Contract Engineer.

Plans will be furnished to the Contractor without charge as follows:

Original Contract Amount in Dollars		Number of Plan Sets	
From	To	Full Size	Half Size
0	1,999,999	4	6
2,000,000	4,999,999	6	8
5,000,000	9,999,999	8	10
10,000,000+		10	10

Plan revisions issued while the project is under construction will be furnished to the Contractor in the same kind and number. The Contractor shall keep one complete set of plans, standard drawings, contract assemblies, and specifications available on the project at all times except for maintenance projects, certain sign projects, and other projects having no field office or on which the Contractor has no office.

Section 105.16 Submission and Disposition of Claims is amended to replace the first and second sentences of the fourth paragraph with the following:

Upon completion of the Contract, the Contractor may, within 60 days after the final estimate date established by the Department pursuant to VA CODE, § 33.1-386, deliver to the Department a written claim, which must be a signed original claim document along with three legible copies of the claim document, for the amount he deems he is entitled to under the Contract. For the purpose of this Section, the final estimate date shall be that date set forth in a letter from the Department to the Contractor sent by certified mail and shall be considered as the date of notification of the Department's final estimate.

Section 105.16—Submission and Disposition Of Claims is amended to replace the last sentence of the fifth paragraph with the following:

If the Commissioner deems that all or any portion of a claim is valid, he shall have the authority to negotiate a settlement with the Contractor subject to the provisions of Section 2.2-514 of the Code of Virginia as amended.

And to add the following:

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



The Contractor shall submit a certification with the notice of claim using the following format:

Pursuant to Virginia Code § 18.2-498.4, I hereby certify that this contract claim submission for Virginia Department of Transportation Project _____ in _____ County, Virginia is a true and accurate representation of additional costs and/or delays incurred by (name of Contractor) in the performance of the required contract work. Any statements made, and known to be false, shall be considered a violation of the Virginia Governmental Frauds Act, punishable as allowed by the Virginia Code for a Class 6 Felony.

(Company)

By:

As officer or duly appointed agent of (Company)

Title:

Date:

State Of:

City/County of _____, To-Wit:

I, the undersigned, a Notary Public in and for the City/ County and State aforesaid, do hereby certify that _____, whose name is signed to the foregoing instrument, bearing date of the _____ day of _____, 200_, has this day acknowledged the same before me in my City/ County and State aforesaid.

Given under my hand this _____ day of _____, 200_.

Notary Public:

My commission expires:

Claims submitted during the statutory period for submitting contract claims and submitted without the certification described above shall be returned to the Contractor. The Contractor shall be informed in writing that the submission was incomplete.

12-4-07 (SPCN)

GUIDELINES - MINIMUM-PLAN AND NO PLAN PROJECTS WITH EXCAVATION, EMBANKMENT and/or AGGREGATE. EXCEPTIONS: NONE.

(cm106a0b-0197) SECTION 106.03(c) SOURCES FURNISHED BY THE CONTRACTOR of the Specifications is replaced by the following:

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



- (c) **Sources Furnished by the Contractor:** The use of material from sources furnished by the Contractor will not be permitted until approved by the Engineer and written authority is issued for the use thereof.

The Contractor shall acquire the necessary rights to take material from these sources and shall pay all costs related thereto, including costs which may result from an increase in length of haul. The Department will review and evaluate the material and reserves the right to reject any material from a previously approved source which fails visual examination or test.

8-1-91, Reissued 1-1-97 (SPCN)

GUIDELINES - ALL FEDERALLY FUNDED PROJECTS.
EXCEPTIONS: NONE.

- (cm108b0b-0197) **SECTION 108.01—SUBCONTRACTING** of the Specifications is amended to include the following:

Any distribution of work shall be evidenced by a written binding agreement on file at the project site. Such agreement shall contain language that Federally required provisions and requirements of the prime Contract are made part of the agreement.

11-8-91, Reissued 1-1-97 (SPCN)

GUIDELINES - PROJECTS SELECTED BY THE DISTRICT CONSTRUCTION ENGINEER. THIS COPIED NOTE IS ONLY USED WHEN LIQUIDATED DAMAGES ARE DIFFERENT THAN THOSE STATED IN SECTION 108.12.THE DOLLAR AMOUNT FOR EACH CALENDAR DAY BEYOND THE TIME LIMIT “(\$ _____)” MUST BE FILLED IN, OTHERWISE NO LIQUIDATED DAMAGES APPLY.
EXCEPTIONS: NONE.

- (cm108d1b-0907) **SECTION 108.12—LIQUIDATED DAMAGES** of the Specifications is replaced by the following:

All work for this Contract shall be completed and accepted on or before the time limit established in the Contract. In the event the Contractor fails to complete the work by the time limit, liquidated damages, representing the estimated additional cost of administration, engineering, supervision, inspection and other expenses will be charged against the Contractor in the amount of \$_____ for each calendar day beyond the time limit, including Sundays and Holidays, in which the Contract remains in an incomplete state.

8-24-07 (SPCN)

GUIDELINES - PROJECTS SELECTED BY THE DISTRICT CONSTRUCTION ENGINEER.
EXCEPTIONS: NONE.

- (cm108e0b-0197) **SECTION 108.12—LIQUIDATED DAMAGES** of the Specifications is replaced by the following:

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



All work for this Contract shall be completed and accepted on or before the time limit established in the Contract. In the event the Contractor fails to complete the work by the time limit, liquidated damages, representing the estimated additional cost of administration, engineering, supervision, inspection and other expenses will be assessed in the amount of \$_____ for each calendar day beyond the time limit, including Sundays and Holidays, that the project is not completed.

Incentive: In the event the Contractor completes all work and the project is accepted prior to the time limit in the Contract, the Contractor will be paid an amount of \$_____ as an incentive for each calendar day of unused time prior to the time limit, including Sundays and Holidays. The amount paid as an incentive will not exceed \$_____. Time extensions will not be considered when computing the incentive.

8-1-91, Reissued 1-1-97 (SPCN)

**GUIDELINES - ALL STATE FUNDED PROJECTS ONLY.
EXCEPTIONS: NONE.**

(cm108i1s-0808) **SECTION 108.01—SUBCONTRACTING** of the Specifications is amended to replace the first paragraph with the following:

No portion of the Contract shall be subcontracted or otherwise disposed of without the written consent of the Engineer, except for work that is \$25,000 or less per subcontractor, where the cumulative total of the sublets not requiring the Engineer's written consent will not exceed 10 percent of the original contract value. This will not, however, waive the requirements for prequalification, and will be considered part of the percentage the Contractor is allowed to subcontract. The Contractor shall notify the Engineer of the name of the firm to whom the work will be subcontracted, and the amount and items of work involved. Such notification shall be made and verbal approval given by the Engineer prior to the subcontractor beginning work.

5-15-08 (SPCN)

**GUIDELINES - ALL PROJECTS. (NOTE: FOR PROJECTS OVER \$15-MILLION DISTRICTS MUST SUBMIT A CONSTRUCTION ENGINEERING INSPECTION (CEI) BUDGET TO SET LIQUIDATED DAMAGES.
EXCEPTIONS: DO NOT USE THIS SPCN IF PROJECT SPECIFIC LIQUIDATED DAMAGES ARE INCLUDED ELSEWHERE IN THE PROPOSAL.**

(cm108p0b-0706) **TABLE I-1 SCHEDULE OF LIQUIDATED DAMAGES** of the Specifications is replaced by the following:

**TABLE I-1
Schedule of Liquidated Damages**

Original Contract Amount In Dollars	Daily Charge In Dollars
0 - 500,000	350
500,001 - 2,000,000	600
2,000,001 - 8,000,000	1,350

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



8,000,001 - 15,000,000	2,500
15,000,001 - Plus	3,100

5-27-05 (SPCN)

**GUIDELINES - USE ON PROJECTS HAVING ASPHALT CONCRETE CONTAINING PG 76-22 – DO NOT DESIGNATE ITEMS CONTAINING PG 76-22 FOR PRICE ADJUSTMENT (E MIXES AND MODIFIED MIXES).
EXCEPTIONS: NONE.**

(cm109a0b-0198) **PG 76-22 ASPHALT CEMENT ADJUSTMENT-** When asphalt concrete mixtures require the use of Performance Graded asphalt cement PG-76-22, the Contractor shall show in the space provided on Form C-16A in the bid proposal the f.o.b. cost per ton or metric ton for asphalt cement PG-76-22 upon which bid items containing PG-76-22 were developed.

During the life of the Contract, the Contractor shall document to the Department, by invoice signed by the supplier, his cost for PG-76-22 used. The Department will then adjust payments for asphalt concrete containing PG-76-22 by the difference in the actual f.o.b. price and the f.o.b. quote submitted with the bid. Adjustments will be made at the time for partial payments for asphalt concrete containing PG-76-22 in accordance with the requirements of Section 109.07 of the Specifications.

12-9-97 (SPCN)

**GUIDELINES – ALL PROJECTS.
EXCEPTIONS: NONE.**

(cm109e7b-0708) **SECTION 109—MEASUREMENT AND PAYMENT** of the Specifications is amended as follows:

Section 109.01(a)—Measurement by Weight is amended to replace the ninth paragraph with the following:

The quantity of materials paid for on a tonnage basis shall be determined on scales equipped with an automatic printer. Truck scale printers shall print the net weight and either the gross or tare weight of each load. Hopper scale printers shall print the net weight of each load. The weigh ticket shall also show the legal gross weight for material weighed on truck scales and the legal net weight for material weighed on hopper scales.

Section 109.04—Compensation for Altered Quantities is amended to delete the last sentence of the second paragraph.

Section 109.05(d)—Equipment is replaced with the following:

(d) **Equipment:** The Contractor shall provide the Engineer a list of all equipment to be used in the work. For each piece of equipment, the list shall include the serial number; date of manufacture; location from which equipment will be transported; and, for rental equipment, the rental rate and name of the company from which it is rented. The Contractor will be

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



paid rental rates for pieces of machinery, equipment, and attachments necessary for prosecution of the work that are approved for use by the Engineer. Hourly rates will not exceed 1/176 of the monthly rates of the schedule shown in the *Rental Rate Blue Book* modified in accordance with the *Blue Book* rate adjustment tables that are current at the time the force account is authorized. Adjustment factors or rate modifications indicated on area maps in the *Blue Book* will not be considered when acceptable rates are determined. Hourly rates for equipment on standby will be at 50 percent of the rate paid for equipment performing work. Operating costs shall not be included in the standby rate.

Payment will be made for the total hours the equipment is performing work. When equipment is performing work less than 40 hours for any given week and is on standby, payment for standby time will be allowed for up to 40 hours, minus hours performing work. Payment will not be made for the time that equipment is on the project in excess of 24 hours prior to its actual use in the force account work. An amount equal to the *Blue Book* estimated operating cost per hour will be paid for all hours the equipment is performing work. This operating cost shall be full compensation for fuel, lubricants, repairs, greasing, fueling, oiling, small tools, and other incidentals. No compensation will be paid for the use of machinery or equipment not authorized by the Engineer.

The Contractor will be paid freight cost covering the moving of equipment to and from the specific force account operation provided such cost is supported by an invoice showing the actual cost to the Contractor. However, such payment will be limited to transportation from the nearest source of available equipment. If equipment is not returned to the nearest equipment storage lot but is moved to another location, the freight cost paid will not exceed the cost of return to the nearest storage lot.

The rates for equipment not listed in the *Blue Book* schedule shall not exceed the hourly rate being paid for such equipment by the Contractor at the time of the force account authorization. In the absence of such rates, prevailing rates being paid in the area where the authorized work is to be performed shall be used.

If the Contractor does not possess or have readily available equipment necessary for performing the force account work and such equipment is rented from a source other than a company that is an affiliate of the Contractor, payment will be based on actual invoice rates, to which 15 percent of the invoice cost will be added for administrative cost and profit. If the invoice rate does not include the furnishing of fuel, lubricants, repairs, and servicing, the invoice rate will be converted to an hourly rate, and an amount equal to the *Blue Book* estimated operating cost per hour will be added for each hour the equipment is performing work.

Section 109.07—Partial Payments is amended to replace the first paragraph with the following:

Partial payments will be based on a monthly progress estimate consisting of approximate quantities and value of work performed as determined by the Engineer. When the method of measurement for a contract item is in units of

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

each or lump sum, the value of work accomplished for partial payment will be determined on a pro rata basis. Partial payments will be made once each month for the work performed in accordance with the contract requirements except when the sum of the work performed during the month's estimate period is less than \$500.00. The Contractor will be given the opportunity to review the monthly progress estimate prior to each partial payment. Upon final acceptance, one last monthly estimate will be prepared and any additional partial payment will be vouchered for payment.

Section 109.07—Partial Payments is amended to replace the second paragraph with the following:

The monthly progress estimates for contractors on the Department's prequalification list will be prepared in accordance with the following schedule:

1. **Contractor companies whose name begins with the letter A through F:** The monthly progress estimate will be prepared on the 4th day of each month, beginning on the first 4th day following the date of the Contract execution, and on the same day of the succeeding months as the work progresses.
2. **Contractor companies whose name begins with the letter G through P:** The monthly progress estimate will be prepared on the 11th day of each month, beginning on the first 11th day following the date of the Contract execution, and on the same day of the succeeding months as the work progresses.
3. **Contractor companies whose name begins with the letter Q through Z:** The monthly progress estimate will be prepared on the 20th day of each month, beginning on the first 20th day following the date of the Contract execution, and on the same day of the succeeding months as the work progresses.

Section 109.08—Payment for Material On Hand is replaced with the following:

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

- (a) **Structural Steel or Reinforcing Steel:** An allowance of 100 percent of the cost to the Contractor for structural steel **or reinforcing steel** materials secured for fabrication not to exceed 60 percent of the contract price may be made when such material is delivered to the fabricator and has been adequately identified for exclusive use on the project. **The provisions of this section for steel reinforcement will only apply where the quantity of steel reinforcement is identified as a separate and distinct bid item for payment.** An allowance of 100 percent of the cost to the Contractor for superstructure units and reinforcing steel, not to exceed 90 percent of the contract price, may be made when fabrication is complete. Prior to the granting of such allowances, the

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

materials and fabricated units shall have been tested or certified and found acceptable to the Department and shall have been stored in accordance with the requirements specified herein. Allowances will be based on invoices, bills, or the estimated value as approved by the Engineer and will be subject to the retainage requirements of Section 109.08. **For the purposes of this section fabrication is defined as any manufacturing process such as bending, forming, welding, cutting or coating with paint or anti-corrosive materials which alters, converts, or changes raw material for its use in the permanent finished work.**

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

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

- (e) **Materials Inventory:** If the Contractor requests a payment allowance for properly stored material, he shall submit a certified and itemized inventory statement to the Engineer no earlier than five days and no later than two days prior to the progress estimate date. The statement shall be submitted on forms furnished by the Department and shall be accompanied by **supplier's or**

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

manufacturer's invoices or other documents that will verify the material's cost. Following the initial submission, the Contractor shall submit to the Engineer a monthly-certified update of the itemized inventory statement within the same time frame. The updated inventory statement shall show additional materials received and stored with invoices or other documents and shall list materials removed from storage since the last certified inventory statement, with appropriate cost data reflecting the change in the inventory. If the Contractor fails to submit the monthly-certified update within the specified time frame, the Engineer will deduct the full amount of the previous statement from the progress estimate.

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

Section 109.09—Final Payment is amended to include the following:

After final acceptance and prior to final payment, the Contractor may request reimbursement for additional performance and payment bond premiums, but only to the extent that the final contract amount exceeds the original contract amount. If the Contractor claims for such bond premium reimbursement, the Contractor shall submit to the Department a written request for reimbursement of additional performance and payment bond premiums, together with a notarized statement from the surety, or its agent that certifies the Contractor's actual bond premium rate for any increase in contract amount above the original contract amount. Such request shall also contain the Contractor's calculation of the additional premium to be paid as verified by the surety or its agent.

Upon submission of such request from the Contractor, the Department will calculate the additional bond premium payment due the Contractor by multiplying the difference between the final contract amount, including all work orders, overruns, and adjustments, and the original contract amount, times the percentage bond premium rate provided by the Contractor and certified by the surety or its agent. The additional premium amount will be paid to the Contractor on the final estimate.

In the event there was a decrease in the original contract amount due to underruns, eliminated items or work, Contractor generated Value Engineering proposals, or other savings and there was a corresponding decrease in performance and payment bond premiums, the Contractor shall reimburse the Department the amount of the decreased premiums prior to the payment of the final estimate. Such reimbursement shall be accompanied by verification from the Contractor's surety or agent.

6-19-08 (SPCN)

**GUIDELINES - STATE FUNDED PROJECTS LESS THAN \$250,000.00 AND ALL MAINTENANCE PROJECTS (ALL SAAPS).
EXCEPTIONS: NONE.**

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

(cm110a0b-0197) **SECTION 110.02 (b) LABOR RATE FORMS** of the Specifications is amended by the following:

The Contractor is advised that labor rate forms will not apply to this contract.

8-1-91, Reissued 1-1-97 (SPCN)

GUIDELINES - ALL FEDERAL PROJECTS AND STATE FUNDED PROJECTS OVER. \$250,000 (NO SAAPs).
EXCEPTIONS:
—SAAP CONTRACTS: NOT TO BE USED.

(cm110b0b-0197) **SECTION 110.02 (b) LABOR RATE FORMS** of the Specifications is amended to replace the second sentence of the first paragraph with the following:

The Contractor shall submit an original and two copies of the form prior to approval of the second progress estimate and for each ninety-day period thereafter until the Contract has been completed.

8-1-91, Reissued 1-1-97 (SPCN)

GUIDELINES - ALL PROJECTS.
EXCEPTIONS: NONE.

(cm110d0b-0103) **SECTION 110.05—CONSTRUCTION SAFETY AND HEALTH STANDARDS** of the Specifications is amended to add the following paragraph:

Additionally at a minimum, all Contractor personnel shall comply with the following, unless otherwise determined unsafe or inappropriate in accordance with OSHA regulations:

1. Hard hats shall be worn while participating in or observing all types of field work when outside of a building or outside of the cab of a vehicle, and exposed to, participating in or supervising construction.
2. Respiratory protective equipment shall be worn whenever an individual is exposed to any item listed in the OSHA Standards as needing such protection unless it is shown the employee is protected by engineering controls.
3. Adequate eye protection shall be worn in the proximity of grinding, breaking of rock and/or concrete, while using brush chippers, striking metal against metal or when working in situations where the eyesight may be in jeopardy.
4. Safety vest shall be worn by all exposed to vehicular traffic and construction equipment.
5. Standards and guidelines of the current Virginia Work Area Protection Manual shall be used when setting, reviewing, and removing traffic controls.
6. Flag persons shall be certified according to the Virginia Flagger Certification Program.

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



- 7. No person shall be permitted to position themselves under any raised load or between hinge points of equipment without first taking steps to support the load by the placing of a safety bar or blocking.
- 8. Explosives shall be purchased, transported, stored, used and disposed of by a Virginia State Certified Blaster in possession of a current criminal history record check and a commercial driver's license with hazardous materials endorsement and a valid medical examiner's certificate. All Federal, State and local regulations pertaining to explosives shall be strictly followed.
- 9. All electrical tools shall be adequately grounded or double insulated. Ground Fault Circuit Interrupter (GFCI) protection must be installed in accordance with the National Electrical Code (NEC) and current Virginia Occupational Safety and Health agency (VOSH). If extension cords are used, they shall be free of defects and designed for their environment and intended use.
- 10. No person shall enter a confined space without training, permits and authorization.
- 11. Fall protection is required whenever an employee is exposed to a fall 1.8 meters or greater.

11-22-02 (SPCN)

GUIDELINES – ALWAYS USE AND ONLY USE ON PROJECTS REQUIRING THE USE OF SPECIAL PROVISION SM110E1F. EXCEPTIONS: NONE.

(cm110e0b-0706) **SECTION 110.04—USE OF DISADVANTAGED BUSINESS ENTERPRISES (DBEs)** - The Special Provision for Section 110.04 of the Specifications is amended to replace the first sentence of the first paragraph of the subsection titled Verification of DBE Participation and Imposed Damages with the following:

Within fourteen days after contract execution, the Contractor shall submit to the Engineer a fully executed subcontract agreement for each DBE used to claim credit in accordance with the requirements stated on Form C-112. The subcontract agreement shall be executed by both parties stating the work to be performed, the details or specifics concerning such work and the price which will be paid to the subcontractor.

12-12-05 (SPCN)

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



— **100 SERIES SPs (SPECIAL PROVISIONS)** —

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



**GUIDELINES - ALL FEDERAL-AID PROJECTS – CONTACT CONSTRUCTION DIVISION FOR THE LATEST WAGE RATES.
EXCEPTIONS: NONE.**

SMF001AF-0197

PREDETERMINED MINIMUM WAGE RATES

Reissued January 1, 1997

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



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

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

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

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


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

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

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

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

By direction of the Secretary of Labor



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

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



**GUIDELINES - FEDERAL-AID PROJECTS.
EXCEPTIONS: NONE.**

SMF010BF-0807

FHWA 1273 AND MEMORANDUM

August 22, 2007c

REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS (FHWA 1273) and the FHWA memorandum with the subject title **THE DISCONTINUANCE OF THE FHWA-45, FHWA-47 & FHWA-810** shall apply to this contract. In accordance with this memorandum the Contractor is hereby advised that the submission of Form C-50 (FHWA 47) used to fulfill the reporting requirements of Section VI. Record of Materials, Supplies, and Labor of **FHWA 1273—Required Contract Provisions Federal-Aid Construction Contracts** is no longer required on Federal Aid Construction Contracts. Only that part of Section VI. of **FHWA 1273** is thus eliminated. All the other parts remain in effect.

=====

FHWA-1273 Electronic version -- March 10, 1994

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

	Page
I. General	1
II. Nondiscrimination	2
III. Nonsegregated Facilities	5
IV. Payment of Predetermined Minimum Wage	6
V. Statements and Payrolls	10
VI. Record of Materials, Supplies, and Labor	11
VII. Subletting or Assigning the Contract	11
VIII. Safety: Accident Prevention	12
IX. False Statements Concerning Highway Project	12
X. Implementation of Clean Air Act and Federal Water Pollution Control Act	13
XI. Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion	13
XII. Certification Regarding Use of Contract Funds for lobbying	16

ATTACHMENTS

- A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendent and to all work performed on the contract by piecework, station work, or by subcontract.
2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required

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



Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.
4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:
 - Section I, paragraph 2;
 - Section IV, paragraphs 1, 2, 3, 4, and 7;
 - Section V, paragraphs 1 and 2a through 2g.
5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.
6. **Selection of Labor:** During the performance of this contract, the contractor shall not:
 - a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
 - b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 *et seq.*) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
 - a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
 - b. The contractor will accept as his operating policy the following statement:

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

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

compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.
3. **Dissemination of Policy:** All members of the contractor's staff who are to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual will be taken as a minimum:
 - a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
 - b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
 - c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.
 - d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
 - e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.
 - a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.
 - b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
 - c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

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

5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
- a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
 - b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
 - c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
 - d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.
6. **Training and Promotion:**
- a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
 - b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.
 - c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
 - d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.
7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:
- a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

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

- b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
 - c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.
 - d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.
8. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.
- a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.
 - b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.
 - c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.
9. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.
- a. The records kept by the contractor shall document the following:
 - (1) The number of minority and non-minority group members and women employed in each work classification on the project;
 - (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;
 - (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

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

- (4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.
- b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

- a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.
- b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).
- c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. General:

- a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and

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

mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

- b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.
- c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. **Classification:**

- a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.
- b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:
 - (1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;
 - (2) the additional classification is utilized in the area by the construction industry;
 - (3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and
 - (4) with respect to helpers, when such a classification prevails in the area in which the work is performed.
- c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do

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

not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary

- e The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. **Payment of Fringe Benefits:**

- a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.
- b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

4. **Apprentices and Trainees (Programs of U.S. DOL) and Helpers:**

a. Apprentices:

- (1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.
- (2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

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

- (3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.
 - (4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.
- b. Trainees:

- (1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.
- (2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.
- (3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.
- (4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate,

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

who is not a helper under a approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. Apprentices and Trainees (Programs of the U.S. DOT):

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

6. Withholding:

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

7. Overtime Requirements:

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. Violation:

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. Withholding for Unpaid Wages and Liquidated Damages:

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal

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

contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. Compliance with Copeland Regulations (29 CFR 3):

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. Payrolls and Payroll Records:

- a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.
- b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.
- c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.
- d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

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

- (1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;
 - (2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;
 - (3) that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.
 - f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.
 - g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR 635) the contractor shall:
 - a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.
 - b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.
 - c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.
2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

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

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).
 - a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.
 - b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.
2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.
4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards

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



and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

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

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

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

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

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

Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both."

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

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

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

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.
2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and

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



GUIDELINEs listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.
4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

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

1. Instructions for Certification - Primary Covered Transactions:

(Applicable to all Federal-aid contracts - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.
- d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
- g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering

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

into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

- h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.
- i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
- d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

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

* * * * *

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



2. Instructions for Certification - Lower Tier Covered Transactions:

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

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



Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
 - a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
 - b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

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



MEMORANDUM



U.S. Department of
Transportation
**Federal Highway
Administration**

MEMORANDUM

Subject: ACTION: The Discontinuance of the FHWA-45, **Date:** May 22, 2007
FHWA-47 & FHWA-810

From: /s/ Original signed by **In Reply** HIPA-10
Dwight Horne, **Refer to:**
Director Office of Program Administration

To: Directors of Field Services
Division Administrators
Federal Lands Administrator

Effective immediately, Divisions and/or our State Transportation Agency (STA) partners will no longer be required to submit data to HIPA-10 that is collected as it relates to:

- The FHWA-45, Bid Price Data¹,
- The FHWA-47, Statement of Materials and Labor Used by Contractors on Highway Construction Involving Federal Funds², and
- The FHWA-810, Bid Tabulation Data³

For several years, STAs have commented that the reports generated from the data collection efforts were of little utility and that there were statistical limitations, statistical significance, and accuracy issues with the data which were felt could result in misleading information. There was also a noted reporting burden on States and contractors. The suggestions have often been to eliminate the reporting requirements all together.

In 2003, the GAO conducted a review of the States' highway construction costs. As part of its review, the GAO reviewed FHWA's cost data collection requirements. In its discussions, the GAO also identified similar issues and concerns with the data series as discussed above. In a December 2003 report GAO made recommendations to FHWA to review the usefulness and accuracy and/or under reporting of the data collected.

As a result, FHWA has determined that it is appropriate to discontinue the reporting requirements for the FHWA 45, 47 and 810 as collection of this data for needed reports such as the "Highway Statistics" publication can be collected through other means. The main reasons for this decision are the strong disinterest in the data collection activities and comments provided to us by our STA partners suggesting that we are not collecting the data extensively enough to be of utility. We will also be going through an abridged regulatory update as appropriate to reflect this action.

Please contact Bob Wright, at 202-366-4630, to answer any questions and/or for additional information on this matter.

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



- . The FHWA 45, Bid Price Data, was collected on NHS projects over \$500,000. The FHWA 45 served as a means to compute the highway construction bid price index, which is published in the document "Price Trends for Federal-aid Highway Construction. The data was used in our "Highway Statistics" publication and by other outside sources, including its use by congressional committees in their deliberations on pending new highway legislation.
 - . The FHWA 47, Statement of Materials and Labor Used by Contractors on Highway Construction Involving Federal Funds, was collected on all NHS projects over \$1,000,000. The FHWA 47 served as a means to collect data related to the quantities of materials, supplies and labor used for various types of highway construction. The data reported on this form was used primarily to compute usage factors for these various materials, supplies, and labor. These factors were used to determine the economic impacts of cuts or increases in the cost of Federal-aid highway construction.
 - . FHWA 810, Bid Tabulation Data was collected on all NHS projects. The needs for the FHWA 810 have been to compute national summaries on the largest contract awards and contract size statistics. The data was also used to produce state-by-state summaries on contracts awards, number of bids and average number of bids.
-

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

GUIDELINES - FOR USE WITH APPALACHIAN REGIONAL COMMISSION FUNDS. DO NOT USE WITH APD FUNDS. USE WITH SMF010AF. EXCEPTIONS: NONE.

SMF020AF-0197

Reissued January 1, 1997
FHWA-1273 Electronic Version – March 10, 1994

**ATTACHMENT A- EMPLOYMENT PREFERENCE FOR
APPALACHIAN CONTRACTS
(Applicable to Appalachian contracts only.)**

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:
 - a. To the extent that qualified persons regularly residing in the area are not available
 - b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.
 - c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph 1c shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph 4 below.
2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which he estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, by shall promptly notify the State Employment Service.
3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.
4. If within 1 week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph 1c above.
5. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

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

**GUIDELINES - FEDERAL-AID PROJECTS GREATER THAN \$10,000.00.
EXCEPTIONS: NONE.**

SMF030AF-0197

Reissued January 1, 1997

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

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

Females- 6.9%
 Minorities - See Attachment "A"

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

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

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

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

1. As, used in this provision:
 - a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
 - b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

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



- c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U. S. Treasury Department Form 941;
- d. "Minority" includes:
- (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation.
3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U. S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors and Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction Contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U. S. Department of Labor.

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

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

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

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

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

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

ATTACHMENT A

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

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



	VA Lexington; VA Martinsville; VA Radford; VA Staunton; VA Waynesboro; WV Pendleton.	
022 Richmond, VA		
	SMSA Counties:	
	6140 Petersburg - Colonial Heights - Hopewell, VA	30.6
	VA Dinwiddie; VA Prince George; VA Colonial Heights; VA Hopewell; VA Petersburg.	
	6760 Richmond, VA	24.9
	VA Charles City; VA Chesterfield; VA Goochland, VA Hanover; VA Henrico; VA New Kent; VA Powhatan; VA Richmond.	
	Non-SMSA Counties	27.9
	VA Albemarle; VA Amelia; VA Brunswick; VA Buckingham, VA Caroline; VA Charlotte; VA Cumberland; VA Essex; VA Fluvanna; VA Greene; VA Greensville; VA Halifax; VA King and Queen; VA King William; VA Lancaster; VA Louisa; VA Lunenburg; VA Madison; VA Mecklenburg; VA Northumberland; VA Nottoway; VA Orange; VA Prince Edward; VA Richmond VA Sussex; VA Charlottesville; VA Emporia; VA South Boston	
023 Norfolk - Virginia Beach - Newport News VA:		
	SMSA Counties:	
	5680 Newport News- Hampton, VA	27.1
	VA Gloucester; VA James City; VA York; VA Hampton; VA Newport News; VA Williamsburg.	
	5720 Norfolk - Virginia Beach - Portsmouth, VA - NC	26.6
	NC Currituck; VA Chesapeake; VA Norfolk; VA Portsmouth; VA Suffolk; VA Virginia Beach.	
	Non-SMSA Counties	29.7
	NC Bertie; NC Camden; NC Chowan; NC Gates; NC Hertford; NC Pasquotank; NC Perquimans; VA Isle of Wight; VA Matthews; VA Middlesex; VA Southampton; VA Surry; VA Franklin.	
Washington, DC:		
020 Washington, DC.		
	SMSA Counties:	
	8840 Washington, DC - MD - VA	28.0
	DC District of Columbia; MD Charles; MD Montgomery MD Prince Georges; VA Arlington; VA Fairfax; VA Loudoun; VA Prince William VA Alexandria; VA Fairfax City; VA Falls Church.	
	Non- SMSA Counties	25.2
	MD Calvert; MD Frederick; MD St. Marys; MD Washington; VA Clarke; VA Culpeper; VA Fauquier; VA Frederick; VA King George; VA Page; VA Rappahannock; VA Shenandoah; VA Spotsylvania; VA Stafford; VA Warren; VA Westmoreland; VA Fredericksburg; VA Winchester WV Berkeley; WV Grant; WV Hampshire; WV Hardy; WV Jefferson; WV Morgan.	
Tennessee:		
052 Johnson City - Kingsport - Bristol, TN - VA		
	SMSA Counties:	
	3630 Johnson City - Kingsport -Bristol, TN-VA	2.6
	TN Carter; TN Hawkins; TN Sullivan; TN Washington; VA Scott: VA Washington; VA Bristol.	
	Non-SMSA Counties	3.2
	TN Greene; TN Johnson; VA Buchanan; VA Dickenson; VA Lee; VA Russell; VA Smyth; VA Tazewell; VA Wise; VA Norton; WV McDowell; WV Mercer.	
Maryland:		
019 Baltimore MD		
	Non-SMSA Counties	23.6

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



MD Caroline; MD Dorchester; MD Kent; MD Queen Annes; MD Somerset;
MD Talbot; MD Wicomico; MD Worcester; VA Accomack; VA
Northampton.

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



GUIDELINES - ALL PROJECTS IN WHICH ANY OF THE REVISED STANDARDS THAT ARE REFERENCED IN THE SPECIAL PROVISION APPLY. EXCEPTIONS: NONE.

SM100A2B-1005

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
THE 1996 ROAD AND BRIDGE STANDARDS

March 4, 2005

The **1996 ROAD AND BRIDGE STANDARDS** are amended as follows:

SECTION 1300 - TRAFFIC CONTROL

Page 1301.05, Standard LP-2 Offset: Amended to include the following:

POLE LENGTH (meters)	FOUNDATION STANDARD	BOLT CIRCLE DIAMETER	ANCHOR BOLT DIAMETER
A (1.5-5.2)	ST'D. LF-1, TYPE A	300 mm	25 mm
B (5.5-6.7)	ST'D. LF-1, TYPE A	300 mm	25 mm
C (7.0-8.2)	ST'D. LF-1, TYPE A	300 mm	25 mm
D (8.5-9.8)	ST'D. LF-1, TYPE A	300 mm	25 mm
E (10.1-11.5)	ST'D. LF-1, TYPE A	375 mm	25 mm
F (11.6-12.8)	ST'D. LF-1, TYPE A	375 mm	25 mm
G (13.1-14.3)	ST'D. LF-1, TYPE A	375 mm	25 mm
H (14.6-15.8)	ST'D. LF-1, TYPE B	400 mm	25 mm
I (16.2-17.3)	ST'D. LF-1, TYPE B	400 mm	31 mm
J (17.7-18.9)	ST'D. LF-1, TYPE B	400 mm	31 mm

NOTE:

Offset lighting pole length range as shown on plans are approximate and the actual length shall be determined by the Contractor in the field to achieve the required mounting height.

Page 1301.75, Standard SPD-1: Amended to replace all references to 6262-T9 with 6061-T6.

Page 1301.61, Standard SSP-VA: The dimensions for post shape S75x8.5 in the table for Bolt Keeper Plate Data are revised accordingly A = 140 millimeter and B = 114 millimeter.

Pages 1301.45, 1301.47, 1301.48, and 1301.49 are amended to include the following note:

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



J-Hook wire supports shall be securely attached to the junction box with a bolt and nut with a neoprene washer or an expansion fitting.

All standard drawings: Where applicable replace the reference to 12 mm conduit for ground wire with 25 mm conduit.

Pages 1301.01, 1301.02, 1301.03, 1301.10, 1301.11,1301.19 and 1301.20 the note:

Voids remaining after conductors exit or enter bell ends or bushings of conduits shall be sealed with silicone to prevent moisture or rodent entry.

is replaced with the following:

Open ends of conduits with conductors installed shall be sealed with an approved soft, pliable and easily removable, waterproof sealant. The sealant shall not have a deleterious effect on cable coverings.

SECTION 1400 - UTILITIES

Page 1411.02, Standard SMH-1 is amended to replace the Flexible Connection note with the following:

Pipe to precast manhole connections shall be made with a flexible boot. The boot shall meet ASTM Specification C-923 and consist of Neoprene Rubber, EPDM Rubber or Polyisoprene Rubber, where preference may be given to a certain material in project specific instances. The internal expansion band to secure the boot in place shall be composed of stainless steel or a non-metallic material. The external band to clamp and seal the boot to the pipe shall be corrosion resistant stainless steel conforming to ASTM Specification A-167. The port to receive the boot shall be core drilled and should be manufactured to allow for lateral and vertical movement. All field installation of pipe thru manhole seal shall be done in accordance with the manufacturer's recommendations and specifications.

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



GUIDELINES - ALL PROJECTS
EXCEPTIONS: NONE

SM100B0B-0205

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

January 3, 2005

I. DESCRIPTION

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

II. DEFINITIONS

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

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

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

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

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

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

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

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

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

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

III. PROCESS FOR DECISION MAKING

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

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

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

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

Both the Department and the Contractor shall agree on:

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

The following general

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



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

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



PROCESS GUIDELINES FOR REQUESTS GENERATED BY THE CONTRACTOR

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

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

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

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



PROCESS GUIDELINES FOR REQUESTS GENERATED BY THE OWNER

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

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

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



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



GUIDELINES – PROJECTS APPROVED BY THE STATE CONTACT ENGINEER AS DUAL DATE CONTRACT PROJECTS ONLY. FEDERALLY FUNDED PROJECTS MAY REQUIRE FHWA REVIEW OF DUAL DATE CONTRACT SPs AND SPCNs BEFORE ADVERTISEMENT. EXCEPTIONS: NONE.

SM100D0B-0908

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
DUAL DATE CONTRACT PROJECTS

January 14, 2008

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

The bidder's attention is directed to the consecutive calendar day and the "no later than" fixed completion dates set forth in the Proposal.

SECTION 103.06—CONTRACT DOCUMENTS of the Specifications is amended to include the following:

The lowest successful bidder may schedule and perform work identified in this proposal at any time within the time limits set forth on Form C-7DD in the proposal. Prior to contract execution, the lowest successful Bidder shall indicate on the Form C-7DD provided by the Department for execution of the Contract, his selected start date for the Work, and, using the number of consecutive calendar days stated in the Proposal, the Department will determine the fixed date for completion and acceptance of the Work. In no case shall the Bidder's determined fixed completion date be beyond the Department's "no later than" fixed completion date set forth in the Proposal.

Once selected, the Contractor's selected start date and determined fixed completion date for the project will be binding.

SECTION 108—PROSECUTION AND PROGRESS OF WORK of the Specifications is amended as follows:

Section 108.02—Notice to Proceed is replaced with the following:

For the purposes of this Contract the date the Contractor selects to start the Work will be the Notice to Proceed date. If the Contractor fails to select a start date that is before a date equal to the "no later than" fixed completion date minus the calendar days stated in the Proposal, the Contractor's Notice to Proceed date will automatically become the date resulting from subtracting the consecutive calendar days from the "no later than" fixed completion date stated in the Proposal. In no case shall work begin before the Department executes the Contract.

Section 108.03—Prosecution of Work is amended to replace the first sentence with the following:

The Contractor shall begin work on his selected start date or no later than 10 consecutive calendar days after his selected start date. Once started, work on this Contract shall be continuously prosecuted and completed no later than the Contractor's determined fixed completion date.

Section 108.07—Character of Workers, Work Methods, and Equipment is amended to add the following:

The Contractor shall provide the Engineer a list of all equipment available for use on the Contract. The make, model, size, capacity, and year of manufacture shall be listed for each piece of

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

equipment. The list shall be provided at the pre-construction conference or no later than one week prior to the first estimate and shall be updated as changes occur but at least once a month.

Section 108.09—Determination and Extension of Contract Time Limit is replaced with the following:

No request for an extension of time will be considered that is based on any claim that the time limit as originally established by the Department was inadequate nor will the Department's granting or denying the Contractor's request for an extension of time relieve the Contractor of his responsibility to perform the Work in accordance with the scope and requirements of the Contract unless specifically addressed as an authorized change to the Contract.

If the satisfactory fulfillment of the Contract with extensions and increases authorized in accordance with the requirements of Sections 104.02 and 104.03 of the Specifications requires the performance of work in greater quantities than those specified in the Contract, the Contractor shall inform the Department in writing if the additional quantities require additional time to perform the work and, if so, the reason supporting such a determination and the additional amount of time requested to perform the work due to the greater quantities. The Engineer will determine if additional contract time is warranted by the greater quantities as specified in the Contractor's request. Where the Engineer determines such additional time is warranted, the amount of additional time as well as the additional quantities involved shall be specifically identified in the authorized change order to the Contract.

The Engineer may give consideration to an extension of time where a delay occurs due to unforeseen circumstances or causes beyond the control of, or not attributable to any fault or negligence of the Contractor. However, consideration will not be given to extensions of time attributable to conditions resulting from weather.

During prosecution of the work, the Contractor shall identify the causes for any delays attributable to conditions he deems to be beyond his control and shall identify the particular construction operations affected and the significant dates that encompass the periods of delay. The timely submission to the Engineer of such information is essential for the Department to make an adequate evaluation of any subsequent claim received from the Contractor for an extension of the contract time limit.

Section 108.13—Default of Contract is amended to replace the first paragraph and its subsequent subparagraphs with the following:

The Contractor may be declared in default if he does *any* one of the following:

- (a) fails to begin the work under the Contract within 10 consecutive calendar days after the Contractor's selected start date for this Contract.
- (b) fails to perform the work with sufficient workers and equipment or with sufficient materials to ensure prompt completion of the work
- (c) performs the work unsuitably or neglects or refuses to remove materials or perform anew work that is unacceptable
- (d) discontinues prosecution of the work
- (e) fails to resume work that has been discontinued within a reasonable time after notice to do so
- (f) becomes insolvent, is declared bankrupt, or commits any act of bankruptcy or insolvency

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

- (g) allows any final judgment to stand against him unsatisfied for a period of 10 days
- (h) makes an assignment for the benefit of creditors
- (i) fails for any other cause whatsoever to carry on the work or contractual obligations in an acceptable manner

SECTION 108—PROSECUTION AND PROGRESS OF WORK of the Specifications is amended as follows:

Section 108.01—Subcontracting is amended to replace the third paragraph with the following:

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

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

**GUIDELINES – ALL EMERGENCY CONTRACT PROJECTS ONLY.
EXCEPTIONS: NONE.**

SM100E0B-0908

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
EMERGENCY CONTRACT PROJECTS

January 14, 2008

SECTION 103—AWARD AND EXECUTION OF CONTRACTS of the Specifications is amended as follows:

Section 103.02—Award of Contract is amended to replace the last sentence of the paragraph with the following:

If the Board, or the Commissioner; where permitted by law, has not awarded the Contract within this period, the bidder may withdraw his bid without penalty or prejudice unless the time limit is extended by mutual consent.

Section 103.03—Cancellation of Award is replaced by the following:

The Board, or the Commissioner; where permitted by law, may cancel the award of any contract at any time before the execution of the contract by all parties without liability to the State.

Section 103.04—Return of Proposal Guaranty is amended to add the following to the first paragraph:

When the Contractor withdraws his bid prior to award, after being the low bidder, the bid bond will be forfeited in accordance with the requirements of Section 2.2-4336 of the *Code of Virginia*.

Section 103.05—Requirements of Contract Bond is amended to replace the second paragraph with the following:

Bidders will not be awarded an unbonded contract when their bid plus the balance of other unbonded contracts exceed \$250,000.00 or if their current Ability Factor is less than 8.0, as determined by their prequalification status.

Section 103.06(f) Contractor's Bodily Injury and Property Damage Liability Insurance is replaced by the following:

(f) **Contractor's Bodily Injury and Property Damage Liability Insurance:** The Contractor shall procure and maintain at his own expense, until final acceptance of the work covered by the Contract, insurance of the kinds and in the amounts specified herein. The minimum limits of liability for this insurance shall be as follows:

A Combined Single Limit for Bodily Injury Liability and Property Damage Liability

\$1,000,000	Each Occurrence
\$2,000,000	Aggregate

Evidence of insurance in compliance with the above shall be filed on forms approved by the Department within the time specified in Section 103.06(d) of the Specifications. The evidence shall be executed by an approved and authorized insurance company authorized to

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



do business in Virginia and with a minimum *"Best Rating"* of *"B"*, and shall cover the Contract it accompanies.

The Contractor shall file notice with the Department at least 30 days prior to the cancellation or reduction of the required insurance, and shall cease operations on the date of the cancellation or reduction until new insurance is in force and the same evidence of insurance is provided to the Department.

The Contractor's Bodily Injury and Property Damage Liability Insurance shall cover liability of the Contractor for damage because of bodily injury to, or death of persons and damage to, or destruction of property, which may be suffered by persons other than the Contractor's own employees as a result of the negligence of the Contractor in performing the work covered by the Contract.

Insurance provided in compliance with this section shall include liability of the Contractor for damage to or destruction of property, which may be suffered by persons other than the Contractor's own employees as a result of blasting operations of the Contractor in performing the work covered by the Contract.

If any part of the work is sublet, insurance meeting the same requirements shall be provided by or in behalf of the subcontractors and evidence of such insurance shall be submitted with the sublet request.

Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve the Contractor or subcontractor(s) for liability in excess of such coverage, nor shall it preclude the Commonwealth from taking such actions as is available to it under any other provision of this Contract or otherwise in law.

Section 103.07—Execution and Approval of Contract is replaced with the following:

SECTION 103.07—EXECUTION AND CONTRACT AUDIT

- (a) **Submittal and Execution of Contract:** The bid as submitted by the Contractor, including the documents specified in Section 103.06(a) of the Specifications shall constitute the Contract upon submittal of the contract bond, contract bodily injury and property damage liability insurance certificate, and workers' compensation insurance certificate and the final execution by the Department. If the Contract is not awarded within the time limit specified in Section 103.02 of the Specifications, the bidder may withdraw his bid without penalty or prejudice. No Contract shall be considered effective until it has been fully executed by all parties.
- (b) **Contract Audit:** The Contractor shall permit the Department to audit, examine, and copy all documents, computerized records, electronic mail, or other records of the Contractor during the life of the contract and for a period of not less than five years after date of final payment, or date Contractor is declared in default of Contract, or date of termination of the Contract.
1. The documents and records shall include, but not be limited to those that were used to prepare and compute the bid, prepare all schedules used on the project, record the progress of work on the project, accounting records, purchasing records, personnel payments or records necessary to determine employee credentials vendor payments and written policies and procedures used to record, compute and analyze all costs incurred on the project, including those used in the preparation or presentation of claims to the Department.

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

2. Records pertaining to the project as the Department may deem necessary in order to permit adequate evaluation and verification of Contractor's compliance with contract requirements, compliance with the Department's business policies, and compliance with provisions for pricing work orders or claims submitted by the Contractor or the Contractor's subcontractors, insurance agents, surety bond agents and material suppliers shall be made available to the auditor(s) at the Department's request. The Contractor shall make his personnel available for interviews when requested by the Department.
3. Upon request, the Contractor shall provide the Department with data files on data disks, or other suitable alternative computer data exchange format. Data furnished by the Contractor that cannot be verified will be subject to a complete audit by the Department.

The Contractor shall ensure that the requirements of this provision are made applicable to his subcontractors, insurance agents, surety bond agents and material suppliers. The Contractor shall cooperate and shall cause all related parties to furnish or make available in an expeditious manner all such information, materials, and data. The Contractor shall be forthcoming in disclosing all sources and locations of media.

The Contractor shall provide immediate access to records for the audit and provide immediate acceptable facilities for the audit. Failure on the part of the Contractor to afford the Department immediate access or proper facilities for the audit will be considered failure to cooperate and will result in disqualification as a bidder in accordance with Section 102.08 of the Specifications.

Upon completion of the contract audit, any adjustments or payments as a result of the audit shall be made within 60 days from presentation of the Department's findings to the Contractor. Failure to make payment may result in disqualification as a bidder in accordance with Section 102.08 of the Specifications.

If the Contractor disagrees with the findings of the Department, the Contractor may appeal the decision in accordance with Section 105.16 of the Specifications or Section 33.1-386 of the *Code of Virginia* as applicable.

SECTION 108—PROSECUTION AND PROGRESS OF WORK of the Specifications is amended as follows:

Section 108.01—Subcontracting is amended to replace the third paragraph with the following:

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

SECTION 103—AWARD AND EXECUTION OF CONTRACTS of the Specifications is amended as follows:

Section 103.05—Requirements of Contract Bond is amended to replace the first paragraph, including subparagraphs (a) and (b), with the following:

Within 72 hours after notification, the successful bidder shall furnish the following bonds for contracts in excess of \$250,000:

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

- (a) a performance bond in the sum of the Contract amount, conditioned upon the faithful performance of the Contract in strict conformity with the plans, specifications and conditions of the Contract, and
- (b) a payment bond in the sum of the Contract amount, conditioned upon the prompt payment for all labor, materials, public utility services and rental of equipment used in the prosecution of the work for the Contract.

And to replace the second paragraph with the following:

Bidders will not be awarded an unbonded contract when their bid plus the balance of other unbonded contracts exceed \$250,000.00 or if their current Ability Factor is less than 8.0, as determined by their prequalification status.

Section 103.06(d) Workers' Compensation Insurance Certificate: is amended to replace the first sentence with the following:

The certificate shall be filed on forms furnished by the Department within 72 hours after notification.

Section 103.08—Failure to Furnish Bonds or Certificate of Insurance is amended to replace the first sentence of the first paragraph with the following:

Failure by the successful bidder to furnish the Department acceptable bonds, workers' compensation insurance or the Contractor's Bodily Injury and Property Damage Liability Insurance policy within 72 hours after being notified of the intent of award the Contract shall be considered just cause for cancellation of award and forfeiture of the proposal guaranty.

SECTION 106—CONTROL OF MATERIAL of the Specifications is amended as follows:

Section 106.01—Source of Supply and Quality Requirements is amended to replace the first paragraph with the following:

The materials used throughout the work shall conform to the requirements of the Contract. The Contractor shall regulate his supplies so that there will be a sufficient quantity of tested material on hand at all times to prevent any delay of work. Except as otherwise specified, materials, equipment, and components shall be new. The Contractor shall file a statement of the known origin, composition and manufacture of all materials to be used in the work, including optional or alternate items. Material requirements not previously reported shall be submitted at least five days prior to their use on the project. The Contractor's statement shall be identified by the complete state project number, and all items or component materials shall be identified by the specific contract item number and the specification reference shown in the Contract.

And to replace the third sentence of the second paragraph with the following:

The contractor shall notify the Department of this change, and provide the same identifying information noted hereinbefore, at least five days prior to their use on the project.

Section 106.02—Material Inspection is amended to delete the first sentence.

SECTION 108—PROSECUTION AND PROGRESS OF WORK of the Specifications is amended as follows:

Section 108.02—Notice to Proceed is replaced with the following:

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



Unless otherwise indicated in the Contract, the date of the Notice to Proceed will be the date of contract execution. The State Contract Engineer will contact the Contractor on the date of contract execution to inform him of such action. The State Contract Engineer will confirm this date in the letter of Contract Execution. This letter of Contract Execution will be distributed to Department personnel involved in the administration of the Contract as well as the Contractor.

In the event the Contractor for matters of his convenience wishes to begin work later than 15 days from the Notice to Proceed as stated in Section 108.03 of the Specifications, he shall make such a request in writing to the Engineer promptly after the execution of the Contract. If the Contractor's start date is acceptable to the Engineer, the Contractor will be notified in writing; however, the Contract fixed completion date will not be adjusted but will remain binding. The Contractor's request to adjust the start date for the work on the Contract will not be considered as a basis for claim that the time resulting from Contractor's requested start date, if accepted by the Engineer, is insufficient to accomplish the work nor shall it relieve the Contractor of his responsibility to perform the work in accordance with the scope of work and requirements of the Contract. In no case shall work begin before the Department executes the Contract. The Contractor shall notify the Engineer at least 24 hours prior to the date on which he plans to begin the work.

Section 108.03—Prosecution of Work is amended to replace the first sentence with the following:

The Contractor shall begin work within 24 hours of notification of the contract execution unless permitted otherwise by specific language in the Contract.

Section 108.07—Character of Workers, Work Methods, and Equipment is amended to add the following:

The Contractor shall provide the Engineer a list of all equipment available for use on the Contract. The make, model, size, capacity, and year of manufacture shall be listed for each piece of equipment. The list shall be provided at the pre-construction conference or no later than one week prior to the first estimate and shall be updated as changes occur but at least once a month.

Section 108.09—Determination and Extension of Contract Time Limit is replaced with the following:

Unless otherwise indicated in the Contract, the contract time limit will be specified as a fixed date for completion. The Contractor shall take into consideration normal conditions considered unfavorable for the prosecution of the work, and shall place sufficient workers and equipment on the project to complete the work in accordance with the specified contract time limit. No request for an extension of time will be considered that is based on any claim that the contract time limit as originally established was inadequate.

If the satisfactory fulfillment of the Contract with extensions and increases meeting the requirements of Sections 104.02 and 104.03 of the Specifications requires the performance of work in greater quantities than those specified in the Contract, the Contractor shall inform the Department in writing if the additional quantities require additional time to perform the work and, if so, the reason supporting such a determination and the additional amount of time requested to perform the work due to the greater quantities. The Engineer will determine if additional contract time is warranted by the greater quantities as specified in the Contractor's request and, if authorized, the amount of additional time to be added to the contract time limit as well as the additional quantities that gave rise to the time extension will be listed in the extra work order.

With a fixed date contract when the date of contract execution is not within 60 calendar days after the opening of bids, or when the Contractor is unable to commence work because of any failure of the Department, or when the Contractor is delayed because of the fault of the Department, the

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

Contractor will be given an extension of time based on the number of days delayed beyond the 60 days. No time extension will be allowed for a delay in the date of contract execution when the delay is the fault of the Contractor.

During prosecution of the work, the Contractor shall identify the causes for any delays attributable to conditions he deems to be beyond his control and shall identify the particular construction operations affected and the significant dates that encompass the periods of delay. The timely submission to the Engineer of such information is essential for the Department to make an adequate evaluation of any subsequent claim received from the Contractor for an extension of the contract time limit.

The Engineer may give consideration for extension of time when a delay occurs due to unforeseen causes beyond the control of and without the fault or negligence of the Contractor. However, consideration will not be given to extensions of time attributable to weather conditions or conditions resulting from weather.

If there is a delay in the progress of the work due to unforeseen causes described hereinbefore, and the delay extends the contract time limit into the period between November 30 of one year and April 1 of the following year and working conditions during such period are unsuitable for the completion of the work, then consideration may be given to granting an extension of time that will encompass a suitable period during which such work can be expeditiously and acceptably performed.

Section 108.13—Default of Contract is amended to replace the first paragraph and its subsequent subparagraphs with the following:

The Contractor may be declared in default if he does *any* one of the following:

- (a) fails to begin the work under the Contract within 10 consecutive calendar days after the Contractor's selected start date for this Contract.
- (b) fails to perform the work with sufficient workers and equipment or with sufficient materials to ensure prompt completion of the work
- (c) performs the work unsuitably or neglects or refuses to remove materials or perform anew work that is unacceptable
- (d) discontinues prosecution of the work
- (e) fails to resume work that has been discontinued within a reasonable time after notice to do so
- (f) becomes insolvent, is declared bankrupt, or commits any act of bankruptcy or insolvency
- (g) allows any final judgment to stand against him unsatisfied for a period of 10 days
- (h) makes an assignment for the benefit of creditors
- (i) fails for any other cause whatsoever to carry on the work or contractual obligations in an acceptable manner

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

GUIDELINES - ALL PROJECTS..
EXCEPTIONS: NONE.

SM100F1B-0708

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
NOTICE TO PROCEED

July 31, 2008

SECTION 101—DEFINITIONS OF ABBREVIATIONS, ACRONYMS, AND TERMS of the Specifications is amended as follows:

SECTION 101.02—TERMS of the Specifications is amended to replace the definition of “Engineer”, “Notice to Proceed” and “Plans” with the following terms:

Engineer. The Chief Engineer, as designated by the Commissioner of the Virginia Department of Transportation, who acts directly or through his duly authorized representative(s) and who is responsible for highway design, construction, and maintenance. The Engineer, or his representative(s), acts within the scope of the particular duties assigned to him or the authority given to him by the Virginia Department of Transportation Commissioner, these Specifications, supplemental specifications, and the Contract documents.

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

Plans. The approved plans and standard drawings, profiles, cross sections, computer output listings, supplemental drawings or exact reproductions thereof, and all subsequent approved revisions thereto that show the location, character, dimensions, and details of the work specified in the Contract.

And to add the following definition:

Affiliate. Any business entity which is closely associated to another business entity so that one has the power to control the other either directly or indirectly; or, where one business entity systematically shares resources, officers and/or other management with another business entity to the extent that a business relationship legally exists or is publicly perceived to exist; or, when a third party has the power to control both; or, where one business entity has been so closely allied with another through an established course of dealings, including but not limited to the lending of financial wherewithal or engaging in joint ventures, so as to cause a public perception that the two firms are one entity.

SECTION 108—PROSECUTION AND PROGRESS OF WORK of the Specifications is amended as follows:

Section 108.01—Subcontracting is amended to replace the third paragraph with the following:

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

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



Section 108.03—Prosecution of the Work is amended to replace the first sentence of the paragraph with the following:

The Contractor shall begin work on the Contract within 10 calendar days after the date selected by the Contractor as his Notice to Proceed date or within 10 calendar days after the specific Notice to Proceed date indicated in the Contract, unless otherwise altered or amended by specific language in the Contract or as permitted by the provisions of Section 108.02 or Section 108.05 and 105.09 of the Specifications.

Section 108.02—Notice to Proceed is replaced with the following:

Unless otherwise indicated in the Contract, the Notice to Proceed date will be the date selected by the Contractor on which the Contractor intends to begin the work. That date shall be no earlier than 15 nor later than 30 calendar days after the date of contract execution. The State Contract Engineer will contact the Contractor on the date of contract execution to inform him that the contract has been executed. The State Contract Engineer will also confirm this date in the Letter of Contract Execution. Copies of the Letter of Contract Execution will be distributed to Department personnel involved in the administration of the Contract and to the Contractor. Within 10 calendar days after the date of contract execution the Contractor shall submit to the Engineer written notice of the date he has selected as his Notice to Proceed date. If the Contractor fails to provide written notice of his selected Notice to Proceed Date within 10 calendar days of contract execution, the selected Notice to Proceed Date will become the date 15 calendar days after the date of contract execution. The Contractor shall begin work no later than 10 calendar days after the date he has selected as his Notice to Proceed date, unless the Notice to Proceed date is otherwise indicated in the Contract, in which case the Contractor shall begin work within 10 calendar days after the specific Notice to Proceed date indicated in the Contract.

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

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

Section 108.07—Character of Workers, Work Methods, and Equipment is amended to add the following:

The Contractor shall provide the Engineer a list of all equipment available for use on the Contract. The make, model, size, capacity, and year of manufacture shall be listed for each piece of

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

equipment. The list shall be provided at the pre-construction conference or no later than one week prior to the first estimate and shall be updated as changes occur but at least once a month.

Section 108.09—Determination and Extension of Contract Time Limit

The Contract time limit for completion will be determined by the Department and specified in the Contract Documents. No request for an extension of time will be considered that is based on any claim that the contract time limit as originally established was inadequate.

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

In the event the contract has a specified notice to proceed other than the date of contract execution and the Contract is not executed by the specified notice to proceed date the Contractor will receive an extension of time equal to the number of days between the specified notice to proceed date and the eventual date of contract execution.

The Engineer will determine if an extension of the Contract time limit for completion is warranted by additions to the Contract. The Contractor shall inform the Department, in writing, of a request for time extensions in his Work Order in accordance with the applicable portion(s) of Section 104 or 109. The Contractor shall provide written supporting data for any request for extension of time due to quantity additions and or additional or altered work.

During prosecution of the work, the Contractor shall identify the causes for any delays attributable to conditions he deems to be beyond his control and shall identify the particular construction operations affected, their criticality to project milestones or overall contract completion, and the significant dates that encompass the periods of delay. The Contractor shall furnish all such information necessary for the Department to make an adequate evaluation of any claim received from the Contractor for an extension of the contract time limit within three days of experiencing such a delay.

- (a) **Fixed Date:** Unless otherwise indicated in the Contract, the contract time limit will be specified as a fixed date for completion. The Contractor shall take into consideration normal conditions considered unfavorable for the prosecution of the work, and shall place sufficient workers and equipment on the project to complete the work in accordance with the specified contract time limit.

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

The Engineer may give consideration for extension of time when a delay occurs due to unforeseen causes beyond the control of or without the fault or negligence of the Contractor. However, consideration will not be given to extensions of time attributable to normal weather conditions or conditions resulting from normal weather.

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

For the purposes of this Section normal weather is defined as that which is not considered extraordinary or catastrophic and is not reasonably conducive to the Contractor progressively prosecuting critical path work under the Contract. Weather events considered extraordinary or catastrophic include, but are not limited to tornados, hurricanes, earthquakes, and floods that exceed a 25-year storm event as defined by National Oceanic and Atmospheric Administration (NOAA) for the NOAA data gathering location that is nearest the project site.

If there is a delay in the progress of the work due to unforeseen causes described within these Specifications, and the delay extends the contract time limit into the period between November 30 of one year and April 1 of the following year and working conditions during such period are unsuitable for the continuous prosecution **or** completion of the work, then consideration may only be given to granting an extension of time that will encompass a suitable period during which such work can be expeditiously and acceptably performed.

Section 108.13 Default of Contract is amended to replace condition 1. with the following:

1. fails to begin the work under the Contract within 10 calendar days after the Contractor's selected Notice to Proceed date, or within 10 calendar days after a contract specific Notice to Proceed date indicated in the Contract, except as otherwise permitted by specific contract language or the provisions of Section 108.02 or Section 108.05 and 105.09 of the Specifications.

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

**GUIDELINES - FEDERAL-AID PROJECTS.
EXCEPTIONS: NONE.**

SM102C0B-0197

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
USE OF DOMESTIC MATERIAL**May 3, 1995c
Reissued January 1, 1997**Section 102.05 Preparation of Bid** of the Specifications is amended to include the following:

Except as otherwise specified, all iron and steel products (including miscellaneous steel items such as fasteners, nuts, bolts and washers) incorporated for use on this project shall be produced in the United States of America; unless the use of any such items will increase the cost of the overall project by more than 25 percent. "Produced in the United States of America" means all manufacturing processes whereby a raw material or a reduced iron ore material is changed, altered or transformed into an item or product which, because of the process, is different from the original material, must occur in one of the 50 States, the District of Columbia, Puerto Rico or in the territories and possessions of the United States. Raw materials such as iron ore, pig iron, processed, pelletized and reduced iron ore and other raw materials used in steel products may, however, be imported. All iron and steel items will be classified hereinafter as "domestic" or "foreign", identified by and subject to the provisions herein. In the event use of the aforementioned "domestic" iron and steel will increase the cost of the overall project by more than 25 percent, the Contractor may furnish either "domestic" or "foreign" items.

In the event the Contractor proposes to furnish "foreign" iron and steel and can verify a savings in excess of 25 percent of the overall project cost, the bid proposal (Form C-7 and Supportive Data supplement) shall be completed using the best price offer for each bid item.

Award of the contract will be made to the bidder who submits the lowest total bid based on furnishing "domestic" iron and steel items, unless such total bid exceeds the lowest total bid based on furnishing "foreign" iron and steel items by more than 25 percent.

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

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

Prior to final payment the Contractor shall obtain from the supplier and furnish to the Department a certificate of compliance with the domestic requirements herein. The Contractor may personally certify that miscellaneous iron and steel and hardware conforms to the domestic requirements herein.

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

GUIDELINES - ALL PROJECTS.

EXCEPTIONS: WHERE PREQUALIFICATION REQUIREMENTS HAVE BEEN WAIVED BY THE STATE CONTRACT ENGINEER AND HE ALLOWS SM102K3B TO BE USED.

SM102J3B-0907

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
ELECTRONIC BIDDING

September 12, 2007

SECTION 101.02—TERMS of the Specifications is amended as follows:

Bid is replaced by the following:

The offer of a bidder, submitted by electronic proposal to perform the work and furnish the materials and labor at the prices set forth therein; valid only when properly signed and guaranteed.

Contract, the first sentence is replaced with the following:

The electronic agreement executed between the Department and the Contractor that sets forth the obligations of the parties thereunder, including, but not limited to, the performance of the work, furnishing of materials and labor, and the basis of payment.

Proposal is replaced by the following:

The document sent by the Department to prospective bidders or personally obtained by prospective bidders that describes the work for which bids will be accepted which includes the electronic forms on which the Department requires bids to be submitted for the work described.

SECTION 102—BIDDING REQUIREMENTS AND CONDITIONS of the Specifications is amended as follows:

Section 102.01—Prequalification of Bidders is amended to include the following:

eVA BUSINESS-TO-GOVERNMENT VENDOR REGISTRATION: Bidders are not required to be registered with "eVA Internet e-procurement solution" at the time bids are submitted, however, prior to award, the lowest responsive and responsible bidder must be registered with "eVA Internet e-procurement solution" or the bid will be rejected. Registration shall be performed by accessing the eVA web site portal www.eva.state.va.us, following the instructions and complying with the requirements therein. The following fees, services and bidding requirements shall apply:

- (a) **eVA Basic Vendor Registration Service:** A \$25 Annual Fee is required. Also required is a transaction fee specified herein. eVA Basic Vendor Registration Service will include electronic order receipt, vendor catalog posting, and on-line registration. Also included in this service is an electronic bidding system for use with goods and services but not for construction. In addition the ability to research eVA historical procurement data will be included services as they become available. All bidders submitting bids to the Department for construction projects shall use the Bid Express internet bidding system.
- (b) **eVA Premium Vendor Registration Service:** A \$25 Annual Fee is required. Also required is a transaction fee specified herein. eVA Premium Vendor Registration Service will include all services and bidding requirements of the eVA Basic Vendor Registration Service for construction projects. In addition, automatic email or fax notification of solicitations and amendments will be included services as they become available.

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



(c) Vendor Transaction Fees are as follows:

1. DMBE-certified Woman-Owned Businesses: \$1500 or one percent of the Contract total, whichever is less, per order.
2. DMBE-certified Minority-Owned Businesses: \$1500 or one percent of the Contract total, whichever is less, per order.
3. DMBE-certified Small Businesses: \$500 or one percent of the Contract total, whichever is less, per order.
4. Other Businesses not specified in 1, 2 or 3 herein: \$1500 or one percent of the Contract total, whichever is less, per order.

Section 102.02—Content of Proposal is amended to replace the first sentence of the second paragraph with the following:

Attachments to the proposal will be considered a part of the bid.

Section 102.05—Preparation of Bid is amended as follows:

The first paragraph is replaced with the following:

The bidder shall submit his bid by approved electronic media. The bidder shall furnish a unit or lump sum price as called for in the proposal, in numerical figures, for each pay item listed. The bidder shall also show the products of the unit prices and quantities in numerical figures in the column provided for that purpose and the total amount of the bid. Bids shall be signed with a digital signature.

The second paragraph is amended to replace the third sentence with the following:

In the event there is a discrepancy between the bidder's electronically generated proposal form and the original proposal form as furnished by the Department, the Department proposal form will govern.

The fourth paragraph is replaced with the following:

The bid shall be signed by the individual, one or more members of a partnership, or one or more of the officers of a corporation, whichever is applicable, by electronic signature. For a joint venture, the bid shall be signed by each individual involved, each partnership through one or more of its members, or each corporation through one or more officers of the corporation, whichever is applicable.

The sixth paragraph is amended to replace the last sentence with the following:

The electronic bids shall contain the identical sworn statement. For the purposes of this section, affixing a digital ID to the bid shall be the equivalent of signing before a person who is authorized by the laws of the State to administer oaths. The original of the sworn statement shall be filed with the Department when the bid is submitted.

Section 102.06—Irregular Bids is amended in the first paragraph as follows:

Section 102.06(b) is deleted.

Section 102.06(i) is replaced with the following:

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



if any attachments included in the bid are detached or altered when the bid is submitted except as otherwise provided for herein

Section 102.06(j) is replaced with the following:

if bids are submitted showing a designation for a project other than the project for which the bid is made

Section 102.09—Delivery of Bid is amended to replace the first paragraph with the following:

Each bid shall be submitted to the Department by approved electronic media in accordance with the policy in place at the time of the advertisement and bid.

Section 102.10(a) Standard Withdrawal is amended to add the following:

Bids may be withdrawn as allowed by the electronic bidding system until bid closing.

Section 102.12—Public Opening of Bids is replaced by the following:

Bids will be decrypted, opened, printed to paper and read publicly at the time and place specified in the Notice of Advertisement. Interested parties are invited to be present.

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



GUIDELINES - USE ONLY ON PROJECTS WHERE PREQUALIFICATION REQUIREMENTS HAVE BEEN WAIVED BY THE STATE CONTRACT ENGINEER. (Copied Note cm102b0b must be included in the proposal.)
EXCEPTIONS: NONE.

SM102K3B-0907

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
ELECTRONIC BIDDING OPTION

September 12, 2007

SECTION 101.02—TERMS of the Specifications is amended as follows:

Bid is replaced by the following:

The offer of a bidder, submitted on the paper or electronic proposal to perform the work and furnish the materials and labor at the prices set forth therein; valid only when properly signed and guaranteed.

Contract, the first sentence is replaced with the following:

The electronic or written agreement executed between the Department and the Contractor that sets forth the obligations of the parties thereunder, including, but not limited to, the performance of the work, furnishing of materials and labor, and the basis of payment.

Proposal is replaced by the following:

The document sent by the Department to prospective bidders or personally obtained by prospective bidders that describes the work for which bids will be accepted which includes the printed or electronic forms on which the Department requires bids to be submitted for the work described.

SECTION 102—BIDDING REQUIREMENTS AND CONDITIONS of the Specifications is amended as follows:

Section 102.01—Prequalification of Bidders is amended to include the following:

eVA BUSINESS-TO-GOVERNMENT VENDOR REGISTRATION: Bidders are not required to be registered with "eVA Internet e-procurement solution" at the time bids are submitted, however, prior to award, the lowest responsive and responsible bidder must be registered with "eVA Internet e-procurement solution" or the bid will be rejected. Registration shall be performed by accessing the eVA web site portal www.eva.state.va.us, following the instructions and complying with the requirements therein. The following fees, services and bidding requirements shall apply:

- (a) **eVA Basic Vendor Registration Service:** A \$25 Annual Fee is required. Also required is a transaction fee specified herein. eVA Basic Vendor Registration Service will include electronic order receipt, vendor catalog posting, and on-line registration. Also included in this service is an electronic bidding system for use with goods and services but not for construction. In addition the ability to research eVA historical procurement data will be included services as they become available. All bidders submitting bids to the Department for construction projects shall use the Bid Express internet bidding system.
- (b) **eVA Premium Vendor Registration Service:** A \$25 Annual Fee is required. Also required is a transaction fee specified herein. eVA Premium Vendor Registration Service

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



will include all services and bidding requirements of the eVA Basic Vendor Registration Service for construction projects. In addition, automatic email or fax notification of solicitations and amendments will be included services as they become available.

(c) Vendor Transaction Fees are as follows:

1. DMBE-certified Woman-Owned Businesses: \$1500 or one percent of the Contract total, whichever is less, per order.
2. DMBE-certified Minority-Owned Businesses: \$1500 or one percent of the Contract total, whichever is less, per order.
3. DMBE-certified Small Businesses: \$500 or one percent of the Contract total, whichever is less, per order.
4. Other Businesses not specified in 1, 2 or 3 herein: \$1500 or one percent of the Contract total, whichever is less, per order.

Section 102.02—Content of Proposal is amended to replace the first sentence of the second paragraph with the following

Papers bound with or attached to the paper proposal or attachments to the electronic proposal will be considered a part of the bid.

Section 102.05—Preparation of Bid is amended as follows:

The first paragraph is replaced with the following:

The bidder shall submit his bid by approved electronic media or paper. The bidder shall furnish a unit or lump sum price as called for in the proposal, in numerical figures, for each pay item listed. The bidder shall also show the products of the unit prices and quantities in numerical figures in the column provided for that purpose and the total amount of the bid. Figures shall be handwritten in ink or typed. Bids that are submitted electronically shall be signed with a digital signature.

The second paragraph is amended to replace the third sentence with the following:

In the event there is a discrepancy between the bidder's electronically generated proposal form and the original proposal form as furnished by the Department, the Department proposal form will govern. In the event the Contractor submits a paper and an electronic bid for the same project, the paper bid will prevail.

The fourth paragraph is replaced with the following:

The bid shall be signed by the individual, one or more members of a partnership, or one or more of the officers of a corporation, whichever is applicable, in ink or by electronic signature. For a joint venture, the bid shall be signed in ink by each individual involved, each partnership through one or more of its members, or each corporation through one or more officers of the corporation, whichever is applicable.

The sixth paragraph is amended to replace the last sentence with the following:

Electronic bids contain an identical sworn statement. For the purposes of this section, affixing a digital ID to the bid shall be the equivalent of signing before a person who is authorized by the laws of the State to administer oaths. The original of the sworn statement shall be filed with the Department when the bid is submitted.

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



Section 102.06—Irregular Bids is amended in the first paragraph as follows:

Section 102.06(b) is replaced with the following:

if the paper bid is not written in ink or typed

Section 102.06(i) is replaced with the following:

if any papers included in the paper bid or attachments included in the electronic bid are detached or altered when the bid is submitted except as otherwise provided for herein

Section 102.06(j) is replaced with the following:

if envelopes containing submitted paper bids or bids submitted by electronic media show a designation for a project other than the project for which the bid is made

Section 102.09—Delivery of Bid is amended in the first paragraph to add the following:

Each paper bid may be submitted in the envelope furnished by the Department. The blank spaces on the envelope shall be filled in correctly. When any other envelope is used, it shall be the same general size and shape as the envelope furnished by the Department and shall be marked to indicate its contents clearly. Bids shall be sealed in an envelope and addressed to: Contract Engineer's Office, VDOT, 1401 E. Broad Street, Richmond, VA 23219. If the bid is permitted to be submitted electronically, it shall be submitted in approved electronic media in accordance with the policy in place at the time of the advertisement and bid.

Section 102.10(a) Standard Withdrawal is amended to add the following:

Electronic bids may be withdrawn as allowed by the electronic bidding system until bid closing.

Section 102.12—Public Opening of Bids is replaced by the following:

Bids will be decrypted, opened, printed to paper and read publicly at the time and place specified in the Notice of Advertisement. Interested parties are invited to be present.

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

GUIDELINES—PROJECTS REQUIRING STATE FORCE CONSTRUCTION SURVEYING. IF LOCATION AND/OR FINAL RIGHT OF WAY MONUMENTATION WILL BE PERFORMED INCLUDE SPCN cm503a0b FOR SECTION 503—RIGHT-OF-WAY MONUMENTS. [USE BY THE APRIL 2008 ADVERTISEMENT] EXCEPTIONS: NONE.

SM105F0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
STATE FORCE CONSTRUCTION SURVEYING

April 18, 2007

I. GENERAL DESCRIPTION

This work shall consist of the Department performing all surveying and providing surveying and stakeout sketches and information as detailed herein for the successful prosecution of work as indicated on the plans and as directed by the Engineer. Stakeout work will be in accordance with the details and requirements of the Department's Survey Manual and the provisions herein. Survey services will be provided to the extent detailed herein for Construction and for Minimum Plan projects.

II. REQUEST FOR SURVEY SERVICES

Once the Contractor requests survey services, the Department will begin the requested work within 3 working days. The Contractor shall not expect the Department survey party to work in the field during adverse weather conditions that could be detrimental to the survey equipment or paperwork, therefore the Contractor shall plan the need for such services accordingly.

It shall be the Contractor's responsibility to preserve all Department furnished centerline or baseline controls, references and location benchmarks. After initial stakeout, an hourly charge equal to the current hourly rate for Department survey services per district will be billed to the Contractor for resetting stakes where the cause for the resetting of such stakes is due to the fault of the Contractor or his operations. This rate will also apply to travel time to and from the project.

If the Contractor requests stakes after the initial staking and he is not ready to accommodate such work, the Contractor will be billed the hourly rate for Department survey services per district measured in travel time to and from the project. Such fees will be billed to the Contractor on the next monthly estimate.

III. CONTRACTOR RESPONSIBILITY FOR EXAMINATION OF DATA

It shall be the responsibility of the Contractor to examine all surveying work provided by the Department for accuracy. Should a disagreement involving the accuracy of stakeout or survey work arise during construction, the Contractor shall within 24 hours provide written notice to the Engineer, precisely describing and documenting the discrepancy. The Engineer will determine the validity of the Contractor's assertion in the notice, respond to the Contractor within 3 working days of receipt of the Contractor's notice and provide direction on how to proceed. The Engineer will give consideration to an extension of time in accordance with the requirements of Section 108.09 of the Specifications or provide additional compensation as deemed appropriate after documentation and evidence to the Engineer's satisfaction if the following occurs:

1. There are delays to the project as a result of inaccurate stakeout information provided or a controllins item of work by the Department where such delays adversely impact the critical path of the work or,

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



2. where extra expense is encountered by the Contractor to correct elements of defective survey work by the Department, and
3. where written notice is provided by the Contractor within the timeframe specified. Failure to furnish written notice of such a discrepancy within the timeframe specified will invalidate any later claim for time impact or costs by the Contractor unless specifically waived by the Engineer.

IV. SURVEY SERVICES FURNISHED

1. Construction (C) Projects:

a. Survey Stakeout Descriptions:

Unless otherwise stated the Department will provide required horizontal and vertical controls for the proper construction stakeout of the project. The Contractor shall preserve all horizontal and vertical controls furnished by the Department.

The following surveying work will be performed by the Department:

- (1) **Digital Terrain Model (DTM) and Construction Cross-Sections:** Original location Digital Terrain Model (DTMs) will be provided by the Department and will serve as a basis of payment for earthwork. The Contractor shall be responsible for taking construction DTMs or cross-sections of areas that, in their determination, do not agree with the Department furnished original location DTMs. The Contractor shall submit the disputed DTM information to the Engineer for verification prior to any excavation by the Contractor in these alleged areas of change. The DTM information furnished by the Department and submitted by the Contractor shall be compatible to the Department's current DTM format.
- (2) **Borrow Pits:** All borrow pit DTM's or cross-sections, originals and finals, will be secured by the Department. The Contractor is encouraged to also secure DTM's or cross-sections of borrow areas. A claim of discrepancy in borrow volume will not be considered by the Engineer unless survey data was obtained and submitted by the Contractor to substantiate his claim.
- (3) **Horizontal and Vertical Control for Bridges:** Certified plats, field notes, coordinates and computations will be furnished to the Contractor by the Department prior to the Contractor beginning work on these structures.
- (4) **Horizontal and Vertical Controls for all Box Culverts, all Pipe Culvert Installations (including single and multiple line installations) with total hydraulic openings equivalent to 1.17 square meters and larger, and for all closed systems such as storm sewers, and sanitary sewers regardless of size:** The Department will stake all such installations. Certified Plats will be furnished to the Contractor prior to the Contractor beginning work on these culvert structures. The notes, coordinates, or computations used to support the platted information will be furnished to the Contractor with the certified plat. For the purposes of identifying those pipe culvert installations please refer to the areas (hydraulic openings) shown in the PB-1 Standards for the respective sizes of pipes specified on the plans. Where multiple lines of pipes are shown, the areas of the pipe sizes will apply to the total areas of the number of lines specified in the plans. For box culverts refer to the sizes shown in the BC-1 Standards to determine areas of total hydraulic opening.

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

- (5) **Horizontal and Vertical Control for Pipe Culvert Installations (including single and multiple line installations) having total hydraulic openings equivalent to 0.29 square meters and up to 1.16 square meters:** The Department will be responsible for staking horizontal and vertical control for pipe culvert installations having a total hydraulic opening equivalent to 0.29 square meters and up to 1.16 square meters. Sketches will be furnished to the Contractor prior to the Contractor beginning work on these culvert structures. For the purposes of identifying those pipe culvert installations please refer to the areas (hydraulic openings) shown in the PB-1 Standards for the respective sizes of pipes specified on the plans. Where multiple lines of pipes are shown, the areas of the pipe sizes shall apply to the total areas of the number of lines specified in the plans. For box culverts refer to the sizes shown in the BC-1 Standards to determine areas of total hydraulic opening.
- (6) **Horizontal and Vertical Control for additional centerlines or baselines for roadways, ramps, loops and connections:** Upon written request from the Contractor the Department will provide horizontal and vertical controls for additional centerlines or baselines for roadways, ramps, loops and connections.
- (7) **Grading and paving construction:** The Department will provide fine grade or other grade stakes required for the construction of the project as the work progresses except as stated herein.

Fine grade stakes will be set on all projects on which the plans show a definite grade line. Fine grade hubs will be set on at least one side with distances and grades referenced to the finished centerline grade. Typically, on curves, the Department will provide the distances and elevations to each edge of pavement and centerline through the transitions and the distances and elevations to the edge of pavement only (straight-line super) through full super portions of the curve.

On projects where grading and paving is performed under the same contract, only one set of fine grade stakes will be provided to the Contractor. Fine grade stakes may be used for fine grade and paving grade.

On Secondary Road projects, fine grade stakes will be provided by the Department only on those projects having curb and gutter or as directed by the Engineer.

Special design ditches will be staked with an offset and cut to the centerline of the ditch. Radius points for pavement flares at connections will be staked only if requested by the Contractor.

The Department will set all slope stakes. Upon written request from the Contractor cut/fill sheets for slope stakes will be furnished by the Department to the Contractor within 3 working days of the survey party's arrival at the project site or a timeframe agreed upon by the Contractor and the Engineer after reviewing the length and complexity of the project.

- (8) **Right of way and boundary stakeout affecting property ownership:** Right of Way will be staked by the Department prior to the start of the project. Right of way stakes will be placed at a minimum of 20-meter intervals on each side of the roadway or as directed by the Engineer and the stakes will be marked with both the station and offset back to centerline. All final boundary stakeout will be performed by the Department's survey party.
- (9) **Setting right-of-way monuments:** Final right of way monumentation will be performed by the Department in accordance with the following:

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

- a) RM-1: The Department will furnish and install RM-1 right-of-way monuments in accordance with the Road and Bridge Standards.
- b) RM-2: The Department will furnish and install RM-2 right-of-way monuments and optional locator posts, including the required caps, in accordance with the Road and Bridge Standards.
- c) Other monumentation: The Department will determine if an alternative form of permanent monumentation will be used if RM-1 or RM-2 monuments are unsuitable for marking the right-of-way at various locations. The Department will indicate this alternative monument usage on the final as-built plan in accordance with the Department's Survey Manual.

Where available, electronic data files along with paper sketches and drawings will be furnished by the Department when requested in writing by the Contractor. All electronic data files furnished to the Contractor will be in the format of the Department's current computer hardware and software or a format fully compatible with such hardware and software.

Additional surveying work and supplemental layout work shall be performed by the Contractor as needed to successfully complete the work. The Contractor shall provide and protect temporary construction benchmarks within the construction limits. Temporary construction benchmarks shall be located not farther than 152 meters apart for the total length of the project or as indicated on the plans. Temporary construction benchmarks that are disturbed during construction operations shall be reestablished by the Contractor at no additional cost to the Department. All drawings, field notes, and computations from such survey work performed by the Contractor shall be submitted to the Engineer.

2. Minimum Plan (M) Projects:

a. Survey Stakeout Descriptions:

Unless otherwise stated, the Department will provide required horizontal and vertical control for the proper construction stakeout of the project. The Contractor shall preserve all horizontal and vertical controls furnished by the Department.

The following surveying work will be performed by the Department:

- (1) **Digital Terrain Model (DTM) and Construction Cross-Sections:** "M" projects are based on plan quantities; therefore DTM and construction cross-sections are not required, except for borrow pits.

Should the Engineer determine at any time that an actual measurement is warranted, the Department will make the necessary measurement in the field.

- (2) **Borrow Pits:** All borrow pit DTM's, originals and finals, will be secured by the Department. The Contractor is encouraged to also secure DTM's or cross-sections of borrow areas. A claim of discrepancy in borrow volume will not be considered by the Engineer unless survey data was obtained by the Contractor to substantiate his claim.
- (3) **Horizontal and vertical control for bridges:** Certified plats, field notes, coordinates and computations will be furnished to the Contractor prior to the Contractor beginning work on these structures.

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

- (4) **Horizontal and Vertical Control for all Box Culverts, all Pipe Culvert Installations (including single and multiple line installations) with a total hydraulic openings equivalent to 1.17 square meters and larger, and for all closed systems such as storm sewers, and sanitary sewers regardless of size:** The Department will stake all such installations. Certified Plats for these stakeouts will be furnished to the Contractor prior to the Contractor beginning work on these culvert structures. The notes, or computations used to support the platted information will be furnished to the Contractor with the certified plat. For the purposes of identifying those pipe culvert installations please refer to the areas (hydraulic openings) shown in the PB-1 Standards for the respective sizes of pipes specified on the plans. Where multiple lines of pipes are shown, the areas of the pipe sizes will apply to the total areas of the number of lines specified in the plans. For box culverts refer to the sizes shown in the BC-1 Standards to determine areas of total hydraulic openings.
- (5) **Horizontal and Verticals Control for Pipe Culvert installations (including single and multiple line installations) having total hydraulic openings equivalent to 0.29 square meters and up to 1.16 square meters:** The Department will be responsible for staking horizontal and vertical controls for pipe culvert installations having a total hydraulic opening equivalent to 0.29 square meters and up to 1.16 square meters. Sketches will be furnished to the Contractor prior to the Contractor beginning work on these culvert structures. For the purposes of identifying those pipe culvert installations please refer to the areas (hydraulic openings) shown in the PB-1 Standards for the respective sizes of pipes specified on the plans. Where multiple lines of pipes are shown, the areas of the pipe sizes will apply to the total areas of the number of lines specified in the plans. For box culverts refer to the sizes shown in the BC-1 Standards to determine areas of total hydraulic opening.
- (6) **Grading and paving construction:** The Department will provide fine grade or other grade stakes required for the construction of all projects except as stated herein as the work progresses. Slope stakes are not required on "M" projects

Fine grade stakes will be set on all projects on which the plans show a definite grade line. Fine grade hubs will be set on at least one side with distances and grades referenced to the finished centerline grade. Typically, on curves, the Department will provide the distances and elevations to each edge of pavement and centerline through the transitions and the distances and elevations to the edge of pavement only (straight-line super) through full super portions of the curve.

On projects where grading and paving is performed under the same contract, only one set of fine grade stakes will be provided by the Department.. Fine grade stakes may be used for fine grade and paving grade.

On Secondary Road projects, fine grade stakes will be provided by the Department only on those projects having curb and gutter or as directed by the Engineer.

Special design ditches will be staked with an offset and cut to the centerline of the ditch. Radius points for pavement flares at connections will be staked only if requested by the Contractor.

- (7) **Right of way and boundary stakeout affecting property ownership:** Right of Way will be staked by the Department prior to the start of the job. Right of way stakes will be placed at a minimum of 20-meter intervals on each side of the roadway or as directed by the Engineer and the stakes will be marked with both the station and offset back to centerline. All final boundary stakeout will be performed by the Department survey party.

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

- (8) **Setting right-of-way monuments:** Final right of way monumentation will be performed by the Department in accordance with the following:
- a) RM-1: The Department will furnish and install RM-1 right-of-way monuments in accordance with the Road and Bridge Standards.
 - b) RM-2: The Department will furnish and install RM-2 right-of-way monuments and optional locator posts, including the required caps, in accordance with the Road and Bridge Standards.
 - c) Other monumentation: The Department will determine if an alternative form of permanent monumentation will be used if RM-1 or RM-2 monuments are unsuitable for marking the right-of-way at various locations. The Department will indicate this alternative monument usage on the final as-built plan in accordance with the Department's Survey Manual.

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

GUIDELINES—PROJECTS REQUIRING CONTRACTOR CONSTRUCTION SURVEYING. IF LOCATION AND/OR FINAL RIGHT OF WAY MONUMENTATION WILL BE PERFORMED INCLUDE SPECIAL PROVISION SM105F0B FOR STATE FORCE CONSTRUCTION SURVEYING AND SPCN cm503a0b FOR SECTION 503—RIGHT-OF-WAY MONUMENTS. [USE BY THE APRIL 2008 ADVERTISEMENT] EXCEPTIONS: NONE.

SM105G0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
CONTRACTOR CONSTRUCTION SURVEYING

April 18, 2007

I. DESCRIPTION

This work shall consist of the Contractor providing all surveying and stakeout as detailed herein for the successful prosecution of work as indicated on the plans and as directed by the Engineer. Stakeout work shall be in accordance with the Department's Survey Manual and this specification

II. GENERAL REQUIREMENTS

The Contractor shall ensure the following surveying work shall be performed by or under the direct responsibility, control and personal supervision of a surveyor who is licensed in Virginia as a Land Surveyor and is experienced in highway construction stakeout work including the following:

- (a) horizontal and vertical control for bridges,
- (b) horizontal and vertical control for box culverts and single and multiple line pipe culverts as specified herein,
- (c) horizontal and vertical control for additional centerlines or baselines for roadways, ramps, loops and connections and
- (d) fine grade or other grade stakes as necessary for construction.

All other surveying work shall be performed by or under the direct supervision and control of the Contractor who is experienced in highway construction stakeout.

The Contractor shall preserve Department furnished centerline or baseline control, references and location benchmarks. The Contractor shall provide all construction benchmarks and reference stakes he develops as detailed herein. All alignment established by the Contractor shall be referenced, with a copy of the references furnished to the Engineer.

The Contractor shall provide the Engineer with a record copy of certified plats, survey drawings, field notes and computations prior to the use of said stakeout information for construction. Survey record drawings shall be prepared and certified in accordance with the requirements of this specification and the sample figure drawings as shown in the Department's Survey Manual. Electronic data files may be submitted along with paper sketches and drawings, subject to the prior approval of the Engineer. All electronic copies submitted shall be in a format fully compatible with the Department's existing computer hardware and software.

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



III. CONTRACTOR RESPONSIBILITY FOR EXAMINATION OF DATA

It shall be the responsibility of the Contractor to examine all surveying work provided by the Department for accuracy. Should a disagreement involving the accuracy of stakeout or survey work arise during construction, the Contractor shall within 24 hours provide written notice to the Engineer, precisely describing and documenting the discrepancy. The Engineer will determine the validity of the Contractor's assertion in the notice, respond to the Contractor within 3 working days of receipt of the Contractor's notice and provide direction on how to proceed. The Engineer will give consideration to an extension of time in accordance with the requirements of Section 108.09 of the Specifications or provide additional compensation as deemed appropriate after documentation and evidence to the Engineer's satisfaction if the following occurs:

- (a) There are delays to the project as a result of inaccurate stakeout information provided by the Department where such delays adversely impact the critical path of the work or,
- (b) Where extra expense is encountered by the Contractor to correct elements of defective survey work by the Department, and
- (c) Where written notice is provided by the Contractor within the timeframe specified. Failure to furnish written notice of such a discrepancy within the timeframe specified will invalidate any later claim for time impact or costs by the Contractor unless specifically waived by the Engineer.

IV. CONSTRUCTION (C) PROJECTS

The following specific requirements shall apply:

- (a) **Digital Terrain Model (DTM) and Construction Cross-sections:** Original location Digital Terrain Model (DTM) will be provided by the Department and will serve as a basis of payment for earthwork. The Contractor shall be responsible for taking construction DTMs or cross-sections of areas that, in their determination, do not agree with the Department furnished original location DTMs. The Contractor shall submit the disputed DTM information to the Engineer for verification prior to any excavation by the Contractor in these alleged areas of change. The DTM information furnished by the Department and submitted by the Contractor shall be compatible to the Department's current DTM format.
- (b) **Borrow Pits:** All borrow pit DTMs or cross-sections, originals and finals, will be secured by the Engineer through the Department Survey party. The Contractor is encouraged to also secure DTMs or cross-sections of borrow areas. A claim of discrepancy in borrow volume will not be considered by the Engineer unless survey data was obtained and submitted by the Contractor to substantiate their claim.
- (c) **Temporary Benchmarks:** The Contractor shall provide and protect temporary construction benchmarks within the construction limits. Temporary construction benchmarks shall be located not farther than 152 meters apart for the total length of the project or as indicated on the plans. Temporary construction benchmarks that are disturbed by the Contractor's activities during construction operations shall be reestablished by the Contractor at no additional cost to the Department.
- (d) **Horizontal and vertical control for bridges:** The Contractor shall stake all bridges. These stakeouts shall require certified plats. Certified plats, field notes, coordinates and computations shall be furnished by the Contractor to the Engineer in accordance with the requirements of Sample Figures 2 and 3 as shown in the Department's Survey Manual prior to the Contractor beginning work on these structures.

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

- (e) **Horizontal and vertical control for all box culverts, all pipe culvert installations (including single and multiple line installations) with a total hydraulic opening equivalent to 1.17 square meters and larger, and for all closed systems such as storm sewers, and sanitary sewers regardless of size:** These stakeouts are deemed critical and require certified plats. The Contractor's surveyor shall stake all such installations. Certified Plats for these stakeouts shall be furnished in accordance with the requirements of Sample Figure 1 as shown in the Department's Survey Manual and shall be submitted to the Engineer prior to the Contractor beginning installation work on these culvert structures. The notes, coordinates, or computations used to support the platted information shall be provided to the Engineer with the certified plat. For the purposes of identifying those pipe culvert installations please refer to the areas (hydraulic openings) shown in the PB-1 Standards for the respective sizes of pipes specified on the plans. Where multiple lines of pipes are shown, the areas of the pipe sizes shall apply to the total areas of the number of lines specified in the plans. For box culverts refer to the sizes shown in the BC-1 Standards to determine areas of total hydraulic opening.
- (f) **Horizontal and vertical control for pipe culvert installations (including single and multiple line installations) having a total hydraulic openings equivalent to 0.29 square meters and up to 1.16 square meters:** The Contractor shall be responsible for staking horizontal and vertical controls for pipe culvert installations having a total hydraulic opening equivalent to 0.29 square meters and up to 1.16 square meters. These stakeouts require sketches, but not certified plats and shall be furnished to the Engineer prior to the Contractor beginning work on these culvert structures. For the purposes of identifying those pipe culvert installations please refer to the areas (hydraulic openings) shown in the PB-1 Standards for the respective sizes of pipes specified on the plans. Where multiple lines of pipes are shown, the areas of the pipe sizes shall apply to the total areas of the number of lines specified in the plans. For box culverts refer to the sizes shown in the BC-1 Standards to determine areas of total hydraulic opening.
- (g) **Horizontal and vertical control for additional centerlines or baselines for roadways, ramps, loops and connections:** The Contractor shall provide horizontal and vertical controls for additional centerlines or baselines for roadways, ramps, loops and connections.
- (h) **Grading and paving construction:** The Contractor shall provide fine grade or other grade stakes required for the construction of the project as the work progresses except as otherwise stated herein.

Fine grade stakes shall be set on all projects on which the plans show a definite grade line. Fine grade hubs shall be set on at least one side with distances and grades referenced to the finished centerline grade. Typically, on curves, the Contractor shall provide the distances and elevations to each edge of pavement and centerline through the transitions and the distances and elevations to the edge of pavement only (straight-line super) through full super portions of the curve.

On projects where grading and paving is performed under the same contract, only one set of fine grade stakes will be required by the Engineer. Fine grade stakes may be used for fine grade and paving grade.

On Secondary Road projects, fine grade stakes shall be provided by the Contractor only on those projects having curb and gutter or as directed by the Engineer.

Special design ditches shall be staked with an offset and cut to the centerline of the ditch. Radius points for pavement flares at connections shall be staked by the Contractor.

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

Generally, slope stakes shall be set by the Contractor as an initial part of the construction operations on the project.

- (i) **Right of way and boundary stakeout affecting property ownership:** The right of way stakes will be placed at a minimum of 20-meter intervals on each side of the roadway or as directed by the Engineer and the stakes will be marked with both the station and offset back to centerline. All final boundary stakeout will be performed by the Department survey party.
- (j) **Locating and setting right-of-way monuments:** All location and final right of way monumentation will be performed by the Department in accordance the requirements of the special provision for **State Force Construction Surveying**.

V. MINIMUM PLAN (M) PROJECTS

The following specific requirements shall apply:

- (a) **Digital Terrain Model (DTM) and construction cross-sections:** "M" projects are based on plan quantities; therefore DTM and construction cross-sections are not required.

Should the Engineer determine at any time that an actual measurement is warranted, the Department will make the necessary measurement in the field.

- (b) **Borrow Pits:** All borrow pit DTM's, originals and finals, will be secured by the Department. The Contractor is encouraged to also secure DTMs or cross-sections of borrow areas. A claim of discrepancy in borrow volume will not be considered by the Engineer unless survey data was obtained and submitted by the Contractor to substantiate the claim.
- (c) **Horizontal and vertical control for bridges:** These stakeouts require certified plats. Certified plats, field notes, coordinates and computations shall be furnished to the Engineer by the Contractor in accordance with the requirements of Sample Figures 2 and 3 as shown in the Department's Survey Manual prior to the Contractor beginning work on these structures.
- (d) **Horizontal and vertical controls for all box culverts, all pipe culvert installations (including single and multiple line installations) with a total hydraulic opening equivalent to 1.17 square meters and larger, and for all closed systems such as storm sewers, and sanitary sewers regardless of size:** These stakeouts are deemed critical and require certified plats. Exceptions may be granted by the Engineer for simple closed systems by requiring stake out sketches. The Contractor shall stake all such installations. Certified Plats for these stakeouts shall be in accordance with the requirements of Sample Figure 1 as shown in the Department's Survey Manual and shall be submitted to the Engineer prior to the Contractor beginning work on these culvert structures. The notes, coordinates, or computations used to support the platted information shall be provided by the Contractor to the Engineer with the certified plat.
- (e) **Horizontal and vertical control for pipe culvert installations (including single and multiple line installations) having a total hydraulic openings equivalent to 0.29 square meters and up to 1.16 square meters:** The Contractor shall be responsible for staking horizontal and vertical controls for pipe culvert installations having a total hydraulic opening equivalent to 0.29 square meters and up to 1.16 square meters. These stakeouts require sketches, but not certified plats and shall be furnished to the Engineer prior to the Contractor beginning work on these culvert structures. For the purposes of identifying those pipe culvert installations please refer to the areas (hydraulic openings) shown in the PB-1 Standards for the respective sizes of pipes specified on the plans. Where multiple lines of pipes are shown, the areas of the pipe sizes will apply to the total areas of the number of lines specified in the

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

plans. For box culverts refer to the sizes shown in the BC-1 Standards to determine areas of total hydraulic opening.

- (f) **Temporary Benchmarks:** The Contractor shall provide and protect temporary construction benchmarks within the construction limits. Temporary construction benchmarks shall be located not farther than 152 meters apart for the total length of the project or as indicated on the plans. Temporary construction benchmarks that are disturbed by the Contractor's activities during construction operations shall be reestablished by the Contractor at no additional cost to the Department.
- (g) **Grading and paving construction:** The Contractor shall provide fine grade or other grade stakes required for the construction of all projects except as stated herein as the work progresses. Slope stakes are not required on "M" projects.

Fine grade stakes shall be set on all projects on which the plans show a definite grade line. Fine grade hubs shall be set on at least one side with distances and grades referenced to the finished centerline grade. Typically, on curves, the Contractor shall provide the distances and elevations to each edge of pavement and centerline through the transitions and the distances and elevations to the edge of pavement only (straight-line super) through full super portions of the curve.

On projects where grading and paving is performed under the same contract, only one set of fine grade stakes will be required by the Engineer. Fine grade stakes may be used for fine grade and paving grade.

On Secondary Road projects, fine grade stakes shall be provided by the Contractor only on those projects having curb and gutter or as directed by the Engineer.

Special design ditches shall be staked with an offset and cut to the centerline of the ditch. Radius points for pavement flares at connections shall be staked by the Contractor.

- (h) **Right of way and boundary stakeout affecting property ownership:** The right of way stakes will be placed at a minimum of 20-meter intervals on each side of the roadway or as directed by the Engineer and the stakes will be marked with both the station and offset back to centerline. All final boundary stakeout will be performed by the Department survey party.
- (i) **Setting right-of-way monuments:** Final right of way monumentation will be performed by the Department in accordance the requirements of the special provision for **State Force Construction Surveying**.

VI. MEASUREMENT AND PAYMENT

Construction surveying will be paid for at the contract lump sum price for the type of project specified, which price shall be full compensation for performing the work prescribed herein, and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

Payment for construction surveying will be made upon written request by the Contractor. Such request shall be submitted to the Engineer no earlier than five days, and no later than two days prior to the progress estimate date. Payment may be made in increments selected by the Contractor. However, payments will not exceed 60 percent of the contract unit price bid until the Contractor has provided the Engineer with surveying field notes, layouts, computations, certified plats, sketches and drawings in the format approved by the Engineer.

Payment will be made under:

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

Pay Item	Pay Unit
Construction surveying (Construction)	Lump sum
Construction surveying (Minimum Plan)	Lump sum

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



**GUIDELINES - ALL PROJECTS.
EXCEPTIONS: NONE.**

SM106C3B-0105

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 106—CONTROL OF MATERIAL**

September 30, 2004c

SECTION 106—CONTROL OF MATERIAL of the Specifications is amended as follows:

Section 106.01 Source of Supply and Quality Requirements is amended as follows:

The last sentence of the first paragraph is replaced with the following:

The Contractor's statement shall be electronically submitted by use of Form C-25 and shall be identified by the complete state project number, and all items or component materials shall be identified by the specific contract item number and the specification reference shown in the Contract.

The fourth sentence of the first paragraph is replaced by the following:

Within 30 days after the date of the letter to the Contractor advising that the Department will recommend that the Board award the Contract, but not later than 7 days prior to the beginning of construction operations under the Contract, the Contractor shall file a statement of the known origin, composition and manufacture of all materials to be used in the work, including optional or alternate items. Material requirements not previously reported shall be submitted at least 60 days prior to their use on the project, but not less than two weeks prior to delivery.

The second paragraph is amended to include the following:

The Contractor shall notify the Department of this change, and provide the same identifying information noted hereinbefore, at least 60 days prior to their use on the project, but not less than two weeks prior to delivery.

The fourth paragraph is deleted.

The following paragraphs are added:

Metric substitutions: The Department recognizes the fact that most materials specified in metric units and necessary for construction of this project may not be commercially available at the time they are required for construction. To this end, the Department has endeavored to convert most dimensions so that existing English items can be supplied where metric items are not available. Therefore, imperial items may be substituted for metric units provided these items conform to the closest English equivalent in size for the specified metric item.

Direct substitution of reinforcing steel and high strength bolts in accordance with the tables shown herein will be allowed.

REINFORCING STEEL

METRIC

ENGLISH

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



10	3
13	4
16	5
19	6
22	7
25	8
29	9
32 or 33	10
36	11

HIGH STRENGTH BOLTS

METRIC	ENGLISH
M16	(5/8")
M22	(7/8")
M27	(1- 1/8")
M30	(1- 1/4")

Shop drawings: Where the Specifications require the Contractor to submit working plans or shop drawings, these drawings shall be provided in metric units or in dual units (English and metric) at the Contractor's option.

Section 106.03 - Local Material Sources (Pits and Quarries) is amended as follows:

The fourth paragraph is replaced with the following:

Local material pits and quarries shall not be opened or reopened without authorization by the Engineer. The Contractor shall submit for approval a site plan, including, but not limited to, (1) the location and approximate boundaries of the excavation with a slope gradient of 3:1 or greater; (2) procedures to minimize erosion and siltation; (3) provision of environmentally compatible screening; (4) restoration; (5) cover vegetation; (6) other use of the pit or quarry after removal of material, including the spoil pile; (7) the drainage pattern on and away from the area of land affected, including the directional flow of water and a certification that all receiving channels shall comply with Minimum Standard 19 of the Virginia Erosion and Sediment Control Regulations; (8) location of haul roads and stabilized construction entrances if construction equipment will enter a paved roadway; (9) constructed or natural waterways used for discharge; (10) a sequence and schedule to achieve the approved plan and; (11) the total drainage area for temporary sediment traps and basins shall be shown. Sediment traps are required if the runoff from a watershed area of less than 1.2 hectares flows across a disturbed area of 929 square meters or greater. Sediment basins are required if the runoff from a watershed area of 1.2 hectares or more flows across a disturbed area of 929 square meters or greater. The Contractor shall design, construct, and maintain the sediment trap or basin to accommodate the anticipated sediment loading from the land-disturbing activity. The Contractor shall certify that the sediment trap or basin design is in compliance with the Virginia Erosion and Sediment Control Regulations, all local, state, and federal laws and Section 107.14. Once a sediment trap or basin is constructed, the dam and all outfall areas shall be immediately stabilized.

The eighth paragraph is amended to replace the second sentence with the following:

The Department will withdraw approval for the use of the site and may cause the Contractor to cease all contributing operations and direct his efforts toward corrective action or may perform the work with state forces or other means as determined by the Engineer.

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



Section 106.04 – Disposal Areas is replaced by the following:

Unsuitable or surplus material shown on the plans shall be disposed of as shown herein. Material not used on the project shall be disposed of by the Contractor off the right of way. The Contractor shall obtain the necessary rights to property to be used as an approved disposal area. For the purpose of this specification an approved disposal area is defined as that which is owned privately and has been approved by the Department for use in disposing of material not used on the project.

When neither unsuitable nor surplus material is shown on the plans, the Contractor shall dispose of it as shown herein. If the Contractor, having shown reasonable effort, is unsuccessful in obtaining the necessary rights to property to be used as an approved disposal area, the Department will obtain rights for disposal. Compensation, if not shown in the Contract, will be in accordance with the requirements of Section 104.02 of the Specifications.

Prior to the Department approving a disposal area, the Contractor shall submit a site plan. The plan shall show (1) the location and approximate boundaries of the disposal area, (2) all procedures to minimize erosion and siltation, (3) haul roads including all stabilized construction entrances if construction equipment will enter a paved roadway, (4) provision for environmentally compatible screening, (5) restoration of and permanent cover vegetation in accordance with the Roadside Development Sheet for the area following the deposit of material, (6) the drainage pattern on and away from the area affected, including constructed or natural waterways used for drainage and calculations to determine the need for channel improvements if the natural channel will not accommodate the 2-year storm or the man-made channel will not accommodate the 10-year storm in accordance with the Virginia Erosion and Sediment Control Regulations, (7) the streams or tributaries receiving the discharge, (8) a sequence and schedule to complete the work, and (9) total drainage area for temporary sediment traps or basins. Sediment traps are required if the runoff from a watershed area of less than 1.2 hectares flows across a disturbed area of 929 square meters or greater. Sediment basins are required if the runoff from a watershed area of 1.2 hectares or more flows across a disturbed area of 929 square meters or greater. The Contractor shall design, construct and maintain the sediment trap or basin to accommodate the anticipated sediment loading from the land disturbing activity. Costs for applying seed, lime, fertilizer, and mulch, reforestation, drainage, erosion and siltation control, regrading, haul roads, and screening for disposal areas and pits shall be included in the contract price bid for the type of excavation or other appropriate items. The Contractor shall certify that the sediment trap or basin design is in compliance with the Virginia Erosion and Sediment Control Regulations, all local, state, and federal laws and Section 107.14. Once the sediment trap or basin is constructed, the dam and all outfall areas shall be stabilized immediately.

Disposal areas shall be cleared but need not be grubbed. The clearing work shall not damage grass, shrubs, or vegetation outside the limits of the approved area and haul roads thereto. After the material has been deposited, the area shall be shaped to minimize erosion and siltation of nearby streams and landscaped in accordance with the approved plan for such work or shall be used as approved by the Engineer. The Contractor's design and restoration shall be in accordance with the requirements of the contract and federal, state, and local laws and regulations.

If the Contractor fails to provide the necessary controls to prevent erosion and siltation, or the efforts are found to be inadequate, he shall take immediate action to abate erosion and siltation. The Department will withdraw approval for the use of the site and may cause the Contractor to cease all contributing operations and direct efforts toward corrective action or may perform the work with state forces or other means determined by the Engineer. If the work is not performed by the Contractor, the entire cost of performing the work, plus 25 percent for supervisory and administrative personnel, will be deducted from monies due the Contractor.

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

The Contractor shall furnish the Engineer a statement signed by the property owner in which the owner agrees to the use of his property for the deposit of material from the project. Upon completion of the use of the property as an approved disposal area, the Contractor shall furnish the Engineer a release signed by the property owner indicating that the property has been satisfactorily restored. This requirement will be waived for property that is owned by the Contractor.

Material encountered by the Contractor shall be handled as follows:

- (a) **Unsuitable material** for the purpose of this specification is defined as material having poor bearing capacity, excessive moisture content, extreme plasticity or other characteristics as defined by the Engineer and shall be disposed of at an approved disposal area or landfill licensed to receive such material.
- (b) **Surplus material** as shown on the plans, shall be disposed of by flattening slopes, used to fill in ramp gores and medians, or disposed of at an approved disposal area or a licensed landfill.
- (c) **Organic materials** such as tree stumps and limbs (not considered merchantable timber), roots, rootmat, leaves, grass cuttings, or other similar materials shall be chipped or shredded and used on the project as mulch, given away, sold as firewood or mulch, burned at the Contractor's option if permitted by local ordinance, or disposed of at an approved facility licensed to receive such materials. Organic material shall not be buried in state rights of way or in an approved disposal area.
- (d) **Rootmat** for the purpose of this specification is defined as any material that, by volume, contains approximately 60 percent or more roots and shall be disposed of in accordance with (c) herein.
- (e) **Inorganic materials** such as brick, cinder block, broken concrete without exposed reinforcing steel, or other such material shall be disposed of at an approved disposal area or landfill licensed to receive such materials. If disposed of in an approved disposal area, the material shall have at least .6 meter of backfill cover and restored in accordance with other provisions of this section.

Concrete without exposed reinforcing steel and not blended, may be crushed and used as rock in accordance with Section 303 of the Specifications. If approved by the Engineer, these materials may be blended with soils that meet AASHTO M57 requirements and deposited in fill areas within the right-of-way in accordance with the requirements of Section 303 of the Specifications as applicable.
- (f) **Excavated rock** in excess of that used within the project site in accordance with the requirements of Section 303 shall be treated as surplus material.
- (g) **Other materials** such as antifreeze, asphalt (liquid), building forms, concrete with reinforcing steel exposed, curing compound, fuel, hazardous materials, lubricants, metal, metal pipe, oil, paint, wood or metal from building demolition, or similar materials shall not be disposed of at an approved disposal area but may be disposed of at a landfill licensed to receive such material.

Surplus material stockpile areas on the right-of-way shall be cleared but need not be grubbed. The clearing work shall not damage grass, shrubs, or vegetation outside the limits of the approved area and the haul roads thereto. Placement of fill material shall not adversely affect existing drainage structures. If necessary, modified existing drainage structures, as approved by

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

the Engineer shall be paid for in accordance with Section 109.05 of the Specifications. Within 7 days after the material has been deposited, the area shall be shaped and seeded to minimize erosion and siltation.

Section 106.07 3. Plant Inspection is amended to replace the third paragraph with the following:

The Contractor shall furnish, install, maintain, and replace, as conditions necessitate, testing equipment specified by the appropriate ASTM, AASHTO method or VTM being used and provide necessary office equipment and supplies to facilitate keeping records and generating test reports. The Contractor's technician shall maintain current copies of test procedures performed in the laboratory. The Contractor shall calibrate or verify all balances, scales and masses associated with testing performed as specified in AASHTO R 18. The Contractor shall also provide and maintain an approved test stand for accessing truck beds for the purpose of sampling and inspection. The Department may approve a single laboratory to service more than one plant belonging to the same Contractor.

Section 106.08—Storing Materials is amended to add the following paragraph:

Chemicals, fuels, lubricants, bitumens, paints, raw sewage, and other harmful materials as determined by the Engineer shall not be stored within any floodplain. Chemicals, fuels, and lubricants, when stored out of doors, shall have an impoundment around each separate storage container or one impoundment around several storage containers of a volume sufficient to hold the maximum chemical, fuel, or lubricant the container(s) is capable of holding. The impoundment shall be lined with an impervious liner and shall have a release valve which shall be kept closed during all operations but may be opened to release rain water following storm events provided no chemical, fuel, or lubricant has contaminated the rain water.

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



GUIDELINES— ALL PROJECTS.
EXCEPTIONS: NONE.

SM107A4B-0708

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 107—LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

June 9, 2008

SECTION 107—LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC of the Specifications is amended as follows:

Section 107.09—Construction Over or Adjacent to Navigable Waters is replaced by the following:

The Department will obtain a permit from the U.S. Coast Guard for the anticipated construction and/or demolition activities of structures on Department projects that cross a waterway(s) under the jurisdiction of the U.S. Coast Guard. As the permit holder, the Department must apply to the U.S. Coast Guard for approval of permit modifications to the original Department permit that the Contractor requests.

Prior to starting demolition or construction operations the Contractor shall meet with the Engineer and the U.S. Coast Guard (U.S. Coast Guard Coordination Meeting) to present its planned operations and the potential impacts those operations may pose to water traffic. As part of this meeting, the parties shall establish in writing the proper protocol for emergency closures and be governed accordingly.

- (a) **Activities subject to Coast Guard regulation under the Permit.** Following the U.S. Coast Guard Coordination meeting, the Contractor shall submit its proposed schedule of operations in writing to the Engineer. The Engineer shall review and provide written comments, if applicable, to the Contractor within 7 calendar days following receipt of the Contractor's schedule of operations. The Contractor shall incorporate the Engineer's comments and submit its notice of scheduled operations to the Engineer and to the U.S. Coast Guard at least 30 days prior to commencement of any permitted construction or demolition operations. U.S. Coast Guard acceptance of the Contractor's written schedule of operations is a condition precedent to the Contractor's commencement of those operations.
- (b) **Activities that require channel closures or restrictions.** In addition to the submittal of its proposed schedule of operations as described in (a) above, Contractor shall submit plans that comply with the Permit for falsework, cofferdams, floating equipment and other obstructions to the channel or channels to the Engineer. The Contractor's attention is directed to the possibility that advance notification for consideration of approval may vary depending on the type and duration of proposed closures, the time of year for requested closure(s), and location of existing bridge(s) and waterway(s) involved, and the impact to entities served along or through the waterway(s). The Engineer shall review and provide written comments, if applicable, to the Contractor within thirty (30) calendar days following receipt of the Contractor's plans. The Contractor shall incorporate the Engineer's comments and submit its plans to the Engineer and to the U.S. Coast Guard at least 30 days prior to commencement of any permitted construction or demolition operations. The Contractor may not commence activities that require channel closures or restrictions without the prior written approval of the Department and the U.S. Coast Guard. The Contractor shall be responsible for complying with all operational requirements that the U.S. Coast Guard may place on the Contractor as conditions of approval.

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

In addition, the Contractor shall request and obtain Department and U.S. Coast Guard approval in writing before commencing any operations that deviate from the Contractor's schedule of operations when these operations interfere or have the potential to interfere with navigation of water traffic outside of timeframes previously approved by the Department and the U.S. Coast Guard.

Notices shall be sent to the U.S. Coast Guard, Fifth District Bridge Office (OBR), 431 Crawford Street, Portsmouth, VA 23704-5004. Payment of any penalty or fine that may be levied by the U.S. Coast Guard for Contractor violations of bridge regulations found in 33 CFR Parts 115, 116, 117 and 118 shall be the responsibility of the Contractor. Further, any delay to the contract as a result of actions or inaction by the Contractor relative to the requirements herein that are determined by the Department to be the fault of the Contractor will not be compensable.

The cost to comply with the requirements of this provision and to provide and maintain temporary navigation lights, signals and other temporary work associated with the structure(s) under this contract required by the U.S. Coast Guard for the protection of navigation during construction or demolition operations shall be included in price bid for other appropriate items.

Section 107.10 Barricades and warning signs is amended to replace the last two sentences of the second paragraph with the following:

Barricades, warning signs, lights, temporary signals, and other protective devices shall conform to the requirements of Section 512.

Section 107.13 Responsibility For Damage Claims is replaced by the following:

The Contractor shall indemnify and save harmless the State, the Board, and its officers, agents, and employees, as well as the city, town, county, or other municipality in which the work is performed and their officers, agents, and employees, from suits, actions, or claims brought for or on account of any injuries or damages received or sustained by any person, persons, or property resulting from or arising out of the work performed by the Contractor, or by or in consequence of any neglect in safeguarding the work, through the use of unacceptable materials in the construction or the improvement, or resulting from any act or omission, neglect, or misconduct of the Contractor; or by or on account of any claims or amounts recovered by infringement of any patent, trademark, or copyright. The Commissioner may retain as much of the monies due the Contractor under and by virtue of his Contract as the Commonwealth considers necessary to ensure that a fund will be available to pay a settlement or judgment of such suits, actions, or claims. If no monies are due, the Contractor's surety will be held until all such claims and actions have been settled and suitable evidence to that effect has been furnished the Board. Any extension of time granted the Contractor, in which to complete the Contract shall not relieve him or his surety of this responsibility.

It is not intended by any of the provisions of any part of the Contract to create the public or any member thereof as a third party beneficiary hereunder or to authorize anyone not a party to the Contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the Contract.

The Contractor shall comply with all requirements, conditions, and terms of the Contract, including but not limited to, environmental permits, commitments identified within the Contract, and applicable environmental laws. The Contractor shall not cause damage, except as allowed under the terms of the contract, or as allowed under applicable permits or laws, to the Commonwealth's air, water, or other natural resources, or cause damage to adjacent or off-site property.

When any act, omission, or other action of the Contractor occurs, which violates the requirements, conditions or terms of the Contract, and affects the health, safety, or welfare of the public or the Commonwealth's natural resources, the Engineer will direct the Contractor to take prompt action to

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

repair, replace, or restore the damage or injury within a reasonable time frame established by the Engineer. If the Contractor fails to make such repair, replacement, or restoration within the established time frame, the Engineer will have the damage or injury repaired, replaced, or restored and will deduct the cost of such repair, replacement, or restoration from monies due the Contractor.

If the Department determines by its own investigation that injury or damage has occurred as a result of work performed or neglected by the Contractor, the Department may suspend the Contractor from future bidding or initiate debarment in a manner consistent with state law, and Department regulations and policies. Injury is defined as harm or impairment to persons or natural resources. Damage is defined as the loss or harm resulting from injury to person or property. In addition, the Department may recover either (i) the loss or damage that the Department suffers as a result of such act, omission or other action or (ii) any liquidated damages established in such contract plus (iii) reasonable attorney's fees, expert witness fees, staff salaries, and equipment charges associated with any investigation.

Upon a finding against the Contractor by the Department, the Contractor shall be responsible for and shall reimburse the Department for all expenses associated with the injury or damage. Expenses include, but are not limited to: investigating the act, omission or other action, financial penalties incurred by the Department as a result of the injury or damage, salary and expenses incurred by employees or consultants of the Commonwealth, road user expenses as determined by the Department due to damage or loss of use of the project area, attorney fees, and expert witness fees. The Department may deduct the reimbursement of expenses from any payments owed the Contractor.

Upon determination by the Department of egregious or repetitious acts, omissions or other actions related to injury or damage to person or property, the Contractor shall be responsible for and shall reimburse the Department for all expenses associated with the investigation as shown herein, and the Department will impose other appropriate actions, as permitted by law, policy and Specifications, such as but not limited to, suspension of work, removal from the bidders' list, or debarment.

Once determination is made that injury or damage has resulted in an action against the Contractor, the Contractor shall have the right of appeal through the Director of Planning and the Environment.

Should any cost remain in dispute after appeal to the Director of Planning and the Environment, resolution shall be handled in accordance with the requirements of Section 105.16 of the Specifications.

Section 107.14(a) Erosion and Siltation of the Specifications is replaced by the following:

- (a) **Erosion and Siltation:** The Contractor shall exercise every reasonable precaution, including temporary and permanent measures, throughout the duration of the project to control erosion and prevent siltation of adjacent lands, rivers, streams, wetlands, lakes, and impoundments. Erosion and siltation control measures shall be applied to areas where erodible material will be exposed by any land disturbing activity associated with project construction, including clearing or grubbing, but not limited to local material sources, stockpiles, disposal areas, and haul roads and shall be functional before land-disturbing activities take place.

The Contractor shall comply with the requirements of Section 301.02 of the Specifications. Should the Contractor as a result of negligence or noncompliance leave an area exposed more than 15 days, the cost of temporary seeding and or mulching shall be at Contractor's own expense. If the delay is due to circumstances beyond the Contractor's control, the Department will be responsible for the expense.

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

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

For projects that disturb 930 square meters or greater of land or 230 square meters or greater in Tidewater, Virginia, the Contractor shall have within the limits of the project during land disturbance activities, an employee certified by the Department in Erosion and Sediment control who shall inspect erosion and siltation control devices and measures for proper installation and operation immediately after each rainfall, at least daily during prolonged rainfall, and weekly when no rainfall event occurs and promptly report their findings to the Inspector. Failure of the Contractor to maintain a certified employee within the limits of the project will result in the Engineer suspending work related to any land disturbing activity until such time as a certified employee is present on the project. Failure on the part of the Contractor to maintain appropriate erosion and siltation control devices in a functioning condition may result in the Engineer notifying the contractor in writing of specific deficiencies. Deficiencies shall be corrected immediately. If the Contractor fails to correct or take appropriate actions to correct the specified deficiencies within 24 hours after receipt of such notification, the Department may do one or more of the following, require the Contractor to suspend work in other areas and concentrate efforts towards correcting the specified deficiencies, hold progress estimates, or proceed to correct the specified deficiencies and deduct the entire cost of such work from monies due the Contractor.

Section 107.14(b) Pollution 1. Water is amended as follows:

The second paragraph is replaced with the following

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

The sixth paragraph is amended to add the following:

Stabilization of the streambed and banks shall occur immediately upon completion of work or if work is suspended for more than 15 days.

The eighth paragraph is amended to add the following:

Stabilization of the streambed and banks shall occur immediately upon completion of work or if work is suspended for more than 15 days.

The ninth paragraph is replaced with the following:

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

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

The following paragraph is added:

Construction operations near rivers, streams, or impoundments may be subject to water quality permit jurisdiction. Clearing and grubbing within 30 meters of the limits of ordinary high water will not be permitted until authorized by the Engineer. Once started, work in a jurisdictional area shall be continuously prosecuted until completed.

Section 107.17—Contractor's Responsibility For Utility Property And Services is amended to include the following:

The Contractor shall comply with all requirements of the Virginia Underground Utility Damage Prevention Act § 56-265.14 (the "Miss Utility" law). The Contractor shall wait a minimum of 48 hours after notifying the "Miss Utility" notification center before commencing excavation work. The Contractor may commence excavation work after 48 hours only if confirmed through the Ticket Information Exchange (TIE) System that all applicable utilities have either marked their underground line locations or reported that no lines are present in the work vicinity. The Contractor shall wait an additional 24 hours before commencing excavation operations if any utility operators have failed to respond to the Ticket Information Exchange within the first 48 hours.

Section 107.21—Size and Weight Limitations is amended to add the following:

(d) **Construction Loading of Structures** - In the construction, reconstruction, widening, or repair of bridge, culvert, retaining wall and other similar type structures including approaches, the Contractor shall consider construction loads during the planning and prosecution of the work. If the loading capacity of these type structure(s) is not shown in the contract documents, the Contractor is responsible for contacting the office of the appropriate district bridge engineer to obtain the loading capacity information. Construction loads include but are not limited to the mass of cranes, trucks, other heavy construction or material delivery equipment, as well as the delivery or storage of materials placed on or adjacent to the structure or parts thereof during the various stages (phases) of the work in accordance with the Contractor's proposed work plan. The Contractor shall consider the effect(s) of construction loads on the loading capacity of these type structure(s) in his sequencing of the work and operations, including phase construction. At the Engineer's request the Contractor shall be prepared to discuss or review his proposed operations with the Engineer with regard to construction loads to demonstrate he has taken such into consideration in the planning and execution of the work.

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

GUIDELINES - USE WHEN PROJECTS REQUIRE RAILROAD INSURANCE
EXCEPTIONS: NONE

SM107E0B-0197

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISIONS FOR
SECTION 107.08 RAILWAY-HIGHWAY PROVISIONS

June 24, 1992cc
Reissued January 1, 1997

Rte. _____ Project _____

SECTION 107.08 of the Specifications is amended as follows:

Section 107.08 is amended to include the following:

The Contractor shall notify the _____ of
the _____ Railway Company,

(City or Town) (State) (Zip)

_____ at least _____ hours before starting any work on or over the Railway
(Telephone No.) (No.)

right-of-way. A vertical clearance above the highest rail of at least _____ meters
and a horizontal clearance from the centerline of the track of at least _____ meters
shall be maintained, unless otherwise authorized by the Railway Company. The approximate
number and type of trains per day per track is a follows:

Track	_____	_____	_____	Track	_____	_____	_____
Track	_____	_____	_____	Track	_____	_____	_____
Track	_____	_____	_____	Track	_____	_____	_____

Upon starting work a slow order of _____ will be in effect.

The following Railway utilities are known to be on the Railway's right of way:

The Contractor shall promptly notify the Railway's duly authorized representative as noted above
of any loss, damage, injury or death arising out of or in connection with the project work
performed on or over the Railway right-of-way.

Section 107.08 (a) is amended to include the following:

The Contractor shall coordinate all construction operations on or over railway right-of-way with
the Railway Company and make all arrangements for necessary flagger and watchperson
service. Any flaggers or watchpersons required by the Railway Company for the safety of railway
operations, because of work being performed by the Contractor or incidental thereto, will be
provided by the Railway Company. No work shall be undertaken on or over the Railway right-of-
way until the watchpersons or flaggers are present at the project site.

Flagger or watchperson service will be required whenever work is accomplished within _____
meters of the railroad's track or whenever any machinery or heavy equipment encroaches within

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



_____ meters of the track. Also, flagger or watchperson service will be required whenever construction activities endanger the railroad signal and communication facilities. The jacking or boring of pipes or utility lines under the track will also require flagger service.

Contractor shall provide flaggers with a heated shelter and suitable sanitation facility.

To procure or terminate flagger or watchperson services, the Contractor shall notify in writing,

Name _____
 Title _____
 Address _____
 Telephone No. _____

On projects that will require these services for longer than a 30 day duration, it will require the posting of the position in accordance with union regulations. Consequently, it will require _____ days before a flagger can be assigned to the project. To terminate the service, it is necessary to allow _____ weeks from the receipt of such notification.

For flagger or watchperson services of less than _____ days duration, you must provide a _____ day advance notification. For termination of this service, allow _____ days from the receipt of the notification.

The Department has estimated that _____ hours of flagging service will be required for this project. If the Department is required to reimburse the Railway Company for cost of flagging service in excess of the cost associated with the established hours, the amount of excess will be deducted from monies due the Contractor.

Sections 107.08 (c) 1. and 107.08 (c) 2. are replaced by the following:

Contractor's Public Liability and Property Damage Insurance: With respect to operations performed by the contractor, this insurance shall provide coverage with a combined single limit of not less than _____ each occurrence for bodily injury and/or property damage liability. This insurance shall include explosion, collapse, and underground hazard coverage. If the Contractor subcontracts any portion of the work, the Contractor shall also secure insurance protection in its own behalf under its Public Liability and Property Damage Insurance policies to cover any liability imposed on him by law for damages because of bodily injury and/or property damage liability as a result of work undertaken by the subcontractor(s). A certificate of insurance shall be provided to the railway company as evidence that the Contractor has in full force and effect the insurance coverage hereinbefore specified. Said certificate shall provide railway company with at least 30 days advance written notice of any material change in or cancellation of the required policies.

Railroad Protective Liability Insurance: With respect to the operations the Contractor or any of its subcontractors perform, the Contractor must provide in the name of the railway company a policy providing coverage with a combined single limit of _____ each occurrence and _____ aggregate for bodily injury and property damage. This policy shall be written on the ISO/RIMA Form of Railroad Protective Insurance or its equivalent. The original of the policy shall be submitted to the Department for the railway company's approval and retention.

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



GUIDELINES— ALL PROJECTS. USED WITH SPECIAL PROVISION SM107G1B.

[USE BY THE JANUARY 2008 ADVERTISEMENT]

EXCEPTIONS:

— REGIONAL SIGNALS PROJECTS: NOT REQUIRED.

—SCHEDULE WORK PROJECTS: NOT REQUIRED.

SM107F3B-0108

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
STORM WATER POLLUTION PREVENTION PLAN**

November 19, 2007

INTRODUCTION

The Storm Water Pollution Prevention Plan (SWPPP) is comprised of, but not limited to, the Erosion and Sediment Control (ESC) Plan, the Stormwater Management (SWM) Plan and related Specifications and Standards contained within all contract documents and shall be required for all land-disturbing activities that disturb 930 square meters or greater, or 232 square meters or greater in Tidewater, Virginia. For the purposes of identifying the affected regions assigned to this designation and the requirements therein Tidewater, Virginia is defined as the Counties of Accomack, Arlington, Caroline, Charles City, Chesterfield, Essex, Fairfax, Gloucester, Hanover, Henrico, Isle of Wight, James City, King George, King and Queen, King William, Lancaster, Mathews, Middlesex, New Kent, Northampton, Northumberland, Prince George, Prince William, Richmond, Spotsylvania, Stafford, Surry, Westmoreland and York and the Cities of Alexandria, Chesapeake, Colonial Heights, Fairfax, Falls Church, Fredericksburg, Hampton, Hopewell, Newport News, Norfolk, Petersburg, Poquoson, Portsmouth, Richmond, Suffolk, Virginia Beach and Williamsburg.

For land-disturbing activities that disturb .4 hectare or greater, or 232 square meters or greater in an area designated as a Chesapeake Bay Preservation Area, coverage under the Department of Conservation and Recreation's Virginia Stormwater Management Program (VSMP) General Construction Permit DCR-01 is required. Where applicable, the Department will apply for and retain coverage under this permit for the land disturbing activity. The requirements of this permit will be satisfied by the Contractor's compliance with the project's SWPPP terms and conditions.

The Engineer shall ensure that the SWPPP is kept on the project site at all times and shall be available for review upon request.

The Contractor shall be responsible for reading, understanding, and complying with the terms and conditions of the DCR-01 General Permit and the project's SWPPP as follows:

I. Project Implementation Responsibilities

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

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

II. Certification Requirements

In addition to satisfying the personnel certification requirements contained in Section 107.14 (a); (107.16(a) – 2007), the Contractor shall certify his activities by completing, signing, and submitting Form C-45 VDOT SWPPP Contractor and Subcontractor Certification Statement to the Engineer at

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



least 7 days prior to commencing any project related land-disturbing activities, both on-site and off-site.

III. Off Site (Outside the Construction Limits) Requirements

The Contractor shall develop erosion and sediment control plan(s) and stormwater pollution prevention plan(s) for submission and acceptance by the Engineer prior to usage of any support facilities, off-site borrow and disposal areas, construction materials or equipment storage areas, and any other areas that may generate a stormwater or non-stormwater discharge directly related to the construction process. Such plans, upon acceptance, shall become a part of and subject to the overall project plan, the VSMP General Construction Permit, and all other contract requirements.

IV. Reporting Procedures

A. Inspection Requirements

The Contractor shall be responsible for conducting inspections in accordance with the requirements of Section 107.14 (a); (107.16(a) – 2007). The Contractor shall document such inspections by completion of Form C-107 (a) and (b), Construction Runoff Control Inspection Form and Continuation Sheet, in strict accordance with the directions contained within the form.

B. Unauthorized Discharge Requirements

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

(1) Notification of non-compliant discharges

The Contractor shall immediately notify the Engineer upon the discovery of or potential of any unauthorized, unusual, extraordinary, or non-compliant discharge from the land disturbing activity. Where immediate notification is not possible, such notification shall be not later than 24 hours after said discovery.

(2) Detailed report requirements for non-compliant discharges

The Contractor shall submit to the Engineer within 5 days of the discovery of the any actual or potential non-compliant discharge a written report describing details of the discharge to include its volume, location, cause, and any apparent or potential effects on private and/or public properties and state waters or endangerment to public health, as well as steps being taken to eliminate the discharge. A completed Form C-107 (a) and (b) shall be used for such reports.

V. Plans, Changes, Deficiencies and Revisions

A. Contractor SWPPP

The Contractor shall develop and provide a SWPPP that documents the location and description of potential pollutant sources such as vehicle fueling areas, storage areas for fertilizers or chemicals, sanitary waste facilities, construction and waste material storage areas, etc. prior to any such pollutant sources being established on the project site. Such plans and documentation shall include a description of the controls to reduce, prevent and control pollutants from these sources including spill prevention and response. The Contractor shall submit such plans and documentation as specified herein to the Engineer and, upon review and approval, they shall

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

immediately become a component of the project's SWPPP and subject to all corresponding requirements contained therein.

B. Changes and Deficiencies

The Contractor shall report to the Engineer when any planned physical alterations or additions are made to the land disturbing activity or deficiencies in the project plans or contract documents are discovered that could significantly change the nature or increase the quantity of the pollutants discharged from the land disturbing activity to surface waters.

C. Revisions to the SWPPP

Where site conditions or construction sequencing or scheduling necessitates revisions or modifications to the erosion and sediment control plan or other any other component of the SWPPP for the land disturbing activity, such revisions or modifications shall be approved by the Engineer and shall be documented by the Contractor on a designated plan set (Record Set). Such plans shall be kept on the project site at all times and shall be available for review upon request.

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



GUIDELINES— ALL PROJECTS. USE WITH SPECIAL PROVISION SM107F2B. (RESIDENT ENGINEER WILL DETERMINE IF FORM IS STILL NEEDED FOR PROJECT AFTER PROJECT IS AWARDED).

[USE BY THE JANUARY 2008 ADVERTISEMENT]

EXCEPTIONS:

— REGIONAL SIGNALS PROJECTS: NOT REQUIRED.

—SCHEDULE WORK PROJECTS: NOT REQUIRED.

SM107G1B-0108

C-45
Rev. 11-9-07

VIRGINIA DEPARTMENT OF TRANSPORTATION
Stormwater Pollution Prevention Plan (SWPPP)
Contractor and Subcontractor Certification Statement

Order No.: _____ Project Number: _____

Route: _____ Contract ID. #: _____

I certify under penalty of law that I understand the terms and conditions of the project contract, plans, permits, specifications and standards related to the erosion and sediment control, stormwater management and stormwater pollution prevention plan requirements for the affected activities associated with this project, the Virginia Stormwater Management Program (VSMP), and the General Construction Permit (DCR01), if applicable to this project, issued by the Virginia Department of Conservation and Recreation. The VSMP Permit authorizes the storm water discharges associated with the construction activities from the project site identified and described in the bid documents and subsequent contract including any off-site support activities required for the complete fulfillment of the work therein.

Signature: _____

Name: _____

Title: _____

Contracting Firm: _____

Address: _____

Phone Number: _____

Address/Description of Site: _____
(Include off-site areas) _____

Certified on this date: _____

(Note: This form must be returned with performance and payment bonds)

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



**GUIDELINES - ALL PROJECTS LOCATED IN VOC EMISSION CONTROL AREAS (LARGER URBAN & ASSOCIATED SUBURBS, See this special provision for specifics).
EXCEPTIONS: NONE.**

SM107H1B-0708

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

July 15, 2008

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

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

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

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

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



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

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

See the Virginia Code (9 VAC 5 Chapter 40 – Article 39 (Emission Standards for Asphalt Paving Operations (Rule 4-39)) and Article 40 (Emission Standards for Open Burning (Rule 4-40)) for further clarification. In addition to the above requirements, the Contractor’s attention is directed to the requirements of Section 107.14 of the Specifications, because other air pollution requirements may also apply.

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



GUIDELINES – THE CATEGORY OF PROGRESS SCHEDULE TO BE USED ON A PARTICULAR PROJECT IS DETERMINED BY THE PROJECT MANAGER (PM) FOR THAT PROJECT (SEE CD-2008-14).
NOTE: ANY PROJECT-SPECIFIC SPs OR SPCNs RELATED TO PROGRESS SCHEDULES MUST BE REVIEWED AND APPROVED BY THE PROJECT PM AND STATE SCHEDULING ENGINEER.
 [Contact State Scheduling Engineer, Frank Gbinije (804) 786-2980, for clarification if project usage is unclear.]
EXCEPTIONS:—DO NOT USE ON EMERGENCY CONTRACT (See SM100E0B) OR ON-CALL PROJECTS (See cm103a0b).

SM108A3B-0808

VIRGINIA DEPARTMENT OF TRANSPORTATION
 SPECIAL PROVISION FOR
PROGRESS SCHEDULE FOR CATEGORY I PROJECTS

April 28, 2008

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

Section 108.08 Progress Schedule of the Specifications is deleted and replaced by this provision.

I. GENERAL REQUIREMENTS

The Contractor shall plan and schedule the work and shall submit his initial plan in the form of a Baseline Progress Schedule for the Engineer's review and acceptance. Upon acceptance, the Progress Schedule shall become the project Schedule of Record (SOR). The SOR shall be used by the Engineer for planning and coordination of the Department activities, and for evaluation of the Contractor's progress and the effects of time-related related impacts on the project.

Prior to preparing the schedule, the Engineer or the Contractor may request a schedule development planning meeting to discuss any project specific items required for preparation of the progress schedule. The Contractor shall prepare and submit a practicable schedule to reflect a logical progress of the work. The Progress Schedule shall represent the Contractor's overall work plan to accomplish the entire scope of work in accordance with the requirements of the Contract. It shall include all items of work required for coordination and inspection and to show progress of the work including, but not limited to the controlling items of work and other relevant time-based tasks required for timely completion of the work, including as applicable, the work to be performed by sub-contractors, suppliers, the Department, and/or others. When preparing the schedule, the Contractor shall consider all known constraints and restrictions such as holidays, seasonal, weather, traffic, utility, railroad, right-of-way, environmental, permits, or other limitations to the work.

The Contractor may be required, as determined by the Engineer, to attend a pre-construction scheduling conference. If required, the scheduling conference may be held in conjunction with the pre-construction conference or at a separate meeting called by the Engineer. The Contractor shall be prepared to discuss his planned or contemplated operations relative to the contract requirements and this special provision. Until the Baseline Progress Schedule is accepted by the Engineer, the Contractor shall keep the Engineer informed of his planned or contemplated operations on a continuing basis.

II. PROGRESS SCHEDULE SUBMITTAL REQUIREMENTS

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



Baseline Progress Schedule – The Contractor shall submit to the Engineer his initial progress schedule in the form of a Baseline Progress Schedule at least seven (7) calendar days prior to beginning work. The Baseline Progress Schedule shall include a written Progress Schedule Narrative and a Progress Earnings Schedule. Progress Earnings Schedules will not be required for projects with contract duration of sixty (60) calendar days or less. The Contractor shall submit three (3) sets of the written Progress Schedule Narrative and the Progress Earnings Schedule as defined herein:

1. Progress Schedule Narrative: The Progress Schedule Narrative shall consist of the following written information:
 - a) A description of the Contractor's overall plan of operations including the planned procedures and crew(s) required to complete each feature or major operation;
 - b) A Tabular Schedule to establish milestone(s) for completing each phase or stage of work, feature, major traffic switch, and other key milestone dates as specified in the Contract or required to assess progress of the work. The schedule shall also indicate the planned sequence and start/finish dates for each operation, maintenance of traffic (MOT) activities, and other relevant time-based tasks required to complete the work;
 - c) A discussion on the proposed working calendar to indicate the number of working days per week as well as the anticipated number of non-working days per month with considerations for known constraints or restrictions; (i.e. normal weather, traffic, holidays, time of year, utility, etc.);
 - d) A description of any potential issues that may impact the schedule.
2. Progress Earnings Schedule: The Progress Earnings Schedule shall be prepared on the Form C-13C. The Progress Earnings Schedule shall indicate the Contractor's anticipated cumulative percent complete for each month as of the Contractor's progress estimate date as defined in Section 109.08(a) of the Specifications. The anticipated cumulative percent complete shall be based on the anticipated cumulative progress earnings relative to the total contract value. Total contract value will be considered to mean the original amount of the contract including any authorized adjustments for changes to the work in accordance with, but not limited to, the provisions of Sections 109.04 and 109.05 of the Specifications. Anticipated payments for Material on Hand in accordance with Section 109.09 of the Specifications or for other adjustments including asphalt, fuel, retainage, liquidated damages, incentives, disincentives, etc., will not be considered in the Progress Earnings Schedule.

Revised Progress Schedule - A Revised Progress Schedule will be required when:

- The Contractor proposes to revise his work plan. (The Contractor may revise his Progress Schedule at any time at his discretion.)
- The Engineer determines the Contractor's work plan or the progress of the work differs or deviates significantly from the SOR. Differs or deviates significantly will be construed to mean major deviations from the SOR that will affect the schedule milestone(s), progress earnings, or project completion.
- The Engineer issues a written request for changes or a directive for changes
- Any of the above conditions impacts or will impact the progress earnings or scheduled dates of any project milestones including project completion

Examples of changes, relative to the above, that will prompt the Engineer to require a Revised Progress schedule include but are not limited to: major deviations from the SOR such as changes to phasing, changes to the general sequence, changes to the proposed method or means, additions or deletions to the work, unanticipated changes deemed beyond the Contractor's control such as those

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



caused by other parties (utilities and railroads) or changes as defined in Section 104 of the Specifications.

When required by the Engineer, the Contractor shall submit the Revised Progress Schedule within ten (10) calendar days of receipt of the Engineer's written request. The Revised Progress Schedule shall be prepared and submitted in the form of a Baseline Progress Schedule; however, it shall reflect the actual progress of accomplished work, including actual dates for completed work or work in progress, any impact of a change, and the proposed plan for completing the remaining work. The Revised Progress Schedule submittal will be reviewed by the Engineer for acceptance as specified herein.

Failure to Furnish Progress Schedules – Work shall not commence until the Contractor submits his complete Baseline Progress Schedule in accordance with the requirements of this special provision, unless otherwise approved in writing by the Engineer.

Delays in work resulting from the Contractor's failure to provide the progress schedule will not be considered just cause for extension of the contract time limit or for additional compensation.

III. REVIEW AND ACCEPTANCE

The Engineer will review all progress schedule submittals within seven (7) calendar days of receipt of the Contractor's complete submittal. The progress schedule submittal shall be considered complete only when all required submittal items and schedule information as defined herein are provided. Acceptance by the Engineer will be based on completeness and conformance with the requirements of this provision and the Contract. Such contract requirements may include phasing, sequence of construction, Maintenance of Traffic (MOT), interim milestone(s), or other specified constraints or restrictions.

If the Contractor's progress schedule is deemed to be unacceptable, the Engineer will issue a written notification of non-conformance or incompleteness with a request for resubmission. The Engineer's response will include comments describing the deficiencies prompting the Engineer's decision.

If the Contractor's progress schedule is deemed to be acceptable, the Engineer will issue a written notice of acceptance that may include comments or concerns on the schedule or a request for clarification. When the Engineer's responses include any comments, concerns, or requests for clarification, the Contractor shall respond accordingly within seven (7) calendar days of receipt of the Engineer's response. Failure on the part of the Contractor to respond to the Engineer may adversely affect the Engineer's ability to completely evaluate the Contractor's schedule.

Upon acceptance, the Progress Schedule will become the Schedule of Record (SOR) and will replace any previous SOR. For the purposes of this Special Provision the SOR is defined as the currently accepted progress schedule by which all schedule references will be made and progress will be compared. The SOR will be basis for evaluating the effects of any time-related changes or impacts on the work.

Review and acceptance by the Engineer will not constitute a waiver of any contract requirements and will in no way assign responsibilities of the work plan, scheduling assumptions, and validity of the schedule to the Department. Failure of the Contractor to include in the Progress Schedule any element of work required by contract for timely completion of the project shall not excuse the Contractor from completing the entire scope of work within the contract specified completion milestone(s).

IV. MONITORING THE WORK AND ASSESSING PROGRESS

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

Monitoring The Work – The Engineer will monitor the work regularly to identify any deviations from the Contractor's scheduled performance relative to the SOR. The Engineer may request a meeting with the Contractor to discuss the Contractor's current progress or to review the approximate date for starting each critical inspection stage during the following thirty (30) calendar days. At least once a week, the Contractor shall advise the Engineer of the approximate timing for anticipated critical stages for the subsequent week. The Engineer shall be advised at least twenty-four (24) hours in advance of any changes in the Contractor's planned operations or critical stage work requiring Department inspection.

Progress Evaluation – Progress will be evaluated by the Engineer at the time of the monthly progress estimate relative to the currently accepted Baseline or Revised Progress Schedule. The Contractor's actual progress may be considered unsatisfactory if any of the following conditions occurs:

1. The actual Total earnings to date percentage for work completed is more than ten (10) percentage points behind the cumulative earnings percentage for work scheduled; or
2. Any interim milestone is later than the scheduled milestone by fourteen (14) calendar days or the projected project completion date is later than the contract completion date by fourteen (14) calendar days or ten (10) percent of the contract duration, whichever is less.

Progress Deficiency and Schedule Slippage – When the Contractor's actual progress is trending toward unsatisfactory status, the Engineer will encourage the Contractor to meet to specifically and substantially discuss reversing this trend and the steps he is taking to recover satisfactory progress.

When the Contractor's actual progress is deemed to be unsatisfactory as defined by any of the conditions listed under **Progress Evaluation** of this provision, the Engineer will issue a written notice of unsatisfactory performance to advise the Contractor that five (5) percent retainage of the monthly progress estimate is being withheld and will continue to be withheld as described in Section 109.08(c) of the Specifications, for each month the Contractor's actual progress is determined to be unsatisfactory. When the Contractor fails to respond with good faith efforts as described herein to restore satisfactory progress, the Engineer may issue a notice to indicate that he will recommend to the State Contract Engineer or State Construction Engineer that the Contractor be temporarily disqualified from bidding on contracts with the Department as described in Section 102.08 of the Specifications, if progress remains unsatisfactory at the time of preparation of the next monthly progress estimate following the Engineer's notice. Prior to recommendation for removal from the list of pre-qualified bidders, the Engineer will allow the Contractor fourteen (14) calendar days from the date of the notice to respond. As an example of good faith efforts the Contractor may submit to the Engineer, a proposed recovery plan in the form of a Revised Progress Schedule and a written statement to describe the Contractor's proposed actions and timeframe to correct the progress deficiency or schedule slippage. The Contractor may also submit to the Engineer a written explanation and supporting documentation to establish that such delinquency was attributable to conditions beyond his control. Any schedule revisions resulting from a recovery plan will be reviewed in accordance with Section III, but shall not replace the current SOR.

When the Engineer determines the Contractor's progress is again satisfactory, the five (5) percent retainage previously withheld will be released to the Contractor in accordance with the provisions of Section 109.08 (c) of the Specifications.

If the Contractor is temporarily disqualified from bidding on contracts with the Department, the Contractor will not be reinstated until either the Engineer deems that his progress has improved to the extent that the work can be completed within the contract time limit or the project has received final acceptance in accordance with the provisions of Section 108.09 of the Specifications.

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

V. MEASUREMENT AND PAYMENT

Category I progress schedule submittals including the baseline and any subsequent revisions requested by the Engineer as described herein, will not be measured or paid for separately. All associated costs to prepare, revise, and/or furnish the progress schedules for Category 1 projects in accordance with the requirements herein shall be considered incidental to the work.

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

GUIDELINES – THE CATEGORY OF PROGRESS SCHEDULE TO BE USED ON A PARTICULAR PROJECT IS DETERMINED BY THE PROJECT MANAGER (PM) FOR THAT PROJECT (SEE CD-2008-14).
NOTE: ANY PROJECT-SPECIFIC SPs OR SPCNs RELATED TO PROGRESS SCHEDULES MUST BE REVIEWED AND APPROVED BY THE PROJECT PM AND STATE SCHEDULING ENGINEER.
 [Contact State Scheduling Engineer, Frank Gbinije (804) 786-2980, for clarification if project usage is unclear.]
EXCEPTIONS:—DO NOT USE ON EMERGENCY CONTRACT (See SM100E0B) OR ON-CALL PROJECTS (See cm103a0b).

SM108B0B-0808

VIRGINIA DEPARTMENT OF TRANSPORTATION
 SPECIAL PROVISION FOR
PROGRESS SCHEDULE FOR CATEGORY II PROJECTS

April 29, 2008

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

Section 108.08 Progress Schedule of the Specifications is deleted and replaced by this provision.

I. GENERAL REQUIREMENTS

The Contractor shall plan and schedule the work and shall submit his initial plan in the form of a Baseline Progress Schedule for the Engineer's review and acceptance. Upon acceptance, the Progress Schedule shall become the project Schedule of Record (SOR). The Contractor shall maintain the SOR regularly to ensure that the schedule continues to represent the Contractor's current actual work plan and progress. The SOR shall be used by the Engineer for planning and coordination of the Department activities, and for evaluation of the Contractor's progress and the effects of impacts on the project.

Prior to preparing the schedule, the Engineer or the Contractor may request a schedule development planning meeting to discuss any project specific items required for preparation of the progress schedule. The Contractor shall prepare and submit a practicable schedule to reflect a logical progress of the work. The Progress Schedule shall represent the Contractor's overall work plan to accomplish the entire scope of work in accordance with the requirements of the Contract. It shall include all items of work required for coordination and inspection and to show progress of the work including, but not limited to the controlling items of work and other relevant time-based tasks required for timely completion of the work, including as applicable, the work to be performed by sub-contractors, suppliers, the Department, and/or others. When preparing the schedule, the Contractor shall consider all known constraints and restrictions such as holidays, seasonal, weather, traffic, utility, railroad, right-of-way, environmental, permits, or other limitations to the work.

The Contractor may be required, as determined by the Engineer, to attend a scheduling conference. If required, the scheduling conference may be held in conjunction with the pre-construction conference or at a separate meeting called by the Engineer. The Contractor shall be prepared to discuss his planned or contemplated operations relative to the contract requirements and this special provision. Until the Baseline Progress Schedule is accepted by the Engineer, the Contractor shall keep the Engineer informed of his planned or contemplated operations on a continuing basis.

II. PROGRESS SCHEDULE SUBMITTAL REQUIREMENTS

Baseline Progress Schedule – The Contractor shall submit to the Engineer his initial progress schedule in the form of a Baseline Progress Schedule at least seven (7) calendar days prior to beginning work. The Baseline Progress Schedule submittal shall include three (3) sets of the written

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



Progress Schedule Narrative, Bar-Chart Progress Schedule, and the Progress Earnings Schedule; as well as two (2) sets of data compact disks containing the electronic working files of the Bar-Chart Progress Schedule and Progress Earnings Schedule as specified below:

1. Progress Schedule Narrative: The Progress Schedule Narrative shall consist of the following written information:
 - a) A description of the Contractor's overall plan of operations in terms of:
 - i) The proposed overall sequence of construction;
 - ii) The general procedures for completing each feature or major operation;
 - iii) Planned resources in terms of number and types of crew and equipment;
 - iv) Anticipated daily production rates for each major operation;
 - b) A Tabular Milestone Schedule to establish interim milestones to complete each phase or stage of work, feature, major traffic switch, or other milestone dates specified in the Contract or required to assess progress of the work;
 - c) A description of the proposed working calendar to indicate the number of work days per week, number of shifts per day, and number of hours per day as well as the anticipated number of non-working days per month with considerations for:
 - i) Holidays;
 - ii) Normal weather conditions;
 - iii) Known constraints and restrictions (i.e. traffic, local events, time of year, environmental, permits, utility, etc.);
 - d) A description of any potential issues that may impact the schedule.
2. Bar-Chart Progress Schedule: The Bar-Chart Progress Schedule shall be submitted in a format wholly compatible with Microsoft Excel or the latest Primavera project and program management software with the capability to import and export project data in the Primavera proprietary exchange format (XER). The Bar-Chart schedule shall be time-scaled and shall show the following:
 - a) A listing of activities to represent the major categories of work and the related time-based tasks required for timely completion of each feature, including but not limited to the controlling items of work. Each activity shall contain the following schedule properties:
 - i) Activity Identification;
 - ii) Activity Description;
 - iii) Original Duration (total anticipated number of days to complete the activity);
 - iv) Remaining Duration (remaining number of days required to complete the activity shall equal the original duration for activities that have not started);
 - v) Planned Start and Finish Dates;
 - vi) Critical Dates (must start by or finish by dates) for the critical activities;
 - vii) Percent Complete;
 - b) Activity bars shall be sequenced according to their relationship to time, other activities, and in order of the intended sequence of progress;
 - c) The Bar-Chart Schedule shall allow for sufficient space for an additional plot per activity for comparison of the actual progress to the baseline schedule.

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

3. Progress Earnings Schedule: The Progress Earnings Schedule shall be submitted on the Department electronic Form C-13C template. The Progress Earnings Schedule shall be prepared in accordance with the following:
 - a) The Progress Earnings Schedule shall indicate the Contractor's anticipated cumulative percent complete for each month as of the Contractor's progress estimate date as defined in Section 109.08(a) of the Specifications;
 - b) It shall be based on the dollar value of the work to be completed each month as depicted on the Bar-Chart Schedule;
 - c) The anticipated cumulative percent complete shall be based on the anticipated cumulative progress earnings relative to the total contract value. Total contract value will be considered to mean the original amount of the contract including any authorized adjustments for changes to the work in accordance with, but not limited to, the provisions of Sections 109.04 and 109.05 of the Specifications;
 - d) Anticipated payments for Material on Hand in accordance with Section 109.09 of the Specifications or for other adjustments including asphalt, fuel, retainage, incentives, disincentives, etc., will not be considered in the Progress Earnings Schedule;
 - e) The Progress Earnings Schedule shall include a plot of the anticipated monthly cumulative earnings progress curve.

Progress Schedule Update – The Contractor shall on a monthly basis submit for the Engineer's review and acceptance the Contractor's Progress Schedule Update within five (5) working days after the Contractor's progress payment estimate cut-off date. The Contractor shall update the Bar-Chart and Progress Earnings Schedule to reflect the actual progress of accomplished work and the proposed plan for completing the remaining work as of the progress payment estimate cut-off date. The Progress Schedule Update submittal shall include three (3) sets of the printed copies and two (2) sets of data compact disks containing the electronic working files of the Bar-Chart Progress Schedule and Progress Earnings Schedule Update as defined below:

1. Bar-Chart Progress Schedule Update: The Bar-Chart Progress Schedule Update shall be based on the currently accepted Bar-Chart Progress Schedule and shall show the following:
 - a) Actual start/finish dates for completed activities, actual start/planned finish dates for on-going activities, and planned start/finish dates for the remaining activities.
 - b) Remaining duration for unfinished activities shall be based on the amount of time required to complete the remaining work;
 - c) Activity percent complete for work-in-place shall be based on the amount of work completed relative to the total amount of work represented by the activity (cumulative actual dollar value of work completed relative to the total allocated contract value for the activity);
 - d) A parallel plot of the Progress Schedule Update activity bars against the currently accepted Baseline Progress Schedule.
2. Progress Earnings Schedule Update: The Progress Earnings Schedule Update shall be based on the currently accepted Progress Earnings Schedule and shall show the following:
 - a) Actual monthly and cumulative earnings for each payment period for work completed and the projected monthly and cumulative earnings for each period for the remaining work;

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

- b) A plot of the actual and projected cumulative earnings progress curve against the currently accepted Baseline or Revised Progress Earnings curve.

Revised Progress Schedule - A Revised Progress Schedule will be required when:

- The Contractor proposes to revise his work plan. (The Contractor may revise his Progress Schedule at any time at his discretion.)
- The Engineer determines the **Contractor's work plan** or the progress of the work differs or deviates significantly from the SOR. Differs or deviates significantly will be construed to mean major deviations from the SOR that will affect the schedule milestone(s), progress earnings, or project completion.
- The Engineer issues a written request for changes or a directive for changes
- Any of the above conditions impacts or will impact the progress earnings or scheduled dates of any project milestones including project completion

Examples of changes, relative to the above, that will prompt the Engineer to require a Revised Progress schedule include but are not limited to: major deviations from the SOR such as changes to phasing, changes to the general sequence, changes to the proposed method or means, additions or deletions to the work, unanticipated changes deemed beyond the Contractor's control such as those caused by other parties (utilities and railroads) or changes as defined in Section 104 of the Specifications.

The Contractor shall submit a **Schedule Impact Analysis (SIA)** for all changes to the work that will impact the schedule, including changes requested by the Engineer or the Contractor. If the Engineer and the Contractor agree changes to the work do not or will not affect or impact the progress schedule, the Engineer will not require a written Schedule Impact Analysis (SIA) be submitted but will require the Contractor to certify in writing that such changes did not impact the schedule.

Schedule Impact Analysis (SIA) – The Contractor will be required, as determined by the Engineer to submit a written Schedule Impact Analysis for any of the following reasons:

1. The Contractor discovers any previously unknown or unanticipated issue that he believes may impact the work plan or schedule; in such cases the Contractor shall notify the Engineer within forty-eight (48) hours of any discovered issues;
2. When the Engineer issues a written request for changes to the work that will impact the work plan or schedule;
3. When the work is impacted by other changes that are deemed by the Engineer to be beyond the control of the Contractor

The written Schedule Impact Analysis (SIA) shall explain the effects of the impact(s) on the Contractor's work plan or schedule; and if appropriate shall substantiate any requests for adjustment of the Contract. Such changes may include, but not be limited to, changes caused by others (i.e. railroads, utilities, etc.) or changes to the work as defined in Section 104 of the Specifications. The Contractor shall submit the written SIA within fourteen (14) calendar days after the finish date of the impact. The written SIA shall include a description of the impact; explanation and justification of the effects of the impact on the work plan or schedule; and a description of any proposed plan to mitigate the effects of the impact. The SIA will be evaluated against the SOR for any adjustments to the Contract in accordance with the provisions of Section 108.04 of the Specifications.

If no SIA is required for changes to the work the Contractor shall submit a Revised Progress Schedule within the timeframe stated below.

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

When a Revised Progress Schedule is required by the Engineer for revisions in the work plan or schedule or for authorized changes to the Contract, the Contractor shall submit for the Engineer's review and acceptance the Revised Progress Schedule within fourteen (14) calendar days of receipt of the Engineer's written request. The Revised Progress Schedule shall be prepared and submitted in the form of a Baseline Progress Schedule; however, it shall reflect the actual progress of accomplished work as of the submittal date, any impact as a result of the change(s), and the proposed plan for completing the remaining work. The Revised Progress Schedule submittal will be reviewed by the Engineer for acceptance as specified herein. The accepted Revised Progress Schedule shall then replace the previous SOR for the remainder of the work.

Failure to Furnish Progress Schedules – Work shall not commence until the Contractor submits his complete Baseline Progress Schedule in accordance with the requirements of this special provision, unless otherwise approved in writing by the Engineer.

If the Contractor fails to provide an acceptable Baseline Progress Schedule within sixty (60) calendar days from the Contract Notice to Proceed date, a Progress Schedule Update, or if a Revised Progress Schedule is required as specified herein and the Contractor fails to provide such a schedule, the Engineer will delay approval for payment of the Contractor's monthly progress estimate until such time as the Contractor has satisfied the submittal requirements.

Delays resulting from the Contractor's failure to provide the progress schedule in accordance with the requirements set forth herein will not be considered just cause for extension of the contract time limit or for additional compensation.

IV. REVIEW AND ACCEPTANCE

The Engineer will review all progress schedule submittals within seven (7) calendar days of receipt of the Contractor's complete submittal. The progress schedule submittal shall be considered complete only when all required submittal items and schedule information as defined herein are provided. Acceptance by the Engineer will be based on completeness and conformance with the requirements of this provision and the Contract. Such contract requirements may include phasing, sequence of construction, Maintenance of Traffic (MOT), interim milestone(s), or other specified constraints or restrictions.

If the Contractor's progress schedule is deemed to be unacceptable, the Engineer will issue a written notification of non-conformance or incompleteness with a request for resubmission. The Engineer's response will include comments describing the deficiencies prompting the Engineer's decision.

If the Contractor's progress schedule is deemed to be acceptable, the Engineer will issue a written notice of acceptance that may include comments or concerns on the schedule or a request for clarification. When the Engineer's responses include any comments, concerns, or requests for clarification, the Contractor shall respond accordingly within seven (7) calendar days of receipt of the Engineer's response. Failure on the part of the Contractor to respond to the Engineer may adversely affect the Engineer's ability to completely evaluate the Contractor's schedule.

Upon acceptance, the Baseline or Revised Progress Schedule will become the Schedule of Record (SOR) and will replace any previous SOR. For the purposes of this Special Provision the SOR is defined as the currently accepted progress schedule by which all schedule references will be made and progress will be compared. The currently accepted Progress Schedule Update will not replace the SOR, but will be used as the contemporaneous schedule with which to assess current progress, and to evaluate the effects of any time-related changes or impacts on the work.

Review and acceptance by the Engineer will not constitute a waiver of any contract requirements and will in no way assign responsibilities of the work plan, scheduling assumptions, and validity of the schedule to the Department. Failure of the Contractor to include in the Progress Schedule any

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

element of work required by the Contract for timely completion of the project will not excuse the Contractor from completing the entire scope of work within the Contract specified completion milestone(s).

IV. MONITORING THE WORK AND ASSESSING PROGRESS

Monitoring The Work – The Engineer will monitor the work regularly to identify any deviations from the Contractor's scheduled performance relative to the SOR. The Engineer may request a meeting with the Contractor to discuss the Contractor's current progress or to review the approximate date for starting each critical inspection stage during the following thirty (30) days. At least once a week, the Contractor shall advise the Engineer of the approximate timing for anticipated critical stages for the subsequent week. The Contractor must advise the Engineer at least twenty-four (24) hours in advance of any changes in the Contractor's planned operations or critical stage work requiring Department inspection.

Progress Evaluation – Progress will be evaluated by the Engineer at the time of the monthly progress estimate relative to the Schedule of Record (SOR). The Contractor's actual progress may be considered unsatisfactory if any of the following conditions occurs:

1. The actual Total earnings to date percentage for work completed is more than ten (10) percentage points behind the cumulative earnings percentage for work scheduled; or
2. Any interim milestone or critical activity completion date is later than the scheduled completion date by more than twenty-one (21) calendar days or ten (10) percent of the contract duration, whichever is less; or
3. The projected project completion date is later than the contract completion date by twenty-one (21) calendar days or ten (10) percent of the contract duration, whichever is less.

Progress Deficiency and Schedule Slippage – When the Contractor's actual progress is trending toward unsatisfactory status, the Engineer will encourage the Contractor to meet to specifically and substantially discuss reversing this trend and the steps he is taking to recover satisfactory progress.

When the Contractor's actual progress is deemed to be unsatisfactory as defined by any of the conditions listed under **Progress Evaluation** of this provision, the Engineer will issue a written notice of unsatisfactory performance to advise the Contractor that five (5) percent retainage of the monthly progress estimate is being withheld and will continue to be withheld as described in Section 109.08(c), for each month the Contractor's actual progress is determined to be unsatisfactory. When the Contractor fails to respond with good faith efforts as described herein to restore satisfactory progress, the Engineer will issue a notice to indicate that he may recommend the Contractor be temporarily disqualified from bidding on contracts with the Department as described in Section 102.08 of the Specifications, if progress remains unsatisfactory at the time of preparation of the next monthly progress estimate following the Engineer's notice. Prior to recommendation for removal from the list of pre-qualified bidders, the Engineer will allow the Contractor fourteen (14) calendar days from the date of the notice to respond. As an example of good faith efforts, the Contractor may submit to the Engineer, a proposed recovery plan in the form of a Revised Progress Schedule and a written statement to describe the Contractor's proposed actions and timeframe to correct the progress deficiency or schedule slippage. The Contractor may also submit to the Engineer a written explanation and supporting documentation to establish that such delinquency was attributable to conditions beyond his control. Any schedule revisions resulting from a recovery plan will be reviewed in accordance with Section III, but shall not replace the current SOR.

When the Engineer determines the Contractor's progress is again satisfactory the five (5) percent retainage previously withheld will be released to the Contractor in accordance with the provisions of Section 109.08 (c) of the Specifications.

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

If the Contractor is temporarily disqualified from bidding on contracts with the Department, the Contractor will not be reinstated until either the Engineer deems that his progress has improved to the extent that the work can be completed within the contract time limit or the project has received final acceptance in accordance with the provisions of Section 108.09.

V. MEASUREMENT AND PAYMENT

Category II progress schedule submittals including the baseline and any subsequent revisions requested by the Engineer as described herein, will not be measured or paid for separately. All associated costs to prepare, update, revise, and/or furnish the progress schedules for Category II projects in accordance with the requirements herein shall be considered incidental to the work.

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

GUIDELINES – THE CATEGORY OF PROGRESS SCHEDULE TO BE USED ON A PARTICULAR PROJECT IS DETERMINED BY THE PROJECT MANAGER (PM) FOR THAT PROJECT (SEE CD-2008-14).
NOTE: ANY PROJECT-SPECIFIC SPs OR SPCNs RELATED TO PROGRESS SCHEDULES MUST BE REVIEWED AND APPROVED BY THE PROJECT PM AND STATE SCHEDULING ENGINEER.
 [Contact State Scheduling Engineer, Frank Gbinije (804) 786-2980, for clarification if project usage is unclear.]
EXCEPTIONS:—DO NOT USE ON EMERGENCY CONTRACT (See SM100E0B) OR ON-CALL PROJECTS (See cm103a0b).

SM108M0B-0808

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

May 12, 2008

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

Section 108.08 Progress Schedule of the Specifications is deleted and replaced by this provision.

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

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

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

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

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

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

Two Week Look-ahead (TWLA) Schedule of Operations – At least seven (7) calendar days prior to beginning work, the Contractor shall submit to the Engineer, an initial written TWLA Schedule of Operations for any work planned for the first two weeks. Every week thereafter, on a day agreed to by the Contractor and the Engineer, the Contractor shall submit to the Engineer, a written TWLA Schedule of Operations for the following two-week period. The TWLA schedule shall provide a detailed list of operations to indicate the type of operation, location(s) of the work, proposed working days and hours,

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



and the start and finish dates for any work planned, started, in progress, or scheduled for completion during the two-week period. The TWLA Schedule of Operations shall also indicate any critical stage(s) of work requiring VDOT oversight or inspection. The Contractor shall submit three (3) copies of the TWLA Schedule of Operations to the Engineer in any legible format.

The Contractor may revise his TWLA Schedule of Operations at his discretion. However, the Contractor shall notify the Engineer at least forty-eight (48) working hours in advance of any changes in the Contractor's planned operations or critical stage work requiring Department oversight or inspection. In the event of extenuating circumstances deemed by the Engineer to be beyond the Contractor's control, the Engineer may grant verbal concurrence of changes in the Contractor's planned operations with less advance notice, as the need arises.

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

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

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

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

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

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

GUIDELINES - PROJECTS REQUIRING 1000 TONS OR MORE OF ASPHALT CONCRETE WHERE LIQUID ASPHALT IS DESIGNATED AS AN ADJUSTMENT ITEM (MARGIN CODE "A" IN THE IN SCHEDULE OF ITEMS). USE ONLY ON PROJECTS THAT WILL REQUIRE GREATER THAN 90 DAYS TO CONSTRUCT. FOR E MIXES OR MODIFIED D&E MIXES, INCLUDE SPCN cm109a0b. EXCEPTIONS: NONE.

SM109D4B-0708

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
ASPHALT MATERIAL PRICE ADJUSTMENT

July 30, 2008

Asphalt material bid items designated in the contract as Price Adjustment Items will be subject to price adjustment as set forth herein. Other items will not be adjusted, except as otherwise specified in the contract. If new pay items which contain asphalt material are established by Work Order, they will not be subject to Price Adjustment unless specifically designated in the Work Order to be subject to Price Adjustment.

Each month, the Department will publish an average state-wide PG 64-22 f.o.b. price per metric ton developed from the average terminal prices provided to the Department from suppliers of asphalt cement to contractors doing work in Virginia. The Department will collect terminal prices from approximately 12 terminals each month. These prices will be received once each month from suppliers on or about the last weekday of the month. The high and low prices will be eliminated and the remaining values averaged to establish the average statewide price for the following month. That monthly state-wide average price will be posted on the Scheduling and Contract Division website on or about the first weekday of the following month.

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

The amount of adjustment applied will be based on the difference between the contract Base Index and the Current Index for the applicable calendar month during which the work is performed. Adjustment of any asphalt material item designated as a price adjustment item which does not contain PG 64-22, except PG 76-22, will be based on the indexes for PG 64-22. The quantity of asphalt cement for asphalt concrete pavement to which adjustment will be applied will be the quantity based on the percent of asphalt cement shown on the appropriate approved job mix formula.

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

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

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

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

**GUIDELINES - ALL PROJECTS 90 DAYS OR LESS - EXCEPT THOSE WITH THE PROVISION FOR PLAN OF OPERATIONS OR WORKING SCHEDULE
EXCEPTIONS: NONE**

SM109F1B-0907

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 109 – PARTIAL PAYMENT

September 25, 2007c

SECTION 109.07 PARTIAL PAYMENTS of the Specifications is amended as follows:

The first paragraph is replaced with the following:

Partial payments will be based on a monthly progress estimate consisting of approximate quantities and value of work performed as determined by the Engineer. When the method of measurement for a contract item is in units of each or lump sum, the value of work accomplished for partial payment will be determined on a pro rata basis. Partial payments will be made once each month for the work performed in accordance with the contract requirements except when the sum of the work performed during the month's estimate period is less than \$500.00. The Contractor will be given the opportunity to review the monthly progress estimate prior to each partial payment. Upon final acceptance, one last monthly estimate will be prepared and any additional partial payment will be vouchered for payment.

The fifth paragraph is replaced with the following:

The Department will deduct an amount equivalent to 5 percent of the monthly progress estimate on all unbonded contracts and will retain such monies until final payment is made in accordance with the requirements of Section 109.09 of the Specifications. The balance less all previous partial payments will be vouchered for payment. After 50 percent of the total contract value has been completed and 5 percent has been retained on this amount, the Department will make the remaining partial payments in full provided the Contractor is maintaining a satisfactory rate of progress. For the purposes herein "*Total contract value*" will be considered to mean the original amount of the contract including any authorized adjustments in accordance with, but not limited to, the provisions of Sections 104.03 and 109.05 of the Specifications. The Department will not deduct retainage on bonded contracts provided the Contractor achieves and maintains a satisfactory rate of progress.

The sixth paragraph is replaced with the following:

If the Contractor's progress falls more than 10 percent behind the latest approved progress schedule on either a bonded or unbonded contract, the Contractor may be notified that if the next monthly progress estimate shows a delinquency of more than 10 percent, progress will be considered unsatisfactory and 5 percent retainage will be withheld each month the Contractor is behind the progress schedule by more than 10 percent.

The seventh paragraph is replaced with the following:

When the dollar value of the work completed has reached 90 percent of the total dollar value indicated on the Contractor's latest approved progress schedule, the progress will be determined at the time of the monthly progress estimate by comparing the percentage of time used with the percentage of work completed. When the percentage of time used exceeds the percentage of work completed by more than 10 percent, the Contractor may be notified that if the next monthly progress estimate shows a delinquency of more than 10 percent, progress will be considered

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

unsatisfactory and 5 percent retainage will be withheld on either bonded or unbonded contracts for each month the percentage of time used exceeds the percentage of work completed by more than 10 percent.

The eighth paragraph is replaced by the following:

On bonded contracts, when the Engineer determines that the Contractor's progress is considered satisfactory in accordance with these requirements, the 5 percent retainage previously withheld because of unsatisfactory progress will be released in the next monthly progress estimate and the remaining monthly progress estimates payments will be made in full provided satisfactory progress continues to be made. The Department will continue to deduct 5 percent retainage on unbonded contracts as provided for herein.

The tenth and eleventh paragraphs are deleted.

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

GUIDELINES - PROJECTS HAVING STEEL PRICE ADJUSTMENTS.
EXCEPTIONS: NONE.

SM109G2B-0205

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
PRICE ADJUSTMENT FOR STEEL

January 24, 2005

The Department will adjust monthly progress payments up or down as appropriate for cost changes in steel used on specific items of work identified in the contract in accordance with this provision. The following steel items will be eligible for consideration under this provision: structural steel (rolled beams, plate girders, diaphragms, plate bearings, etc.), reinforcing steel (plain & epoxy coated), overhead sign structures, guardrail, posts, standard sign or lighting supports, railing, encasement pipe, H-piles (end bearing or friction), steel strand (used for pre-tensioned or post-tensioned finished elements) and sheet piles. Inventoried materials from the listing of eligible items are specifically excluded for consideration.

The requirements of this provision shall apply only to material cost changes that occur between the date of bid opening and the date the material is shipped to the fabricator. To be eligible for this price adjustment, the Contractor, subcontractor and/or supplier is required to place his purchase order for eligible steel items for price adjustment (as identified in the contract) within 30 days after execution of this contract with the Department so as to better ensure reduced cost for steel used in such items and receipt of such items in a timely manner that shall not adversely affect his progress schedule or contract completion date. Further, in order for steel items to be eligible for adjustment, once shipped to the fabricator, the items shall be specifically stored, labeled, or tagged, recognizable by color marking, and identifiable by project for inspection and audit verification.

This provision allows for price adjustment for embedded steel used for pre-tensioned or post-tensioned precast components where furnishing steel is included in the unit price of the finished bid item. Steel used for post-tensioned or pre-tensioned elements shall be evaluated for price adjustment in the same manner as other steel material eligible under the requirements of this provision except that adjustment shall only apply to the tonnage or poundage of steel strand used in the pre-tensioned or post-tensioned element. This provision shall only apply to material cost changes of steel strand that occur between the date of bid opening and the date the strand material is shipped to the Contractor, subcontractor or supplier/fabricator who is placing the steel into the finished component.

Within 15 days after the date of the Award letter, the Contractor shall submit material price quotes, bid papers, or other documentation satisfactory to the Department for the bid items listed in the Contract for which it is requesting a steel price adjustment. This documentation shall support the completion of the form establishing the average price per kilogram for the eligible steel bid item. The Contractor must use the format as shown with this provision; no other format for presenting this information will be permitted. The Contractor shall certify that all items of documentation are original and were used in the computation of the amount bid for the represented eligible pay items for the month bids were opened. This documentation shall support the base line material price ("Base Price") of the steel item only. No adjustment will be made for changes in other components of the contract unit bid price, including, but not limited to, fabrication, shipping, storage, handling, and erection.

Failure to submit specifically required information such as purchase order, price data, bill of lading, material information or other requested information as noted herein will result in the Contractor not being eligible for price adjustment of steel items.

Price adjustment of each qualifying item under consideration will be subject to the following condition:

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

There is an increase or decrease in the cost of eligible steel materials in excess of 10 percent up to a maximum of 60 percent from the Base Price when compared with the latest published price index ("Price Index") in effect at the time material is shipped to the fabricator.

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

The following table indicates the Producers Price Index (PPI) steel category index items and the corresponding I.D. numbers with which VDOT items will be compared:

VDOT Pay Item	Bureau of Labor Statistics PPI Series I. D. Number WPU#
Reinforcing steel (plain & epoxy coated) Steel Strand (Pre-tensioning & Post-tensioning)	101704
Plate girders & rolled beams (St'd. & High strength, diaphragms, plate bearings, etc.) Steel piling (H-pile & sheet)	Average of 1017 & 101
Steel encasement pipe Overhead sign structures, posts, poles, guardrail, sign or lighting supports, & railing	101706
Guardrail	Average of 1017 & 101707

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

Price increase/decrease will be computed as follows:

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

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

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

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



The need for application of the adjustments herein to extra work will be determined by the Engineer on an individual basis and, if appropriate, will be specified on the Work Order.

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

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

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

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

20-Jan-05

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

BID DATE

28-Apr-04

Bid Item 61720 High Strength Structural Steel

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

Total 1,235,000 \$347,200.00

Average weighted price = \$0.2816

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

Reinforcing Bar (plain)

Reinforcing Bar (epoxy coated)

H- piles

Guardrail

Posts

Pipe Encasements

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



20-Jan-05

Sample Calculation of a Price Adjustment (increase)

Project bid on April 28, 2004.

Project has 204,120 kg. of structural steel.

Orders placed in timely manner and according to contract.

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

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

** final change
after 4 months

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

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

Adjustment formula is as follows:

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

Where;

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

$$B = \$0.2816$$

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

$$Q = 204,120 \text{ kg.}$$

$$A = 0.2816 \times 0.054 \times 204,120$$

$$A = \$3,103.93 \text{ pay adjustment to Contractor}$$

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

20-Jan-05

Sample Calculation of a Price Adjustment (decrease)

Project bid on April 28, 2004.

Project has 204,120 kg. of structural steel.

Orders placed in timely manner and according to contract.

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

Adjusted BLS Producers Price Index (PPI) most recently published average at time of bid is 156.6.

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

Adjusted BLS Producers Price Index (PPI) most recently published average for month of October is 136.3

Adjustment formula is as follows:

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

Where;

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

$$B = \$0.2816$$

$$P = (156.6 - 136.3) / 136.3 - 0.10 = 0.049$$

$$Q = 204,120 \text{ kg.}$$

$$A = 0.2816 \times 0.049 \times 204,120$$

$$A = \$2,816.59 \text{ credit to Department}$$

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

**GUIDELINES - PROJECTS REQUIRING FUEL ADJUSTMENT AS AN OPTION:
EXCEPTIONS: NONE**

SM109H0B-0206

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
OPTIONAL ADJUSTMENT FOR FUEL

December 20, 2005

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

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

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

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

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

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

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

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

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

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

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

B = Base index price

E = Current index price

Q = Quantity of individual units of work

F = Appropriate fuel factor

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

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

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

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

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

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

**GUIDELINES - STATE PROJECTS.
EXCEPTIONS: NONE**

SM110B0S-0597

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 110.04
Use of Minority Business Enterprises

March 5, 1997

SECTION 110.04 of the Specifications is replaced by the following:

Section 110.04 Use of Minority Business Enterprises (MBEs)

It is the policy of the Department that Minority Business Enterprises (MBEs) shall have the maximum opportunity to participate in the performance of the Contract. The Contractor is encouraged to take necessary and reasonable steps to ensure that MBEs have the maximum opportunity to compete for and perform work on the Contract, including participation in any subsequent subcontracts.

MBE shall mean a small business concern (as defined pursuant to Section 3 of the Small Business Act and implementing regulations) which is owned and controlled by one or more minorities or women. *Owned and controlled* means: at least 51 percent of the business is owned by one or more minorities or women or, in the case of a publicly owned business, at least 51 percent of the stock is owned by one or more minorities or women; and the management and daily business operations are controlled by one or more such individuals.

Minority shall mean a person who is a citizen or lawful permanent resident of the United States and is a bona fide member of a minority group, so regarded by that particular minority community, and who is:

Black (a person having origins in any of the black racial groups of Africa);

Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);

Portuguese (a person of Portuguese, Brazilian, or other Portuguese culture or origin, regardless of race);

Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands);

American Indian or Alaskan Native (a person having origins in any of the original peoples of North America); or

a member of another group, or other individual, found to be economically and socially disadvantaged by the Small Business Administration under 8(a) of the Small Business Act as amended (15 U.S.C. 637[a]).

The Department will furnish, upon request, a list of certified MBEs. This list shall not be construed as an endorsement of the quality or performance of the business, but is simply a listing of firms who are certified by the Department as being MBEs.

The Contractor is encouraged to use the services of banks owned or controlled by minorities or females; however, use of such services will not be credited toward participation achievement for the Contract. The Department has on file, and will make available on request, the names and addresses of known minority and female owned banks in the State of Virginia.

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



The Contractor shall designate and make known to the Department a liaison officer who is assigned the responsibility of actively and effectively administering, encouraging and promoting a responsive program for the use of MBEs.

The "performance of the Contract" for the purpose of this specification shall be interpreted to include, but not necessarily be limited to, subcontracting; furnishing materials, supplies, and services; and, leasing equipment.

If the Contractor intends to sublet a portion of the work on the project, the Contractor is encouraged to seek out and consider MBEs as potential subcontractors. The Contractor is encouraged to contact MBEs to solicit their interest, capability, and prices and shall retain on file the proper documentation to substantiate such contacts.

By signing the bid, the bidder certifies to the following:

- (1) That on the work proposed to be sublet and shown on the form for "Contractors Proposal to Sublet," the bidder has taken reasonable steps to seek out and consider MBEs as potential subcontractors.
- (2) That, if awarded the project, any work proposed to be sublet and not shown on the form for "Contractors Proposal to Sublet," the same reasonable steps certified under paragraph (1) herein will be taken.

If the Department has determined that specific opportunities for participation by MBEs are available on a particular Contract, such participation will be shown as a percentage of the Contract amount and will be indicated in the proposal on Form C-61, *Potential MBE Participation*.

If the bidder is an MBE which is owned and controlled by a minority female(s), participation achievement may be shown as either minority or female, but not both. Further, each bidder shall meet the requirements of Section 102.01 of the Specifications.

If the apparent low bidder is a currently certified MBE firm, the MBE requirements of this provision will not be applicable except for those referring to the reporting of participation achievement.

The Department has prepared a suggested list of the types of efforts that contractors are encouraged to make in soliciting MBE participation. Other factors or types of efforts may be relevant in appropriate cases.

The Department offers the following examples of efforts that may be considered. The Contractor is encouraged to:

- (1) attend any pre-solicitation or pre-bid meetings at which MBEs could be informed of contracting and subcontracting opportunities;
- (2) advertise in general circulation, trade association and minority-focus media concerning the subcontracting opportunities;
- (3) provide written notice to a reasonable number of specific MBEs that their interest in the Contract was being solicited in sufficient time to allow the MBEs to participate effectively;
- (4) follow-up initial solicitations of interest by contacting MBEs to determine with certainty whether the MBEs were interested;

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

- (5) select portions of the work to be performed by MBEs in order to increase the likelihood of obtaining MBE participation (including, where appropriate, breaking down contracts into economically feasible units to facilitate MBE participation);
- (6) provide interested MBEs with adequate information about the plans, specifications, and requirements of the Contract;
- (7) negotiate in good faith with interested MBEs, not rejecting MBEs as unqualified without sound reasons based on a thorough investigation of their capabilities;
- (8) make efforts to assist interested MBEs in obtaining bonding, lines of credit, or insurance required by the Department or Contractor;
- (9) make efforts to assist interested MBEs in obtaining necessary equipment, supplies, materials, or other necessary or related assistance or services; and,
- (10) effectively use the services of available minority community organizations; minority contractors' groups; local, state and federal minority business assistance offices; and other organizations that provide assistance in the recruitment and placement of MBEs.

Any agreement between a bidder and an MBE whereby the MBE agrees not to provide quotations for performance of work to other bidders is prohibited.

Within 14 days after the opening of proposals in accordance with Section 102.12, if the apparent low bidder, as read at the bid opening, is reporting participation achievement on the contract, he shall submit to the Department a fully executed Form C-61 showing the name(s) and certification number(s) of any currently certified MBEs who will perform work eligible to be reported as said participation credit.

The signatures on Form C-61 shall be those of authorized representatives of the bidder as shown on Forms C-37 and C-38A or as authorized by letter from the bidder.

If it is determined, subsequent to the bid opening, that the apparent low bidder as read at the bid opening has changed, the new apparent low bidder will be advised by letter and shall submit the information required herein within 14 days after the date of notification.

Any award made by the Board prior to receipt of the information required will be conditional, pending receipt of such information.

The Contractor shall furnish, and require each subcontractor to furnish, prior to final acceptance of the Contract, information relative to all MBE involvement on the project if such work is to be claimed as participation achievement and verification is available. The information shall be indicated on Form C-63, *D/MBE Activity Report*, and certified on Form C-63A, *DBE/WBE Payment Certification*, or by copies of canceled checks with appropriate identifying notations. If participation achievement is with an MBE whose name has not been previously furnished, an initial or revised Form C-61, whichever is appropriate, shall be submitted prior to such MBE beginning the work. Failure to provide the Department the forms by the Contractor's semi-final estimate may result in delay of approval of the Contractor's estimate for payment.

If an MBE, through no fault of the Contractor, is unable or unwilling to fulfill his agreement with the Contractor, the Contractor shall immediately notify the Department and provide all relevant facts. If any subcontractor is relieved of the responsibility to perform work under their subcontract, the Contractor is encouraged to take steps to obtain an MBE to perform an equal or greater dollar value of the work. The substitute MBE's name, description of the work, and dollar value of the work shall be submitted to the Department on Form C-61 prior to such MBE beginning the work, if such work is to be counted for participation achievement.

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

**GUIDELINES - FEDERAL PROJECTS ONLY. (COPIED NOTE cm110e0b MUST BE INCLUDED IN THE PROPOSAL WHENEVER THIS SPECIAL PROVISION IS USED.)
EXCEPTIONS: NONE.**

SM110E1F-0205

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 110.04

November 4, 2004c

SECTION 110.04 of the Specifications is replaced by the following:

Section 110.04 Use of Disadvantaged Business Enterprises (DBEs)

Disadvantaged Business Enterprise (DBE) Program Requirements.

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

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

All administrative remedies noted in this provision are automatic unless the Contractor exercises the right of appeal within the required timeframe(s) specified herein. Appeal requirements, processes, and procedures shall be in accordance with

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



GUIDELINES stated herein and current at the time of the proceedings. Where applicable, the Department will notify the Contractor of any changes to the appeal requirements, processes, and procedures after receiving notification of the Contractor's desire to appeal.

Miscellaneous DBE Program Requirements.

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

Required Contract Provisions.

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

The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award, administration, and performance of this contract. Failure by the Contractor to carry out these requirements is a material breach of this contract, which will result in the termination of this contract or other such remedy, as VDOT deems appropriate **Bank Services.**

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

DBE Certification.

The only DBE firms eligible to perform work on a federal-aid contract for DBE contract goal credit are firms certified as Disadvantaged Business Enterprises by the Department of Minority Business Enterprises or VDOT in accordance with federal and VDOT

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

GUIDELINES. A directory listing of certified DBE firms can be obtained from Department of Minority Business Enterprises Internet website: www.dmb.e.state.va.us

DBE Program-related Certifications Made by Bidders/Contractors.

Bids will be considered non-responsive and will be rejected for failure to comply with the requirements of this Special Provision and the contract specifications. By submitting a bid and by entering into any contract on the basis of that bid, the bidder/Contractor certifies to each of the following DBE Program-related conditions and assurances:

- (1) That the management and bidding officers of its firm agree to comply with the bidding and project construction and administration obligations of the USDOT DBE Program requirements and regulations of 49 CFR Part 26 as amended, and VDOT's Road and Bridge Specifications and DBE Program requirements and regulations.
- (2) Under penalty of perjury and other applicable penal law that it has complied with the DBE Program requirements in submitting the bid, and shall comply fully with these requirements in the bidding, award, and execution of the contract.
- (3) To ensure that certified DBE firms have been given full and fair opportunity to participate in the performance of the contract. The bidder certifies that all reasonable steps were, and will be, taken to ensure that DBE firms had and will have an opportunity to compete for and perform work on the contract. The bidder further certifies that the bidder shall not discriminate on the basis of race, color, age, national origin, or sex in the performance of the contract or in the award of any subcontract.

Any agreement between a bidder and a DBE whereby the DBE promises not to provide quotations for performance of work to other bidders is prohibited.

- (4) As a bidder good faith efforts were made to obtain certified DBE participation in the proposed contract at or above the goal for certified DBE participation established by VDOT. It has submitted as a part of its bid a true, accurate, complete, and detailed written explanation of the good faith efforts it performed to meet the contract goal for certified DBE participation.
- (5) Once awarded the contract, the Contractor shall make good faith efforts to utilize certified DBE firms to perform work designated to be performed by certified DBEs at or above the amount or percentage of the dollar value specified in the bidding documents. Further, the Contractor understands it shall not unilaterally terminate, substitute for, or replace any DBE firm that was designated in the executed contract in whole or in part with another DBE, any non-DBE firm, or with the Contractor's own forces or those of an affiliate of the Contractor without the prior written consent of VDOT as set out within the requirements of this provision.

Once a contract is awarded, the Contractor shall designate and make known to the Department a liaison officer who is assigned the responsibility of administering and promoting an active and inclusive DBE program as required by 49 CFR Part 26 for certified DBEs. The designation and identity of this officer need be submitted only once by the Contractor during any twelve (12) month period at the preconstruction conference for the first contract the Contractor has been awarded during that reporting period. The Department will post such information for informational and administrative purposes at VDOT's Internet Civil Rights Division website.

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

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



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

- (7) In the event a bond surety takes over the completion of work after VDOT has terminated the prime Contractor, the surety shall be obligated to meet the same DBE contract goals as were required of the original prime Contractor in accordance with the requirements of this specification.

Designation of DBE Firms to Perform on Contract.

The bidder, by signing and submitting its bid, certifies the DBE participation information submitted within the stated time thereafter is true, correct, and complete, and that the information provided includes the names of all certified DBE firms that will participate in the contract, the specific line item(s) that each listed certified DBE firm will perform, and the creditable dollar amounts of the participation of each listed certified DBE. The specific line item must reference the VDOT line number and item number contained in the proposal. The bidder further certifies, by signing its bid, it has committed to use each certified DBE firm listed for the specific work item shown to meet the contract goal for certified DBE participation. Award of the contract will be conditioned upon meeting these and other listed requirements of 49 CFR Part 26.53 and the contract documents.

By signing the bid, the bidder certifies on work it proposes to sublet, it has made good faith efforts to seek out and consider certified DBEs as potential subcontractors. The bidder shall contact DBEs to solicit their interest, capability, and prices in sufficient time to allow them to respond effectively, and shall retain on file proper documentation to substantiate its good faith efforts.

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

- (1) When a Contractor has made a commitment to use a DBE firm that is not currently certified, thereby making the Contractor ineligible to receive DBE participation credit for work performed, and a subcontract has not been executed, the ineligible DBE firm does not count toward either the contract goal or overall goal. The Contractor shall meet the contract goal with a DBE firm that is eligible to receive DBE credit for work performed, or must demonstrate to the Engineer that it has made good faith efforts to do so.

When a Contractor has executed a subcontract with a certified DBE firm prior to official notification of the DBE firm's loss of eligibility, the Contractor may continue to use the firm on the contract and shall continue to receive DBE credit toward its DBE goal for the subcontractor's work.

When VDOT has executed a prime contract with a DBE firm that is certified at the time of contract execution but that is later ruled ineligible, the portion of the ineligible firm's performance on the contract before VDOT has issued the notice of its ineligibility shall count toward the contract goal.

- (2) If a certified DBE subcontractor is terminated, or fails, refuses, or is unable to complete the work on the contract for any reason, the Contractor must promptly request approval

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

to substitute or replace that firm in accordance with this section of this Special Provision. The Contractor, as aforementioned in (1) above, shall notify VDOT in writing before terminating and/or replacing the certified DBE that was committed as a condition of contract award or that is otherwise being used or represented to fulfill certified DBE contract obligations during the contract performance period. Written consent from the Department for terminating the performance of any DBE shall be granted only when the Contractor can demonstrate that the DBE is unable, unwilling, or ineligible to perform its obligations for which the Contractor sought credit toward the contract DBE goal. Such written consent by the Department to terminate any DBE shall concurrently constitute written consent to substitute or replace the terminated DBE with another DBE. Consent to terminate a certified DBE shall not be based on the Contractor's ability to negotiate a more advantageous contract with another subcontractor whether that subcontractor is, or is not, a certified DBE

(a) Contractor's Written Request to Terminate DBE

All Contractor requests to terminate, substitute, or replace a certified DBE shall be in writing, and shall include the following information:

- (i) The date the Contractor determined the certified DBE to be unwilling, unable, or ineligible to perform;
- (ii) The projected date that the Contractor shall require a substitution or replacement DBE to commence work if consent is granted to the request;
- (iii) A brief statement of facts describing and citing specific actions or inaction by the certified DBE giving rise to the Contractor's assertion that the certified DBE is unwilling, unable, or ineligible to perform;
- (iv) A brief statement of the affected certified DBE's capacity and ability to perform the work as determined by the Contractor;
- (v) A brief statement of facts regarding actions taken by the Contractor which are believed to constitute good faith efforts toward enabling the certified DBE to perform;
- (vi) The current percentage of work completed on each bid item by the certified DBE;
- (vii) The total dollar amount currently paid per bid item for work performed by the DBE;
- (viii) The total dollar amount per bid item remaining to be paid to the certified DBE for work completed, but for which the certified DBE has not received payment, and with which the Contractor has no dispute;
- (ix) The total dollar amount per bid item remaining to be paid to the certified DBE for work completed, but for which the certified DBE has not received payment, and over which the Contractor and/or the certified DBE have a dispute.

(b) Contractor's Written Notice to DBE of Pending Request to Terminate and Substitute With Another DBE

The Contractor shall send a copy of the "request to terminate and substitute" letter to the affected committed DBE firm, in conjunction with submitting the request to the

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

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

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

(c) Proposed Substitution of Another Certified DBE

Upon termination of a certified DBE, the Contractor shall use reasonable good faith efforts to replace the terminated DBE. The termination of such certified DBE shall not relieve the Contractor of its obligations pursuant to this section, and the unpaid portion of the terminated certified DBE's contract would not be counted toward the contract goal.

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

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

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

Bidding Procedures.

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

Contract Goal, Good Faith Efforts Specified.

All bidders evidencing the attainment of DBE goal commitment equal to or greater than the required DBE goal established for the project must submit completed Form C-111 as a part of the bid documents. Form C-111 may be submitted electronically or may be faxed to the Department, but in no case shall the bidder's Form C-111 be received later than 2 hours after the time stated in the bid proposal for the receipt of bids.

If, at the time of submitting its bid the bidder knowingly cannot meet or exceed the required DBE contract goal, it shall submit Form C-111 exhibiting the DBE participation it attained as a part of its bid documents. The bidder shall then submit its good faith efforts within two (2) working days after the bid opening.

The lowest responsive and responsible bidder must submit its properly executed Form C-112 within two (2) working days after the bids have been opened and the determination of apparent lowest bidder. If, after review of the apparent lowest bid, VDOT determines the DBE requirements have not been met, the apparent lowest successful bidder must submit good faith documentation, which must be received by the Contract Engineer within two (2) working days after official notification of such failure to meet the aforementioned DBE requirements.

Good Faith Efforts Described.

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

- (1) Soliciting through reasonable and available means, such as but not limited to, attendance at pre-bid meetings, advertising, and written notices to certified DBEs who have the capability to perform the work of the contract. Examples include: advertising in at least one daily newspaper of general circulation; phone contact with a completely documented telephone log, including the date and time called, contact person, or voice mail status; and internet contacts with supporting documentation, including dates advertised. The bidder shall solicit this interest no less than five (5) business days before the bids are due so that the solicited DBEs have enough time to reasonably respond to the solicitation. The bidder shall determine with certainty if the DBEs are interested by taking reasonable steps to follow up initial solicitations as evidenced by documenting such efforts on Department standard good faith documentation forms;
- (2) Selecting portions of the work to be performed by certified DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the Contractor might otherwise prefer to perform these work items completely or with its own forces;
- (3) Providing interested certified DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner, which will assist the DBEs in responding to a solicitation;

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

- (4) Negotiating for participation in good faith with interested DBEs;
 - (a) Evidence of such negotiation shall include the names, addresses, and telephone numbers of DBEs that were considered; dates DBEs were contacted, a description of the information provided regarding the plans, specifications, and requirements of the contract for the work selected for subcontracting; and, if insufficient DBE participation seems likely, evidence as to why additional agreements could not be reached for DBEs to perform the work;
 - (b) A bidder using good business judgment should consider a number of factors in negotiating subcontractors, including certified DBE subcontractors, and should take a firm's price, qualifications, and capabilities, as well as contract goals, into consideration. However, the fact that there may be some additional costs involved in finding and using certified DBEs is not sufficient reason for a bidder's failure to meet the contract goal for certified DBE participation, as long as such costs are reasonable and comparable to costs customarily appropriate to the type of work under consideration. Also, the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make diligent good faith efforts. Bidders are not, however, required to accept higher quotes from DBEs if the price difference can be shown by the bidder to be excessive, unreasonable; or greater than would normally be expected by industry standards;
- (5) A bidder cannot reject a certified DBE as being unqualified without sound reasons based on a thorough investigation of the DBE's capabilities. The certified DBE's standing within its industry, membership in specific groups, organizations, associations and political or social affiliations, and union vs. non-union employee status are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal for certified DBE participation;
- (6) Making efforts to assist interested certified DBEs in obtaining bonding, lines of credit, or insurance as required by VDOT or by the bidder/Contractor;
- (7) Making efforts to assist interested certified DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services subject to the restrictions contained in these provisions;
- (8) Effectively using the services of appropriate personnel from VDOT and from the Virginia Department of Minority Business Enterprises, (VDMBE); available minority/women community or minority organizations; contractors' groups; local, state, and Federal minority/ women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and utilization of qualified DBEs.

Bid Rejection.

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

In order to award a contract to a bidder that has failed to meet DBE contract goal requirements, VDOT will determine if the bidder's efforts were adequate good faith efforts, and if given all relevant circumstances, those efforts were to the extent a bidder actively and aggressively seeking to meet the requirements would make. Efforts to obtain DBE

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

participation are not good faith efforts if they could not reasonably be expected to produce a level of DBE participation sufficient to meet the DBE Program and contract goal requirements.

If the lowest bidder is rejected for failure to submit required documentation, the Department may either award the work to the next lowest bidder, or re-advertise and construct the work under contract or otherwise as determined by the Commonwealth Transportation Board (CTB).

Documentation, and Administrative Reconsideration of Good Faith Efforts.

During Bidding

As described in the **Contract Goal, Good Faith Efforts Specified** section of this Special Provision, the bidder must provide certified written documentation of its good faith efforts made to meet the DBE contract goal as proposed by VDOT within the timeframe specified in this section of the provision. No extension of time for submittal of good faith effort documentation will be allowed. The means of transmittal and the risk for timely receipt of this information shall be the responsibility of the bidder. The bidder shall attach additional pages to the certification, if necessary, in order to fully detail specific good faith efforts made to obtain certified DBE firm participation in the proposed contract work.

However, regardless of the DBE contract goal participation level proposed by the bidder or the extent of good faith efforts shown, all bidders shall timely and separately file their completed and executed Forms C-111 and C-112 and good faith efforts as aforementioned, or face potential bid rejection. If a bidder does not submit its completed and executed C-111 or C-112 when required by this Special Provision the bidder's bid will be considered non-responsive and will be rejected.

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

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

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

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

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

During the Contract

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

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

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

DBE Participation for Contract Goal Credit

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

- (1) Cost-plus subcontracts will not be considered to be in accordance with normal industry practice and will not normally be allowed for credit.
- (2) The applicable percentage of the total dollar value of the contract or subcontract awarded to the DBE will be counted toward meeting the contract goal for certified DBE participation in accordance with the **Designation of DBE Firms to Perform on Contract** section of this Special Provision for the value of the work, goods, or services that are actually performed or provided by the certified DBE firm itself or subcontracted by the certified DBE to other certified DBE firms.
- (3) When a certified DBE performs work as a participant in a joint venture, the Contractor may count toward the DBE goal only that portion of the total dollar value of the contract equal to the distinctly defined portion of the contract work that the DBE has performed with the DBE's own forces or in accordance with the provisions of this Section. The Department shall be contacted in advance regarding any joint venture involving both a certified DBE firm and a non-DBE firm to coordinate Department review and approval of the joint venture's organizational structure and proposed operation where the Contractor seeks to claim the certified DBE's credit toward the DBE contract goal.

When a DBE subcontracts part of the work of the contract to another firm, the value of that subcontracted work may be counted toward the DBE contract goal only if the DBE's subcontractor at a lower tier is a VDOT certified DBE. Work that a certified DBE subcontracts to either a non-DBE firm or to a non-certified DBE firm will not count toward

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

the DBE contract goal. The cost of supplies and equipment a DBE subcontractor purchases or leases from the prime Contractor or the prime's affiliated firms will not count toward the contract goal for certified participation.

- (4) The Contractor may count expenditures to a certified DBE subcontractor toward the DBE contract goal only if the certified DBE performs a Commercially Useful Function (CUF) on that contract.
- (5) A Contractor may not count the participation of a certified DBE subcontractor toward the Contractor's final compliance with the DBE contract goal obligations until the amount being counted has actually been paid to the certified DBE. A Contractor may count sixty (60) percent of its expenditures actually paid for materials and supplies obtained from a DBE certified by VDOT as a regular dealer, and one hundred (100) percent of such expenditures actually paid for materials and supplies obtained from a VDOT certified DBE manufacturer.
 - (a) For the purposes of this Special Provision, a regular dealer is defined as a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the material, supplies, articles, or equipment required and used under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a regular dealer, the certified DBE firm shall be an established business that regularly engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions will not be considered regular dealers.
 - (b) A certified DBE firm may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business where it keeps such items in stock if the certified DBE both owns and operates distribution equipment for the products it sells and provides for the contract work. Any supplementation of a regular dealer's own distribution equipment shall be by a long-term lease agreement and not on an *ad hoc* or contract-by-contract basis to be eligible for credit to meet the DBE contract goal.
 - (c) If a certified DBE regular dealer is used for DBE contract goal credit, no additional credit will be given for hauling or delivery to the project site goods or materials sold by that certified DBE regular dealer. Those delivery costs shall be deemed included in the price charged for the goods or materials by the certified DBE regular dealer, who shall be responsible for their distribution.
 - (d) For the purposes of this Special Provision, a manufacturer will be defined as a firm that operates or maintains a factory or establishment that produces on the premises the material, supplies, articles, or equipment required under the contract and of the general character described by the project specifications. A manufacturer shall include firms that produce finished goods or products from raw or unfinished material, or purchase and substantially alter goods and materials to make them suitable for construction use before reselling them.
- (6) A Contractor may count toward the DBE contract goal the following expenditures to certified DBE firms that are not regular dealers or manufacturers for DBE program purposes:
 - (a) The entire amount of fees or commissions charged by a certified DBE firm for providing a bona fide service, such as professional, technical, consultant or managerial services, or for providing bonds or insurance specifically required for the

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

performance of the federal-aid contract, if the fee is reasonable and not excessive or greater than would normally be expected by industry standards for the same or similar services.

- (b) The entire amount of that portion of the construction contract that is performed by the certified DBE's own forces and equipment under the DBE's supervision. This includes the cost of supplies and materials ordered and paid for by the certified DBE for contract work, including supplies purchased or equipment leased by the certified DBE, except supplies and equipment a certified DBE subcontractor purchases or leases from the prime Contractor or its affiliates.
- (7) A Contractor may count toward the DBE contract goal one hundred (100) percent of the fees paid to a certified DBE trucker or hauler for the delivery of material and supplies required on the project job site, but not for the cost of those materials or supplies themselves, provided that the trucking or hauling fee is determined by VDOT to be reasonable, as compared with fees customarily charged by non-DBE firms for similar services. Nor could a Contractor count costs for the removal or relocation of excess material from or on the job site when the certified DBE trucking company is not also the manufacturer of or a regular dealer in those materials and supplies. The certified DBE trucking firm shall also perform a CUF on the project and not operate merely as a pass through for the purposes of gaining credit toward the DBE contract goal. Prior to submitting a bid, the Contractor shall determine, or contact the VDOT Civil Rights Division or its district Offices for assistance in determining, whether a DBE trucking firm will meet the criteria for performing a CUF on the project.
- (8) The Contractor will receive DBE contract goal credit for the fees or commissions charged by and paid to a certified DBE broker who arranges or expedites sales, leases, or other project work or service arrangements provided that those fees are determined by VDOT to be reasonable and not excessive as compared with fees customarily charged by non-DBE firms for similar services. For the purposes of this Special Provision, a broker is defined as a person or firm that arranges for delivery of material, supplies, and equipment, or arranges project services but does not own or operate the delivery equipment necessary to transport materials, supplies, or equipment to or from a job site. A broker typically shall not purchase or pay for the material, supplies, or equipment, and if the broker does purchase or pay for those items those costs will be reimbursed in full. To receive DBE contract goal credit VDOT must determine that the DBE broker has performed a CUF in providing the contract work or service.

Performing a Commercially Useful Function (CUF)

No credit toward the DBE contract goal will be allowed for contract payments or expenditures to a certified DBE firm if that DBE firm does not perform a CUF on that contract. A DBE performs a CUF when the DBE is solely responsible for execution of a distinct element of the contract work and the DBE actually performs, manages, and supervises the work involved with the firm's own forces or in accordance with the provisions of the **DBE Participation for Contract Goal Credit** section of this Special Provision. To perform a CUF the certified DBE alone shall be responsible and bear the risk for the material and supplies used on the contract, selecting a supplier or dealer from those available, negotiating price, determining quality and quantity, ordering the material and supplies, installing those materials with the certified DBE's own forces and equipment, and paying for those materials and supplies. The amount the certified DBE firm is to be paid under the contract shall be commensurate with the work the certified DBE actually performs and the DBE credit claimed for the certified DBE's performance.

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

Monitoring CUF Performance

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

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

DBEs Must Perform a Useful and Necessary Role in Contract Completion

A DBE does not perform a commercially useful function if the DBE's role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation.

DBEs Must Perform The Contract Work With Their Own Workforces

If a DBE does not perform and exercise responsibility for at least thirty (30) percent of the total cost of the DBE's contract with the DBE's own work force, or the DBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involved, VDOT will presume that the DBE is not performing a commercially useful function and such participation will not be counted toward the contract goal.

Factors Used to Determine if a DBE Trucking Firm is Performing a CUF

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

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

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

certified DBE will receive credit for the total fair market value actually paid for transportation services the lessee certified DBE firm provides on the contract;

- (5) The DBE may also lease trucks from a non-DBE firm, including an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit for the total value of the transportation services provided by non-DBE lessees, not to exceed the value of transportation services provided by DBE-owned trucks on the contract. For additional participation by non-DBE lessees, the DBE will only receive credit for the fee or commission it receives as a result of the lease arrangement.

EXAMPLE: DBE Firm X uses two (2) of its own trucks on a contract. The firm leases two (2) trucks from DBE Firm Y and six (6) trucks from non-DBE Firm Z. DBE credit would be awarded for the total transportation services provided by DBE Firm X and DBE Firm Y, and may also be awarded for the total value of transportation services by four (4) of the six (6) trucks provided by non-DBE Firm Z. In all, full DBE credit would be allowed for the participation of eight (8) trucks. With respect to the other two trucks provided by non-DBE Firm Z, DBE credit could be awarded only for the fees or commissions pertaining to those trucks that DBE Firm X receives as a result of the lease with non-DBE Firm Z.

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

VDOT Makes Final Determination On Whether a CUF Is Performed

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

Verification of DBE Participation and Imposed Damages.

After contract award, the Contractor shall submit to the Engineer a fully executed subcontract agreement for each DBE used to claim credit in accordance with the requirements stated on Form C-112, executed by both parties stating the work to be performed, details or specifics concerning such work and the price which will be paid for the aforementioned work no later than seven (7) working days prior to the Notice to Proceed. Because of the commercial damage that the Contractor and its DBE subcontractor could suffer if their subcontract pricing, terms, and conditions were known to competitors, the Department staff shall treat subcontract agreements as proprietary Contractor trade secrets with regard to Freedom of Information Act requests. In lieu of subcontract agreements, purchase orders may be submitted for haulers, suppliers, and manufacturers. Such purchase orders must contain, as a minimum, the following information: authorized signatures of both parties; description of the scope of work to include contract item numbers, quantities, and prices; and required federal contract provisions.

The Contractor shall also furnish, and shall require each subcontractor to furnish, information relative to all DBE involvement on the project for each month during the life of the contract in which participation occurs and verification is available. The information shall be indicated on Form C-63 and certified on Form C-63A, or by copies of cancelled checks with appropriate

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



identifying notations. Failure to provide the forms to the Engineer by the Contractor's monthly progress estimate date may result in delay of approval of the Contractor's monthly progress estimate for payment. The names and certification numbers of DBE firms provided by the Contractor on the various forms indicated in this Special Provision shall be exactly as shown on the Department's latest list of certified DBEs. Signatures on all forms indicated herein shall be those of authorized representatives of the bidder as shown on Form C-32 or Form C-32A, or authorized by letter from the bidder. If certified DBE firms are used which have not been previously documented with the Contractor's bid and for which the Contractor now desires to claim credit toward the project goal, the Contractor shall be responsible for submitting necessary documentation in accordance with the procedures stipulated in this Special Provision to cover such work prior to the DBE beginning work.

The Contractor shall submit to the Engineer its progress schedule as required by Section 103.06 of the Specifications or other such specific contract scheduling specification that may include contractual milestones, i.e., monthly or VDOT requested updates. The Contractor shall include a narrative of applicable DBE activities relative to work activities of the Contractor's progress schedule, including the approximate start times and durations of all DBE participation to be claimed for credit that shall result in full achievement of the DBE goal required in the contract.

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

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

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

Documentation Required for Semi-final Payment.

On those projects nearing completion, the Contractor must submit Form C-63 and appropriate Form C-63A(s) marked "Semi-Final" within twenty (20) days after the submission of the last regular monthly progress estimate to the Engineer. The forms must include each certified DBE used on the contract work and the work performed by each certified DBE. The forms shall include the actual dollar amount paid to each certified DBE for the accepted creditable work on the contract and monies owed the certified DBE subcontractor. The forms shall be certified under penalty of perjury, or other applicable law, to be accurate and complete. VDOT will use this certification and other information available to determine applicable DBE credit allowed to date by VDOT and the extent to which the DBEs were fully paid for that work. The Contractor shall

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

acknowledge by the act of filing the forms that the information is supplied to obtain payment regarding a federal participation contract. A letter of certification, signed by both the prime Contractor and appropriate certified DBEs, will accompany the forms, indicating the amount, including any retainage that remains to be paid to the certified DBE(s).

Documentation Required for Final Payment.

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

Prompt Payment Requirements.

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

For purposes of this Special Provision, a subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished, documented, and accepted as required by the contract documents by VDOT. When VDOT has made partial acceptance of a portion of the prime contract, the Department will consider the work of any subcontractor covered by that partial acceptance to be satisfactorily completed. Payment will be made in accordance with the requirements of Section 107.01, Section 109.07, and Section 109.09 of the Specifications.

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

The Contractor shall make payment of the subcontractor's portion of the work within seven (7) days of the receipt of payment from VDOT in accordance with the requirements of Section 109.10 of the Specifications.

If the Contractor fails to make payment of the subcontractor's portion of the work within the timeframe specified herein, the subcontractor shall contact the Engineer and the Contractor's bonding company in writing. The bonding company and VDOT will investigate the cause for non-payment and, barring mitigating circumstances that would make the subcontractor ineligible for payment, ensure payment in accordance with the requirements of Section 109.10 of the Specifications.

The Department will withhold payment of the Contractor's monthly progress estimates until the Contractor ensures that the subcontractors have been promptly paid for the work that they have performed successfully and for which the Department has accepted and paid the Contractor.

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

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

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

Data Collection

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

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

The above information can be submitted by means of the Annual Gross Receipts Survey as required in the Prequalification/Certification application.

All bidders, including DBE prime Contractor bidders, shall complete and submit to the Contract Engineer the Subcontractor/Supplier Solicitation and Utilization Form C-48 for each bid submitted within ten (10) days after the bid opening. Failure of bidders to submit this form in the timeframe specified will be cause for rejection of the bid.

Summary of Remedies Available to VDOT

Failure of any bidder\Contractor to comply with the requirements of this Special Provision for Section 110.04 of the Virginia Road and Bridge Specifications, which is deemed to be a condition of bidding, or where a contract exists, is deemed to constitute a breach of contract shall be remedied in accordance with the following:

Disadvantaged Business Enterprise (DBE) Program Requirements.

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

DBE Program-related Certifications Made by Bidders\Contractors

Bids will be considered non-responsive and will be rejected for failure to comply with the requirements of this Special Provision and the contract specifications. Where a contract exists and where the Contractor, a DBE or any other firm retained by the Contractor has failed to comply with federal or VDOT DBE Program regulations and/or their requirements on that contract, VDOT has the authority and discretion to determine the extent to which the DBE contract goals have not been met, and will assess against the Contractor any remedies available at law or provided in the contract in the event of such a contract breach.

Bid Rejection

The failure of bidders to submit the required documentation within the timeframes specified in the Contract Goal, Good Faith Efforts Specified section of this Special Provision may be cause for rejection of the bid.

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

If the lowest bidder is rejected for failure to submit required documentation, the Department may either award the work to the next lowest bidder, or re-advertise and construct the work under contract or otherwise as determined by the Commonwealth Transportation Board (CTB).

Documentation and Administrative Reconsideration of Good Faith Efforts

During Bidding

Regardless of the DBE contract goal participation level proposed by the bidder or the extent of good faith efforts shown, all bidders shall timely and separately file their completed and executed Forms C-111 and C-112 and good faith efforts as aforementioned or face potential bid rejection. If a bidder does not submit its completed and executed C-111 or C-112 when required by this Special Provision the bidder's bid will be considered non-responsive and will be rejected.

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

If sufficient documented evidence is presented to demonstrate that the apparent low bidder made reasonable good faith efforts, the Department will award the contract and reduce the DBE requirement to the actual commitment identified by the lowest successful bidder at the time of its bid. However, such action will not relieve the Contractor of its responsibility for complying with the reduced DBE requirement during the life of the contract or any administrative sanctions as may be appropriate.

During the Contract

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

Verification of DBE Participation and Imposed Damages for Non-compliance

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

Prompt Payment Requirements

The Department will withhold payment of the Contractor's monthly progress estimates until the Contractor ensures that the subcontractors have been promptly paid for the work that they have performed successfully, and for which the Department has accepted and paid the Contractor.

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

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

Suspect Evidence of Criminal Behavior.

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

Suspected DBE Fraud

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

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



2-

— DIVISION II—MATERIALS —

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



— 200 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES) —

GUIDELINES - PROJECTS WITH FINE AGGREGATES.
EXCEPTIONS: NONE.

(cm202c1b-0804) **SECTION 202—FINE AGGREGATE** of the Specifications is amended as follows:

Section 202—Fine Aggregate is amended to revise Table II-1 with the following:

Table II-1

Fine Aggregate								
Amounts Finer Than Each Laboratory Sieve (Square Opening) (% by Mass)								
Grading	(9.5mm)	(4.75mm)	(2.36mm)	(1.18mm)	(600µm)	(300µm)	(150µm)	(75µm)
A	Min. 100	95-100	80-100	50-85	25-60	5- 30	Max. 10	
B	Min. 100	94-100					Max. 10	
C	Min. 100	94-100				Max. 25		

Section 202—Fine Aggregate is amended to revise Table II-2 with the following:

Increase the freeze and thaw cycles to 100 cycles.

8-17-04 (SPCN)

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



GUIDELINES - PROJECTS WITH COARSE AGGREGATES.
EXCEPTIONS: NONE.

(cm203a2b-0804) **SECTION 203-COARSE AGGREGATE** of the Specifications is amended as follows:

Section 203.03 – Detail Requirements is amended by adding the following:

- (e) **Flat & Elongated:** Coarse Aggregate to be used as a riding surface during construction activities or as the riding surface after construction shall contain not more than 30 percent by mass of aggregate particles retained on and above the 9.5-millimeter sieve having a maximum to minimum dimensional ratio greater than 5 as determined by ASTM D4791.

Table II-3 Sizes Of Open Graded Coarse Aggregates is replaced by the following:

TABLE II-3

Sizes of Open Graded Coarse Aggregates															
Amounts Finer Than Each Laboratory Sieve (Square Openings) (% by Mass)															
Va Size No.	100 mm	87.5 mm	75 mm	62.5 mm	50 mm	37.5 mm	25 mm	19 mm	12.5 mm	9.5 mm	4.75 mm	2.36 mm	1.18 mm	300 µm	150 µm
1	Min. 100	90-100		25-60		Max. 15		Max. 5							
2			Min. 100	90-100	35-70	Max. 15		Max. 5							
3				Min. 100	90-100	35-70	0-15		Max. 5						
357				Min. 100	95-100		35-70		10-30		Max. 5				
5						Min. 100	90-100	20-55	Max. 10	Max. 5					
56						Min. 100	90-100	40-85	10-40	Max. 15	Max. 5				
57						Min. 100	95-100		25-60		Max. 10	Max. 5			
67							Min. 100	90-100		20-55	Max. 10	Max. 5			
68							Min. 100	90-100		30-65	5-25	Max. 10	Max. 5		
7								Min. 100	90-100	40-70	Max. 15	Max. 5			
78								Min. 100	90-100	40-75	5-25	Max. 10	Max. 5		
8									Min. 100	85-100	10-30	Max. 10	Max. 5		
8P									Min. 100	75-100	5-30	Max. 5			
9										Min. 100	85-100	10-40	Max. 10	Max. 5	
10										Min. 100	85-100				10-30

Table II-4 is revised to increase the freeze and thaw cycle to 100 cycles.

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



8-17-04 (SPCN)

**GUIDELINES - PROJECTS HAVING CRUSHER RUN AGGREGATE.
EXCEPTIONS: NONE.**

(cm205b0b-0304) **SECTION 205—CRUSHER RUN AGGREGATE** of the Specifications is amended to add the following:

Section 205.02 – Materials is amended to add the following:

- (c) **205.02 Crusher run aggregate** to be used as a wearing surface shall contain not more than 30 percent by mass of aggregate particles greater than 9.5 millimeters having a maximum to minimum dimensional ratio greater than 5 as determined by ASTM D4791.

Section 205.03 – Detail Requirements is amended to add the following:

- (e) **Flat & Elongated:** Crusher Run Aggregate to be used as a riding surface during construction activities or as the riding surface after construction shall contain not more than 30 percent by mass of aggregate particles retained on and above the 9.5-millimeter sieve having a maximum to minimum dimensional ratio greater than 5 as determined by ASTM D4791.

9-17-03 (SPCN)

**GUIDELINES—PROJECTS WITH SELECT MATERIAL
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

(cm207b0b-0408) **SECTION 207—SELECT MATERIAL** of the Specifications is amended by adding the following:

Section 207.02—Detail Requirements is amended by adding the following:

- (e) **Flat and Elongated:** Select Materials to be used as a riding surface during construction activities or as the riding surface after construction shall contain not more than 30 percent by mass of aggregate particles retained on and above the 9.5-millimeter sieve having a maximum to minimum dimensional ratio greater than 5 as determined by ASTM D4791.

Table II-6 Design Range: Select Material, Type I is replaced by the following:

TABLE II-6

Design Range: Select Material, Type I					
% by Mass of Material Passing					
75mm Sieve	50mm Sieve	2.00mm Sieve	425µm Sieve	75µm Sieve	ASTM D4791 Flat & Elongated 5:1
100	95-100	25-55	16-30	4-14	30 % max.

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



6-9-06 (SPCN)

**GUIDELINES— PROJECTS WITH SUBBASE AND AGGREGATE BASE MATERIAL.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

(cm208b1b-0408) **SECTION 208—SUBBASE AND AGGREGATE BASE MATERIAL** of the Specifications is amended as follows:

Table II-9 is replaced with the following:

**TABLE II-9
Design Range for Dense Graded Aggregates**

Amounts Finer Than Each Laboratory Sieve (Square Openings*) (% by Mass)							
Size No.	50mm	25.0mm	9.5mm	2.00mm	425µm	75µm	ASTM D4791 Flat & Elongated 5:1
21A	100	94-100	63-72	32-41	14-24	6-12	30 % max.
21B	100	85-95	50-69	20-36	9-19	4-7	30 % max.
22	---	100	62-78	39-56	23-32	8-12	30 % max.

*In millimeters, except where otherwise indicated. Numbered sieves are those of the U. S. Standard Sieve Series.

Section 208.03—Detail Requirements is amended by adding the following:

- (g) **Flat and Elongated:** Subbase and Aggregate Base Materials to be used as a riding surface during construction activities or as the riding surface after construction shall contain not more than 30 percent by mass of aggregate particles retained on and above the 9.5-millimeter sieve having a maximum to minimum dimensional ratio greater than 5 as determined by ASTM D4791.

Section 208.06—Acceptance is amended to replace the third sentence of the third paragraph with the following:

Unless otherwise approved, samples shall be obtained from the approximate center of truckloads of material.

6-9-06 (SPCN)

**GUIDELINES— ALL ASPHALT MAINTENANCE PROJECTS REQUIRING SUPERPAVE ASPHALT CONCRETE. ALSO MAY BE USED ON CONSTRUCTION PROJECTS WHERE PERMITTED BY THE DISTRICT PAVEMENT ENGINEER.
[USE BY THE JANUARY 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

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



(cm211f0b-0108) **SECTION 211 SURFACE AND INTERMEDIATE MIXES USING RAP** - Asphalt concrete mixtures used in surface and intermediate courses shall conform to the requirements of Section 211 of the Specifications except as specified herein for the following:

Section 211—Asphalt Concrete of the Specifications is amended as follows:

Section 211.01—Description is amended to replace the “ESALs” table in the second paragraph with the following

Mix Type	Equivalent Single Axle Load (ESAL) Range (millions)	Asphalt Performance Grade	Aggregate Nominal Maximum Size*
SM-9.0 A	0 to 3	64-16	9.5 mm
SM-9.0 D	3 to 10	70-16	9.5 mm
SM-9.0 E	Above 10	76-22	9.5 mm
SM-9.5 A	0 to 3	64-16	9.5 mm
SM-9.5 D	3 to 10	70-16	9.5 mm
SM-9.5 E	Above 10	76-22	9.5 mm
SM-12.5 A	0 to 3	64-16	12.5 mm
SM-12.5 D	3 to 10	70-16	12.5 mm
SM-12.5 E	Above 10	76-22	12.5 mm
IM-19.0 A	Less than 10	64-16	19.0 mm
IM-19.0 D	10 and above	70-16	19.0 mm

Section 211.03(f) is amended to replace the first sentence in the second paragraph with the following:

The Department will perform rut testing in accordance with the procedures detailed in VTM-110.

TABLE II-14A RECOMMENDED PERFORMANCE GRADE OF ASPHALT is replaced with the following:

**TABLE II-14A
RECOMMENDED PERFORMANCE GRADE OF ASPHALT CEMENT**

Mix Type	Percentage of RAP in Mix	
	%RAP ≤ 20.0%	20% < %RAP ≤ 30%
'A' Designated Surface & Intermediate Mixes	64-22	64-22
'D' Designated Surface & Intermediate Mixes	70-22	64-22

Section 211.06—Tests is amended to replace the “Abson Recovery” table in the second paragraph with the following:

Mix Type	Recovered Penetration		Ductility at 25 ⁰ C
	RAP% ≤ 20%	RAP% > 20%	
SM-9.0A,9.5A, 12.5A	min 35	min 35	min. 40 cm
SM-9.0D,9.5D, 12.5D	min 35	min 35	min. 40 cm
IM-19.0A	min 35	min 35	min. 40 cm
IM-19.0D	min 35	min 35	min. 40 cm

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



NOTE: Recovered Penetration and Ductility shall not be performed on SM-9.5E, 12.5E, and all (M) and (S) mixes

Section 211.06—Testing is amended to replace the third paragraph with the following:

Abson recovery samples shall be PG graded according to the requirements of AASHTO M 320-05. Samples meeting the required grades specified in Section 211.01 shall be acceptable.

9-24-07 (SPCN)

GUIDELINES - PROJECTS REQUIRING BRIDGE JOINTS.
EXCEPTIONS: NONE.

(cm212a0b-0798) **SECTION 212.02(j) ELASTOMERIC EXPANSION DAM AND TOOTH EXPANSION JOINT** of the Specifications is amended to replace the ninth paragraph with the following:

Stud anchors shall conform to the requirements of Section 226.02 (d).

1- 8-98 (SPCN)

GUIDELINES - PROJECTS REQUIRING JOINT MATERIALS.
EXCEPTIONS: NONE.

(cm212c0b-0906) **SECTION 212—JOINT MATERIALS** of the Specifications is amended as follows:

Section 212.02-Detail Requirements is amended by replacing **(a) 1. Asphalt Sealer** with the following:

- 1. **Asphalt sealer** shall conform to the requirements of ASTM D 6690 Type II.

And by replacing (h) with the following:

- (h) **Gaskets for pipe** shall conform to the following: Rubber gaskets for ductile iron pipe and fittings shall conform to the requirements of AWWA C111; rubber gaskets for all other pipe shall conform to the requirements of ASTM C443 and the ozone cracking resistance described in Section 237.02(a) 4 of the Specifications.

Preformed plastic gaskets shall conform to the requirements of AASHTO M198.

2-14-06 (SPCN)

GUIDELINES - ALL PROJECTS HAVING HYDRAULIC CEMENT CONCRETE (ALL CONCRETE ITEMS INCLUDING PIPE).
EXCEPTIONS: NONE.

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



(cm214b0b-0708) **SECTION 214—HYDRAULIC CEMENT** of the Specifications is amended as follows:

Section 214.02(a) Blended Hydraulic Cement is replaced with the following:

- (a) **Blended hydraulic cement** shall conform to the requirements of AASHTO M240, Type I(P) or Type I(S).

Section 214.02(b) Portland cements is amended by replacing 1. with the following:

- 1. The SO₃ content as specified in AASHTO C85 will be permitted, provided supporting data specified in AASHTO M85 are submitted to the Department for review and acceptance prior to use of the material.

Section 214.02(b) Portland cements is amended by deleting 3., 4., and 5.

Section 214.02—Detail Requirements is amended by adding the following:

- (c) **Expansive hydraulic cement** shall conform to the requirements of ASTM C 845 Type K.

1-28-08 (SPCN)

**GUIDELINES— PROJECTS REQUIRING HYDRAULIC CEMENT CONCRETE ADMIXTURES.
EXCEPTIONS: NONE.**

(cm215a2b-0708) **SECTION 215—HYDRAULIC CEMENT CONCRETE ADMIXTURES** of the Specifications is amended as follows:

Section 215.02(g) Fly ash is replaced with the following:

- (g) **Pozzolan** shall conform to Section 241 of the Specifications.

Section 215.02(j)—Corrosion Inhibitor is replaced with the following:

- (j) **Corrosion Inhibitor** shall contain a minimum 30 percent solution of calcium nitrite or other approved material.

Section 215.02—Materials is amended by adding the following:

- (k) **Metakaolin** shall conform to the requirements of AASHTO M321

1-28-08 (SPCN)

**GUIDELINES— PROJECTS REQUIRING WATER FOR USE WITH CEMENT OR LIME.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

(cm216b0b-0408) **SECTION 216—WATER FOR USE WITH CEMENT OR LIME** of the Specifications is amended as follows:

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



Section 216.02—Detail Requirements is amended to replace the fourth paragraph with the following:

Wash water from hydraulic cement concrete mixer operations will be permitted to be reused in the concrete mixture provided it is metered and is 25 percent or less of the total water. The total water shall conform to the acceptance criteria of ASTM C1602 Tables 1 and 2. A uniform amount of wash water shall be used in consecutive batches, with subsequent admixture rates adjusted accordingly to produce a workable concrete conforming to the Specifications.

6-12-06 (SPCN)

GUIDELINES - PROJECTS SELECTED BY THE DISTRICT CONSTRUCTION ENGINEER. EXCEPTIONS: NONE.

(cm217a0b-0197) **SECTION 217.09(b) READY-MIXED CONCRETE** of the Specifications is amended to replace the fourth paragraph with the following:

Each batch of concrete, retarded or unretarded, shall be delivered to the site of work and discharged within 2 1/2 hours from the instant the cement is introduced to the mix.

8-1-91, Reissued 1-1-97 (SPCN)

GUIDELINES - ALL PROJECTS REQUIRING HYDRAULIC CEMENT CONCRETE (ALL CONCRETE ITEMS INCLUDING PIPE). EXCEPTIONS: NONE.

(cm217h1b-0105) **SECTION 217—HYDRAULIC CEMENT CONCRETE** of the Specifications is amended as follows:

Section 217.02(a) is replaced with the following:

(a) **Cementitious materials** shall be a blend of mineral admixtures and portland cement or a blended cement. The portland cement or Type I(P) or Type 1(S) cement shall comply with Section 214 of the Specifications. Fly ash, granulated iron blast-furnace slag or silica fume conforming to Section 215 of the Specifications shall be used with the cement in a quantity sufficient to limit expansion to a maximum of 0.1percent at 56 days when tested in accordance with ASTM C-441. If the level of expansion is low enough to permit the use of portland cement only, then the cement shall be Type II. As a portion of the cementitious material, the fly ash content shall not exceed 30 percent for Class F, the ground granulated blast furnace slag content shall not exceed 50 percent, and the silica fume content shall not exceed 10 percent.

Section 217.03—Handling And Storing Materials is amended to include the following:

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



- (e) **Aluminum forms, chutes, buckets, pump lines, and other conveying devices** shall not be used if the aluminum comes in contact with concrete.

Section 217.05(c)—Mobile Production Plants is amended by replacing 4. with the following:

4. During discharge, the consistency, determined by the slump cone method (ASTM C143) on representative samples taken from the discharge of the mixer at random intervals, shall not vary by more than 1 inch.

Section 217.08(a)—Air and Consistency Tests is replaced with the following:

Air and Consistency Tests: Air and consistency tests will be performed by the Department prior to discharge into forms to ensure that specification requirements are consistently being complied with for each class of concrete. The sample secured for the tests will be taken after at least 2 cubic feet of concrete has been discharged from the delivery vehicle. The Contractor shall provide a receptacle conforming to the requirements of ASTM C31, Section 5.9, for the Department's use in obtaining its sample. If either determination yields a result that is outside the allowable range for air content or consistency, the following procedures will be used:

1. The Engineer will immediately perform a recheck determination. If the results confirm the original test results, the load will be rejected.
2. The Contractor's representative will be immediately informed of the test results.
3. The Contractor's representative shall notify the producer of the test results through a preestablished means of communication.

The Engineer may perform any additional tests deemed necessary and reject all remaining material that fails the tests.

Entrained air content will be determined in accordance with the requirements of ASTM C231 or C173. Acceptance or rejection will be based on the results obtained from these tests.

In general, a mixture that contains the minimum amount of water consistent with the required workability shall be used. Consistency will be determined in accordance with the requirements of ASTM C143. Adding cement to loads previously rejected for excessive water content or consistency will not be permitted.

Section 217.08(b)—Strength Tests is amended to replace the first paragraph with the following:

Strength Tests: The 28-day strengths specified in Table II-17 are the strengths used in the design calculations. The Engineer will verify design strengths by tests made during the progress of the work in accordance with the requirements of ASTM C39, C31, or C42. If the test results do not conform to the strengths specified in Table II-17, immediate steps shall be taken to adjust the design mixture and an investigation will be initiated to determine the acceptability of the concrete.

And to replace the first sentence of the third paragraph with the following:

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

When use of high-early-strength hydraulic cement concrete is required, it shall conform to the requirements of Table II-17 except that the 28-day strength shall be obtained in 7 days.

Table II-17 Requirements For Hydraulic Cement Concrete is replaced with the following:

**TABLE II-17
Requirements for Hydraulic Cement Concrete**

Class of Concrete	Design Min. Laboratory Compressive Strength at 28 Days (f _c) (MPa)	Aggregate Size No.	Nominal Max. Aggregate Size (mm)	Min. Grade Aggregate	Min. Cement Content (kg/cu m)	Maximum Water (kg water/ kg cement)	Consistency (mm of slump)	Air Content (%) ¹
35-60 Prestressed and other by 5's special designs ²	35-50 in units of 5's	57 or 68	25	A	375	0.40	0-100	4½ ±1½
35 General	35	57	25	A	375	0.45	50-100	6½ ±1½
30 General	30	57	25	A	375	0.45	50-100	6½ ±1½
30 Posts & rails ³	30	7	13	A	375	0.45	50-125	7 ±2
25 General	25	57	25	A	350	0.49	25-125	6 ±2
20 General	20	57	25	A	350	0.49	25-125	6 ±2
20 Paving	20	57	25	A	335	0.49	0-75	6 ±2
15 Massive or lightly reinforced	15	57	25	B	300	0.58	0-100	4 ±2
10 Massive unreinforced	10	57	25	B	250	0.71	0-75	4 ±2
20T Tremie seal	20	57	25	A	375	0.49	75-150	4 ±2
25 Latex hydraulic cement concrete ⁴	25	7 or 8	13	A	400	0.40	100-150	5 ±2
35 Silica fume concrete	35	7 or 8	13	A	400 ⁵	0.40	100-175	6 ±2

¹ When a high-range water reducer is used, the upper limit for entrained air may be increased by 1% and the slump shall not exceed 175 mm.

² When Class 35-60 concrete is used as the finished bridge deck riding surface, or when it is to be covered with asphalt concrete with or without waterproofing, the air content shall be 5½ ±1½%.

³ When necessary for ease in placement, aggregate No. 7 shall be used in concrete posts, rails, and other thin sections above the top of bridge deck slabs.

⁴ The latex modifier content shall be 13.25 liters per bag of cement. Slump shall be measured approximately 4½ minutes after discharge from the mixer.

⁵ Minimum 7% silica fume replacement by mass of the total cementitious material.

Note: The Contractor may substitute a higher class of concrete for that specified at his expense.

8-17-04 (SPCN)

GUIDELINES - PROJECTS REQUIRING MATERIALS FOR CURING CONCRETE.

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



EXCEPTIONS: NONE.

(cm220a0b-0105) **SECTION 220.02(d)—LIQUID MEMBRANE-FORMING COMPOUNDS** of the Specifications is amended by replacing 5. with the following:

- 5. The average moisture loss at 24 hours shall be not more than 0.20 kilograms per square meter of exposed surface. At 72 hours, it shall not be more than 0.30 kilograms per square meter.

8-17-04 (SPCN)

GUIDELINES - ALL PROJECTS HAVING GUARDRAIL.
EXCEPTIONS: NONE.

(cm221a0b-0801) **SECTION 221.02 DETAIL REQUIREMENTS** of the Specifications is amended to replace paragraph (h) with the following:

(h) **Offset block** shall conform to either of the following:

- 1. **Wood** conforming to the requirements of Section 236 and shall be pressure treated.
- 2. **Recycled material** - Offset blocks shall be made from a minimum of 40% recycled plastic waste. Such plastic shall be accumulated from post consumer and post industry waste. The material for these blocks shall have a minimum specific gravity of 0.950. The minimum compressive strength of these blocks in the lateral dimension shall be 11 megapascals. The maximum water absorption allowed over the theoretical lifetime of the block shall not exceed 5% by weight, when tested in accordance with ASTM D1037. Block attachment shall be in accordance with the Standard Drawings for wooden posts, standard GR-2, 2A W-Beam guardrail. The size tolerance in the direction of the bolt hole shall not be more than 6 millimeters. The blocks shall present a neat appearance and have plane surfaces. The blocks shall conform to the dimensions and tolerances listed on the Standard Drawings.

The manufacturer of the recycled plastic blocks must provide independent test results showing the material meets the velocity, acceleration and post-impact trajectory requirements of National Cooperative Highway Research Program (NCHRP) Report 350.

The manufacturer shall also certify that the material components of the completed blocks are resistant to the Subterranean Termites during its theoretical lifetime when tested in accordance with ASTM D3345. The theoretical lifetime is considered to be at least 20 years.

1-8-01c (SPCN)

GUIDELINES - PROJECTS HAVING EPOXY COATED REINFORCING STEEL.
EXCEPTIONS: NONE.

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



(cm223a0b-0201) **SECTION 223 - STEEL REINFORCEMENT** of the Specifications in amended to include the following:

223.02 (d) REINFORCING STEEL TO BE GALVANIZED: Steel shall conform to the requirements herein and shall be galvanized in accordance with requirements of ASTM A767M.

6-14-00 (SPCN)

GUIDELINES— WHEN DESIGNATED ON THE PLANS.
EXCEPTIONS: NONE.

(cm223b0b-0708) **SECTION 223—STEEL REINFORCEMENT** of the Specifications is amended to add the following:

(e) **Corrosion Resistant Reinforcement** shall conform to the requirements of one of the following standards:

- ASTM A1035/A1035M – Standard Specification for Deformed and Plain, Low-carbon, Chromium, Steel Bars for Concrete Reinforcement.
- ASTM A955/A955M - Standard and Specification for Deformed and Plain Stainless Steel Bars for Concrete Reinforcement. UNS* Designations: S24100, S30400, S31603, S31653, S32101, S32201, S32205
- AASHTO Designation: MP 13M/MP 13-04, Standard Specification for Stainless Steel Clad Deformed and Plain Round Steel Bars for Concrete Reinforcement.

* Unified Numbering System for Metals and Alloys

12-4-07 (SPCN)

GUIDELINES - PROJECTS HAVING STRUCTURAL STEEL.
EXCEPTIONS: NONE.

(cm226c0b-0801) **SECTION 226.02 (h) 3. STRUCTURAL STEEL** is amended to replace the first sentence with the following:

3. High strength fasteners (plain and coated) shall be subjected to a rotational-capacity test similar to the supplementary requirements of ASTM A325 and ASTM A490 and as modified by the following:

2-14-01 (SPCN)

GUIDELINES - PROJECTS WITH ALUMINUM ALLOY.
EXCEPTIONS: NONE.

(cm229d0b-1202) **SECTION 229 - ALUMINUM ALLOY** of the Specifications is amended as follows:

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



Section 229.02 (h) Sand castings is replaced by the following:

(h) **Sand castings** shall conform to the requirements of ASTM B26\ASTM B26M alloys 319-F, 319.0-T6, 356.0-F, 356.0-T6 or 535.0-F.

Section 229.02(l) Breakaway support couplings for light poles and sign posts is replaced with the following:

(l) **Breakaway support couplings for light poles and sign posts** shall conform to the requirements of ASTM B209M or B221M, alloy 6061-T6.

Section 229.02 (g) Permanent-mold castings is amended to replace the second sentence of the first paragraph with the following:

Cast aluminum alloy rail post shall conform to the requirements of ASTM B108, alloy A444.0.

10-1-02 (SPCN)

**GUIDELINES - PROJECTS INVOLVING THE USE AND REPAIR OF GALVANIZED MATERIALS.
EXCEPTIONS: NONE.**

(cm233a0b-0200) **SECTION 233.03 REPAIR OF GALVANIZED SURFACES** of the Specifications is replaced with the following:

Galvanizing surfaces that have been damaged or have uncoated areas shall be repaired in accordance with ASTM A780, except that repair materials shall not contain lead or cadmium.

4-13-99 (SPCN)

**GUIDELINES - PROJECTS WITH PAVEMENT MARKINGS.
EXCEPTIONS: NONE.**

(cm234a0b-0197) **SECTION 234.02 - DETAIL REQUIREMENTS** of the Specifications is amended to replace the second sentence with the following:

Glass beads shall be spherical in shape and shall conform to AASHTO M247 Type 1, except that at least 80% of the beads shall be round when tested in accordance with the requirements of ASTM D 1155 Procedure B.

2-26-96, Reissued 1-1-97 (SPCN)

**GUIDELINES - PROJECTS HAVING BEARING PADS.
EXCEPTIONS: NONE.**

(cm237a0b-0200) **SECTION 237 – BEDDING MATERIAL AND BEARING PADS** of the Specifications is amended as follows:

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



Section 237.02(a) Elastomeric Bearing Pads: is amended to replace the third paragraph with the following:

Laminated pads shall consist of alternate laminations of elastomer and hot-rolled steel sheets molded together as a unit. The bond between the elastomer and metal shall be such that failure shall occur in the elastomer and not between the elastomer and steel when tested for separation.

Section 237.02(a)1.a. Laminated pads is amended to replace the first sentence with the following:

The maximum compressive deflection shall be 7 percent of the total rubber thickness at the total load given in the plans.

4-12-99 (SPCN)

**GUIDELINES - PROJECTS REQUIRING PAVEMENT LINE MARKING.
EXCEPTIONS: NONE.**

(cm246a0b-0705) **SECTION 246.02(a) WHITE AND YELLOW PAVEMENT MARKING MATERIAL** of the Specifications is amended to replace the sixth paragraph with the following:

Initial nighttime color of yellow thermoplastic and yellow epoxy pavement marking material shall conform to the following CIE chromaticity coordinate requirements when tested in accordance with VTM 111.

Cie Chromaticity Coordinate Limits (initial with drop-on beads)

Color	1		2		3		4	
	x	y	x	y	x	y	x	y
Yellow	0.486	0.439	0.520	0.480	0.560	0.440	0.498	0.426

11-23-04 (SPCN)

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



—**200 SERIES SPs (SPECIAL PROVISIONS)**—

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



GUIDELINES – ALL PROJECTS.
EXCEPTIONS: NONE.

SM200A0B-1007

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 200—GENERAL

April 19, 2007

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

Section 200.04—Acceptance Procedures for Aggregates is amended by adding the following:

Crushed glass may be used for construction in drainage, embankment and backfilling applications, except for undercutting and foundation support for bridges, abutments, retaining walls and box culverts. The substitution of crushed glass will be permissive and limited to applications using material of size 3/8 inch and smaller where permitted for use in the Specifications.

Section 200.06(b)—Asphalt Concrete Plant Technician is replaced with the following:

(b) **Asphalt Plant Technician:** An Asphalt Plant Technician samples material and is capable of conducting any tests necessary to put the plant into operation.

Section 200.06(c)—Hydraulic Cement Concrete Plant Technician: is replaced with the following:

(c) **Concrete Plant Technician:** A Concrete Plant Technician performs necessary adjustments in the proportioning of material used to produce the specified concrete mixtures

Section 200.06(d)—Hydraulic Cement Concrete Batchers: is replaced with the following:

(d) **Concrete Batchers:** A Concrete Batchers performs the batching operation. The batchers implements adjustments only at the direction of a certified Concrete Plant Technician unless the batchers's certification authorizes otherwise.

Section 200.06(e)—Asphalt Paving Technician is replaced with the following:

(e) **Asphalt Field Technician:** An Asphalt Field Technician inspects asphalt concrete placement in accordance with applicable requirements.

Section 200.06(f)—Concrete Field Technician is replaced with the following:

(f) **Concrete Field Technician:** A Concrete Field Technician provides quality control of placement operations for hydraulic cement concrete in accordance with applicable requirements

Section 200.06 is amended by adding the following:

(g) **Asphalt Mix Design Technician:** An Asphalt Mix Design Technician is responsible for designing and adjusting mixes as needed, reviewing and approving all test results, having direct communication with the plant for making recommended adjustments and capable of conducting any tests necessary to put the plant into operation.

(h) **Aggregate Properties Technician:** An Aggregate Properties Technician conducts all aggregate tests on aggregate used in asphalt concrete in accordance with applicable requirements.

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

- (i) **Slurry Surfacing Technician:** A Slurry Surfacing Technician inspects the placement of emulsified asphalt slurry seal and latex modified emulsion treatment (Micro-surfacing) in accordance with applicable requirements.
- (j) **Surface Treatment Technician:** A Surface Treatment Technician inspects the placement of single seal and modified (blotted) seal coats in accordance with applicable requirements.

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

**GUIDELINES - WHEN REQUESTED BY THE DESIGNER:
EXCEPTIONS: NONE.**

SM208A0B-0900

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
CRUSHED HYDRAULIC CEMENT CONCRETE (CHCC)
(USED AS SUBBASE AND AGGREGATE BASE MATERIAL)

May 10, 2000

SECTION 208-SUBBASE AND AGGREGATE BASE MATERIAL of the Specifications is amended as follows:

Section 208.02 - Materials is replaced with the following:

- (a) **Subbase materials** may consist of any mixture of natural or crushed gravel, crushed stone or slag, crushed hydraulic cement concrete (CHCC), natural or crushed sand; with or without soil mortar. Subbase material may be used in a stabilized or unstabilized form.
- (b) **Aggregate base material** may be designated as Type I or Type II as follows: **Type I** shall consist of crushed stone, crushed slag, crushed hydraulic cement concrete (CHCC), crushed gravel or any combination of these material: with or without soil mortar or other admixtures. Crushed gravel shall consist of particles of which at least 90 percent by mass of the material retained on the 2.00 millimeter sieve shall have at least one face fractured by artificial crushing. **Type II** shall consist of gravel, stone, or slag screening; fine aggregate and crushed coarse aggregate; sand-clay-gravel mixtures; crushed hydraulic cement concrete; or any combination of these materials; with or without soil mortar or other admixtures. Aggregate base materials Type I or II may be used in a stabilized or unstabilized form.
- (c) **Crushed Hydraulic Cement Concrete** shall not be used as Subbase or aggregate base material when any subsurface drainage system, such as standard underdrains (UD-4 or UD-5) and /or a stabilized open graded aggregate drainage layer (OGDL) is present, except when the CHCC is cement stabilized.

Section 208.03 (b) is amended to add the following paragraph after Table II-11:

Plasticity: Subbase and aggregate base materials shall be either non-plastic (PI=0) or shall conform to the requirements of Table II-11 when tested in accordance with VTM-7. If the material is classified as non-plastic (PI=0), in accordance with VTM-7, the Liquid Limit requirement will be waived. Exceptions to this provision are noted as follows:

- 1. 100% CHCC and 20% or less CHCC Blends will be tested and subject to penalty as noted in Table II-11 for the plasticity index, excluding Liquid Limit penalties.
- 2. Greater than 20% CHCC Blends will follow testing

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



GUIDELINES as set forth in Section 208.06 (b) for Atterburg limits.

Section 208.03 (g) is added as follows:

Deleterious Material: The quantity of deleterious materials present in stockpiles of Crushed Hydraulic Cement Concrete, to be used in blending with virgin aggregates or as 100% CHCC, shall not exceed the following values:

MATERIAL	PERCENT BY MASS
Asphalt Concrete	5.0
Glass and Metals	5.0
Wood, Plastic, Brick and other foreign matter	0.5

Section 208.04 - Job-Mix Formula is amended to designate the first paragraph as (a).

Section 208.04(b) is added as follows:

(b) A job mix formula shall be submitted for the engineer's approval for each category of CHCC mixture used. Designated categories shall indicate the mixture percentage of CHCC used according to the following criteria:

(1) **Category 1:** 100% CHCC

Category 2: 20% or less CHCC (20%)

Category 3: greater than 20% CHCC but less than 100% CHCC (>20%<100%)

(2) The quantity of CHCC in the mix shall be expressed as a percentage of the total mix.

Section 208.06 - Job-Mix Formula is amended to designate the first paragraph as (a).

Section 208.06(b) is added as follows:

(b) This section applies specifically to the use of Crushed Hydraulic Cement Concrete (CHCC) mixtures. All provisions for acceptance of these products shall conform to the same criteria as in 208.06(a) with the following additions:

1) **100% CHCC** shall conform to the requirements of this special provision.

2) **20% or Less CHCC Blends** shall conform to the requirements of this special provision.

3) **Greater than 20% CHCC Blends** shall conform to the following:

a. The virgin aggregate portion of the blend will be tested for Atterberg limits, prior to CHCC blending.

b. Price adjustments for Liquid Limit and the Plasticity Index of the virgin aggregates used in the blend with CHCC shall be in accordance with Table II-11.

c. No additional testing for Liquid Limit or Plasticity Index will be required on the final blended product.

4) All shipments of products containing CHCC must be designated on the shipping ticket (scale ticket) by the use of the letter "R". Examples: [22R, 21AR and 21BR] for: Aggregate Base material, Type I or Subbase materials.

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



GUIDELINES— PROJECTS REQUIRING SUPERPAVE ASPHALT CONCRETE. USE WITH SPECIAL PROVISION S315A. [INCLUDE SPECIAL PROVISION S200A TECHNICIAN AND BATCHER CERTIFICATION] EXCEPTIONS: NONE.

SM211I6B-1007

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**SECTION 211 ASPHALT CONCRETE MIXTURES
(SUPERPAVE)**

December 1, 2006

SECTION 211 of the Specifications is completely replaced by the following:

SECTION 211.01 DESCRIPTION - Asphalt concrete shall consist of a combination of mineral aggregate and asphalt material mixed mechanically in a plant specifically designed for such purpose.

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

Mix Type	Equivalent Single Axle Load (ESAL) Range (millions)	Asphalt Performance Grade (PG)	Aggregate Nominal Maximum Size*
SM-9.0A	0 to 3	64-22	9.5 mm
SM-9.0D	3 to 10	70-22	9.5 mm
SM-9.0E	Above 10	76-22	9.5 mm
SM-9.5A	0 to 3	64-22	9.5 mm
SM-9.5D	3 to 10	70-22	9.5 mm
SM-9.5E	above 10	76-22	9.5 mm
SM-12.5A	0 to 3	64-22	12.5 mm
SM-12.5D	3 to 10	70-22	12.5 mm
SM-12.5E	above 10	76-22	12.5 mm
IM-19.0A	less than 10	64-22	19.0 mm
IM-19.0D	10 and above	70-22	19.0 mm
BM-25.0 A	all ranges	64-22	25.0 mm
BM-25.0 D	Above 10	70-22	25.0 mm

Asphalt concrete shall conform to the requirements for the type designated.

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

SECTION 211.02 MATERIALS

- (a) Asphalt materials shall conform to the requirements of Section 210 of the Specifications except asphalt cement materials shall be Performance Graded (PG) conforming to the requirements of AASHTO Provisional Specification MP-1. In addition, asphalt mixtures with the E designation shall meet the asphalt cement requirements in Section 211.04(e)1.
- (b) Coarse aggregate shall be Grade A or B, conforming to all requirements (except grading) of Section 203 of the Specifications for quality. In addition, the coarse aggregate sizes retained on and above the 4.75 mm sieve shall meet the coarse aggregate requirements in the aggregate properties table below. Flat and Elongated (F&E) shall be tested in accordance

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



with ASTM D 4791 and coarse aggregate angularity (CAA) shall be tested, on crushed gravel only, in accordance with ASTM D 5821.

- (c) Fine aggregate shall conform to the requirements (except grading) of Section 202 of the Specifications for quality and the fine aggregate requirements in the aggregate properties table below. Fine aggregate angularity (FAA) shall be tested in accordance with AASHTO T 304 (Method A) and sand equivalent (SE) in accordance with AASHTO T 176.

**T A B L E II - 12A
AGGREGATE PROPERTIES**

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

*10 percent measured at 5:1 on maximum to minimum dimension.

- (d) After performing a gradation;
 1. If 10 percent or more of the material is retained on the 4.75 mm sieve, then that portion will be tested in accordance with Section 211.02 (b) herein.
 2. If 10 percent or more of the material passes the 4.75 mm sieve, then that portion will be tested for Sand Equivalent.
 3. If 10 percent or more of the material passes the 2.36 mm sieve, then that portion will be tested for Fine Aggregate Angularity.
- (e) Fine or coarse aggregates that tend to polish under traffic will not be permitted in any final surface exposed to traffic except in areas where the two-way average daily traffic is less than 750 vehicles per day and as permitted elsewhere in these specifications.
- (f) Mineral filler shall conform to the requirements of Section 201 of the Specifications.

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



- (g) Aggregate for asphalt concrete shall be provided in sufficient sizes to produce a uniform mixture. The Contractor shall indicate on the proposed job-mix formula, the separate approximate sizes of aggregate to be used.

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

- (h) An antistripping additive shall be used in all asphalt mixes. It may be hydrated lime in accordance with the requirements of Section 211.02 (i) of the Specifications or an approved chemical additive from the Department's approved list found in the Materials Division's Manual of Instructions, or a combination of both.

The mixture shall produce a tensile strength ratio (TSR) value not less than 0.80 for the design and production tests. The TSR value shall be determined in accordance with AASHTO T283, including a freeze-thaw cycle, (100 mm specimens compacted with Marshall hammer or 95 x 150 mm specimens when compacted with a gyratory), except that the 16 hour curing time requirement and 72 to 96 hour storage period will be waived. Design tests shall use the same materials that are to be used in the production mix and shall be conducted in a Department approved laboratory.

When a chemical additive is used, it shall be added to the asphalt cement prior to introduction into the mix. Any chemical additive or particular concentration of chemical additive found to be harmful to the asphalt material or which changes the viscosity of the original asphalt cement more than 400 poises or the penetration more than -4 or +10 shall be changed to obtain compliance with these values.

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

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

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

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

- (j) Reclaimed Asphalt Pavement (RAP) material may be used as a component material of asphalt mixtures in conformance with the following:
1. Asphalt surface, intermediate, and base mixtures containing RAP shall use the PG grade of asphalt cement as indicated in Table II-14A.
 2. The final asphalt mixture shall conform to the requirements for the type specified.
 3. During the production process, RAP material shall not be allowed to contact open flame.

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

4. RAP material shall be handled, hauled and stored in a manner that will minimize contamination. Further, the material shall be stockpiled and used in such manner that variable asphalt contents and asphalt penetration values will not adversely affect the consistency of the mixture.
5. RAP shall be processed in such a manner as to ensure that the maximum top size introduced into the mix shall be 50 millimeters. The Engineer may require smaller sized particles be introduced into the mix if the reclaimed particles are not broken down or uniformly distributed throughout the mixture during heating and mixing.

SECTION 211.03 JOB-MIX FORMULA - The Contractor shall submit for the Engineer's approval, a job-mix formula for each mixture to be supplied. The job-mix formula shall be within the design range specified. The job-mix formula shall establish a single percentage of aggregate passing each required sieve, a single percentage of asphalt material to be added to the aggregate, a temperature at which the mixture is to be produced and a temperature at which the mixture is to be compacted for SUPERPAVE testing according to the requirements of AASHTO PP28-99. Each approved job-mix formula shall remain in effect, provided the results of tests performed on material currently being produced consistently meet the requirements of the job-mix for grading, asphalt content, temperature, SUPERPAVE compaction results, and the requirements of Section 315 of the Specifications.

- (a) SUPERPAVE mixes shall be designed and controlled according to the requirements of AASHTO PP28-99. The contractor shall have available all of the equipment outlined in AASHTO TP-4 (section 4-6) and a Department certified Asphalt Mix Design Technician. The SUPERPAVE Gyratory Compactor (SGC) shall be one from the approved list maintained by the Materials Division. The SUPERPAVE mixes shall conform to the criteria outlined in Table II-13 and Table II-14. Section 7.1.2 of AASHTO PP-2-99 shall be modified such that the compaction temperature is as specified in Section 211.03 (d) 6. The Superpave mixture shall be compacted in a gyratory compactor with an internal angle of $1.16 \pm 0.02^\circ$. The internal angle shall be measured and calibrated using a cold (non-mix) device.

The mixture shall be designed and compacted at the N design gyration specified in Table II-14. The N max requirement shall be verified as part of the design process by compacting a minimum of 2 specimens at the design asphalt content.

The Superpave mixture shall be compacted in a gyratory compactor with an internal angle of $1.16 \pm 0.02^\circ$. The internal angle shall be measured and calibrated using a cold (non-mix) device.

- (b) In conjunction with the submittal of a job-mix formula, the Contractor shall submit complete SUPERPAVE design test data, ignition furnace calibration data according to VTM-102 prepared by an approved testing laboratory and viscosity data or supplier temperature recommendations for the asphalt cement if different from Section 211.03(d)6.

**T A B L E II-13
ASPHALT CONCRETE MIXTURES-DESIGN RANGE
PERCENTAGE BY WEIGHT PASSING SQUARE MESH SIEVES**

Mix Type	50	37.5	25.0	19.0	12.5	9.5	4.75	2.36	.600	.300	.075
SM-9.0 A,D,E					100*	90-100	90 max	47-67			2-10
SM-9.5 A,D,E					100*	90-100	80 max	38-67			2-10
SM-12.5 A,D,E				100	95-100	90 max	--	34-50			2-10
IM-19.0 A,D			100	90-100	90 max	--	--	28-49			2-8
BM-25.0 A,D		100	90-100	90 max	--	--	--	19-38			1-7

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



C (Curb Mix) 100 92-100 70-75 50-60 28-36 15-20 7-9

Legend: SM = Surface Mixture; IM = Intermediate Mixture; BM = Base Mixture; C = Curb Mixture
 * A production tolerance of 1% will be applied to this sieve, regardless of the number of tests in the lot.

- (c) Three trial blends for gradation shall be run at 1 asphalt content. An aggregate blend that was previously developed and approved as a job mix formula at a higher gyration level, may be used for subsequent year's mix designs which require a lower gyration level in lieu of developing three new trial blends.
- (d) The SUPERPAVE design test data shall include but not be limited to the following information:
1. Grading data for each aggregate component of 3 trial blends shall be submitted to the Department. The data for the mixture will show percent passing for sieves 50 mm, 37.5 mm, 25.0 mm, 19.0 mm, 12.5 mm, 9.5 mm, 4.75 mm, 2.36 mm, 1.18 mm, 600 μ m, 300 μ m, 150 μ m and 75 μ m. The grading shall be reported to the nearest 1.0 percent except the 75 μ m sieve shall be reported to nearest 0.1 percent.
 2. The percentage of each aggregate component as compared to the total aggregate in the asphalt mixture. The specific gravity and aggregate properties for coarse and fine aggregates defined in Sections 211.02 (b) and (c), including flat and elongated properties, for each aggregate component or for the total aggregates used in the mixture shall be reported. Aggregate properties (except Sand Equivalent) shall be reported for RAP portions of the mixture. The aggregate specific gravity of the RAP shall be the effective aggregate specific gravity calculated from the results of AASHTO T 209 and VTM-102.
 3. The aggregate grading in the asphalt mixture shall be determined by igniting or extracting the asphalt from a laboratory prepared sample. The laboratory sample shall be batched on the basis of component percentages as indicated in (d) 2. and at the proposed job-mix asphalt content. The aggregate shall be obtained in accordance with the requirements of VTM-102 or (VTM-36 when approved). Sieves noted in (d) 1. shall be reported, beginning with the top size for that mix.
 4. The following volumetric properties of the compacted mixture [calculated on the basis of the mixture's maximum specific gravity determined by AASHTO T-209 (mixture must be aged in accordance with AASHTO PP-2-99) and the bulk specific gravity of the specimens determined by AASHTO T-166, Method A] for each asphalt content tested. Properties shall be determined and reported in accordance with the requirements of AASHTO PP28-99.
 - a. Voids in total mix (VTM)
 - b. Voids in mineral aggregate (VMA)
 - c. Voids filled with Asphalt (VFA)
 - d. Fines/Asphalt ratio (F/A)
 5. The value of the maximum specific gravity of the asphalt mixture used in (c) 4. shall be reported to 3 decimal places.
 6. The mixing and compaction temperature for testing shall be as follows:

For mix designation A and all Base mixes, the mix temperature shall be 145⁰ C to 155⁰ C and the compaction temperature shall be 140⁰ C to 145⁰ C.

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

For mix designation D, the mix temperature shall be 155⁰ C to 160⁰ C and the compaction temperature shall be 145⁰ C to 150⁰ C.

In cases involving PG 76-22 or modified binders, the temperatures shall be based on documented supplier's recommendations.

7. Field correction factor. The field correction factor is determined by subtracting the bulk specific gravity of the aggregate from the effective specific gravity of the aggregate at the design asphalt content.
 8. Permeability test data shall be submitted in accordance with VTM-120 using either single point verification or the regression method for each surface mix having a different gradation. If the average of the permeability results from the single point verification method exceeds 150×10^{-5} cm/sec, or if the regression method predicts a permeability exceeding 150×10^{-5} cm/sec at 7.5% voids, the contractor shall redesign the mixture to produce a permeability number less than 150×10^{-5} cm/sec.
- (e) The SUPERPAVE design test data shall be plotted on graphs provided by the software of the test equipment manufacturer and shall show that the proposed job-mix formula conforms to the requirements of the mix type.
- (f) A determination will be made that any asphalt concrete mixture being produced conforms to the job-mix formula approved by the Department. The Department will test the mixture using samples removed from production. The following tests will be run to determine the properties listed:

1. Asphalt Content	VTM-102, (VTM-36 when approved)
2. Gradation	AASHTO T-30
3. SUPERPAVE Properties	AASHTO PP28-99
4. Asphalt Cement Material	AASHTO TP-48 or T-201

At the discretion of the Engineer, the Department will perform rut testing in accordance with VTM-110. If the results of the rut testing do not conform to the table below, the Engineer reserves the right to require adjustments to the job mix formula.

<u>Mix Designation</u>	<u>Maximum Rut Depth, mm</u>
A	7.0
D	5.5
E, (M), (S)	3.5

In the event the Department determines that the mixture being produced does not conform to the approved job mix formula and volumetric properties in Table II-14 based on Department or Contractor's test results, the Contractor shall immediately make corrections to bring the mixture into conformance with the approved job-mix formula or cease paving with that mixture.

Subsequent paving operations, using either a revised or other job-mix formula which has not been verified as described herein, shall be limited to a test run of 100 to 300 metric tons of mixture if such material is to be placed in Department work. No further paving for the Department using that specific mixture is to occur until the acceptability of the mixture being produced has been verified using the 100 to 300 metric ton run constraint.

Asphalt concrete mixtures used in surface, intermediate, and base courses shall conform to the following requirements when tested in accordance with the requirements of AASHTO PP28-99:

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



TABLE II-14
MIX DESIGN CRITERIA

Mix Type	VTM (%) Production (Note 1)	VFA (%) Design	VFA (%) Production (Note 2)	Min. VMA (%)	Fines/Asphalt Ratio (Note 3)	Number of Gyration			Density (%) at N Initial
						N Design	N Initial	N Max	
SM-9.0 A ^{Notes 1,2,3}	2.0-5.0	75-80	70-85	16	0.6-1.3	65	7	100	≤ 90.5
SM-9.0 D ^{Notes 1,2,3}	2.0-5.0	75-80	70-85	16	0.6-1.3	65	7	100	≤ 89.0
SM-9.0 E ^{Notes 1,2,3}	2.0-5.0	75-80	70-85	16	0.6-1.3	65	7	100	≤ 89.0
SM-9.5 A ^{Notes 1,2,3}	2.0-5.0	73-79	68-84	15	0.6-1.2	65	7	100	≤ 90.5
SM-9.5 D ^{Notes 1,2,3}	2.0-5.0	73-79	68-84	15	0.6-1.2	65	7	100	≤ 89.0
SM-9.5 E ^{Notes 1,2,3}	2.0-5.0	73-79	68-84	15	0.6-1.2	65	7	100	≤ 89.0
SM-12.5 A ^{Notes 1,2,3}	2.0-5.0	70-78	65-83	14	0.6-1.2	65	7	100	≤ 90.5
SM-12.5 D ^{Notes 1,2,3}	2.0-5.0	70-78	65-83	14	0.6-1.2	65	7	100	≤ 89.0
SM-12.5 E ^{Notes 1,2,3}	2.0-5.0	70-78	65-83	14	0.6-1.2	65	7	100	≤ 89.0
IM-19.0 A ^{Notes 1,2,3}	2.0-5.0	69-76	64-81	13	0.6-1.2	65	7	100	≤ 90.5
IM-19.0 D ^{Notes 1,2,3}	2.0-5.0	69-76	64-81	13	0.6-1.2	65	7	100	≤ 89.0
BM-25.0 A ^{Notes 2,3,4}	2.0-5.0	67-75	62-83	12	0.6-1.3	65	7	100	≤ 89.0
BM-25.0 D ^{Notes 2,3,4}	2.0-5.0	67-75	62-83	12	0.6-1.3	65	7	100	≤ 89.0

- Note 1:** Asphalt content should be selected at 4.0 percent Air Voids,
- Note 2:** During production of an approved job mix, the VFA shall be controlled within these limits.
- Note 3:** Fines-Asphalt Ratio is based on effective asphalt content.
- Note 4:** Base mix shall be designed at 3.5 percent air voids. BM-25.0 A shall have a minimum asphalt content of 4.4 percent, unless otherwise approved by the Engineer. BM-25.0 D shall have a minimum asphalt content of 4.6 percent, unless otherwise approved by the Engineer.

Asphalt surface, intermediate, and base mixtures containing RAP shall use a PG asphalt cement according to Table II-14A:

TABLE II-14A
RECOMMENDED PERFORMANCE GRADE OF ASPHALT

Mix Type	Percentage RAP in Mix	
	0.0 - 20.0	Over 20.0
SM-9.0A, SM-9.5A, SM-12.5A	PG 64-22	PG 58-28
SM-9.0D, SM-9.5D, SM-12.5D	PG 70-22	PG 64-28
SM-9.0E, SM-9.5E, SM-12.5E	PG 76-22	PG 70-28
IM-19.0A	PG 64-22	PG 58-28
IM-19.0D	PG 70-22	PG 64-28
BM-25.0A	PG 64-22	PG 64-22*
BM-25.0D	PG 70-22	PG 70-22*

*BM-25.0A mixes using more than 25% RAP shall use PG 58-22 and BM-25.0D mixes using more than 25% RAP shall use PG 64-22.

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



Based on rut testing performed by the Department and/or field performance of the job-mix, the Engineer reserves the right to require adjustments to the job-mix formula.

SECTION 211.04 ASPHALT CONCRETE MIXTURES shall conform to the requirements of Table II-14 and the following:

- (a) **Types SM-9.0A, SM-9.0D, SM-9.0E, SM-9.5A, SM-9.5D, SM-9.5E, SM-12.5A, SM-12.5D, and SM-12.5E** asphalt concrete shall consist of crushed stone, crushed slag, or crushed gravel and fine aggregate, slag or stone screenings or a combination thereof combined with asphalt cement.

NOTE: For all surface mixes, except where otherwise noted, no more than 5 percent of the aggregate retained on the 4.75 mm sieve and no more than 20 percent of the total aggregate may be polish susceptible. At the discretion of the Engineer, a SM-9.5AL or SM-12.5AL may be specified and polish susceptible aggregates may be used (without percentage limits).

- (b) **Types IM-19.0A and IM-19.0D** asphalt concrete shall consist of crushed stone, crushed slag, or crushed gravel and fine aggregate, slag or stone screenings or a combination thereof combined with asphalt cement.

NOTE: At the discretion of the Engineer, an intermediate mix may be designated as either a SM-19.0A or SM-19.0D. When designated as such, no more than 5 percent of the aggregate retained on the 4.75 mm sieve may be polish susceptible. All material passing the 4.75 mm sieve may be polish susceptible.

- (c) **Types BM-25.0A and BM-25.0D** asphalt concrete shall consist of crushed stone, crushed slag, or crushed gravel and fine aggregate, slag or stone screenings or a combination thereof combined with asphalt cement.

- (d) **Type C (Curb Mix)** Asphalt Concrete shall consist of a blend of No. 78 or No. 8 crushed aggregate, No. 10 crushed aggregate, fine aggregate, mineral filler and a stabilizing additive from the Department's approved list; combined with 6.0 – 9.0 percent of PG 64-22. This mix does not require a volumetric mix design or volumetric testing under the Superpave system.

- (e) Asphalt mixtures Type SM-9.5, SM-12.5, IM-19.0, BM-25.0, and BM-37.5 may be designated (M) for modified, (S) for stabilized or (M) or (S) for Contractor's option. Asphalt mixtures with the E designation may be modified, but shall not be stabilized.

1. Type (M) asphalt mixtures shall consist of mixes incorporating a neat asphalt material with polymer modification meeting the requirements of a PG 76-22 and have a Rolling Thin Film Oven Test residue elastic recovery at 25° C of a minimum 70 percent. Modified mixtures shall be designated with a (M) following the standard mix designation. Type (M) asphalt mixtures shall not be permitted to exceed 15 percent reclaimed asphalt pavement material.
2. Type (S) asphalt mixtures shall consist of mixes incorporating a stabilizing additive from the Department's approved list. These mixes shall be designated with an (S) following the standard mix designation. The minimum required additive shall be as specified on the approved list.

SECTION 211.05 TESTING - The Contractor shall provide the quality control and assurance necessary for the Department to determine conformance with the required grading, asphalt content and temperature properties for asphalt concrete.

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

The Contractor shall have a VDOT certified Asphalt Mix Design Technician for designing and adjusting mixes as necessary. The Asphalt Mix Design Technician or Asphalt Plant Technician may perform testing of asphalt mixes. The Asphalt Mix Design Technician shall be responsible for reviewing and approving the results of all testing. The Asphalt Mix Design Technician shall be available and have direct communication with the plant for making necessary adjustments in the asphalt concrete mixes at the mixing plant. The Asphalt Mix Design Technician and Asphalt Plant Technician shall each be capable of conducting any tests necessary to put the plant into operation, however, it shall be the responsibility of the Asphalt Mix Design Technician to produce a mixture within the requirements of these specifications. The Department will award certification.

The Contractor shall maintain all records and test results associated with the material production and shall maintain appropriate current quality control charts. All test results and control charts shall be available for review by the Engineer.

The Contractor shall execute a quality control plan of process inspections and tests, including the determination of SUPERPAVE properties. The results of the SUPERPAVE tests shall be used, along with the results of other quality control efforts, to control the quality of the mixture being produced.

The Contractor shall perform at least one field SUPERPAVE test per day per mix or per 1000 metric tons per mix if more than 1000 metric tons of a mix is produced per day. In the event less than 300 metric tons of asphalt mixture is produced under a single job mix formula in a day, field SUPERPAVE testing will not be required. This tonnage shall be added to subsequent production. When the accumulated tonnage exceeds 300 metric tons, minimum testing frequency shall apply. Field SUPERPAVE test results shall be plotted and displayed in control chart form in the plant immediately following the completion of each individual test. The tests shall determine asphalt content, VTM, VMA, VFA and F/A in percent to the nearest 0.1 percent. The Department will conduct onsite inspections so the Contractor's Asphalt Mix Design Technician can demonstrate knowledge of SUPERPAVE mix design and production requirements on Department supplied mixture.

Aggregate specific gravity and aggregate property tests shall be conducted by a Department certified Aggregate Properties Technician or Asphalt Mix Design Technician on each aggregate component (including RAP) or total aggregate mixture once at design and once prior to beginning production in each calendar year. Sand Equivalent shall not be performed on RAP. Additionally, for each 50,000 metric tons of each aggregate size used at each plant, aggregate specific gravity and aggregate property test shall be reported on each aggregate component or the total aggregate mixture. Otherwise, if the total blend (cold feed) is used to obtain aggregate specific gravity and aggregate properties, then these tests shall be run for each 50,000 metric tons of the total blend.

Field Superpave tests shall be performed to N design gyration as specified in Table II-14. At the Engineer's discretion, the N max requirement may be checked.

SECTION 211.06 TESTS - The Department may sample materials entering into the composition of the asphalt concrete, the mixture or the completed pavement. The Contractor shall cooperate with the Engineer in obtaining these samples. When samples are obtained from the pavement, the resulting voids shall be filled and refinished by the Contractor without additional compensation.

When asphalt cement is extracted and recovered in accordance with AASHTO T170, the recovered asphalt cement shall have the following penetration.

Mix Type	Recovered Penetration
SM-9.0A, 9.5A, 12.5A	min 35
SM-9.0D, 9.5D, 12.5D	min 25
IM-19.0A	min 35
IM-19.0D	min 25

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



BM-25.0A	min 35
BM-25.0D	min 25

NOTE: Recovered Penetration and Ductility shall not be performed on SM-9.5E, 12.5E, and all (M) and (S) mixes.

Abson recovery samples that fail recovered penetration shall be PG graded according to AASHTO M320. If the samples meet the required grade specified in Section 211.01, they shall be deemed acceptable.

When the Department performs PG grading on a Contractor's liquid asphalt storage tank, the Engineer will notify the Asphalt Concrete Producer and Binder Supplier if tests indicate that the binder properties of the asphalt material differs from the approved job-mix. It will be the responsibility of the Asphalt Concrete Producer and Binder Supplier to determine corrective action with the approval of the Engineer.

SECTION 211.07 PLANT INSPECTION - The preparation of asphalt concrete mixtures will be accepted by a quality assurance plan. The Contractor shall provide a laboratory as specified in Section 106.07 of the Specifications. In addition, the Contractor shall have all Laboratory Scales and Gyrotory Compactors calibrated once a year by an independent source. The Contractor shall maintain the calibration records for 3 years.

SECTION 211.08 ACCEPTANCE - Acceptance shall be made under the Department's quality assurance program which includes the testing of production samples by the Contractor and monitor samples by the Department. Sampling and testing for the determination of grading, asphalt cement content and temperature shall be performed by the Contractor, and the Department will perform independent monitor checks at a laboratory of its discretion. The Contractor shall provide copies of such test results to the Department on forms furnished by the Department. Where the Contractor's test results indicate that the mixture conforms to the gradation, asphalt cement content and mix temperature requirements of the Specifications, the mixture will be acceptable for these properties; however, nothing herein will be construed as waiving the requirements of Sections 106.06, 200.02, 200.03, and 315 of the Specifications or relieving the Contractor of the obligation to furnish and install a finished functional product that conforms to the requirements of the Contract. In the event a statistical comparative analysis of the Contractor's test results and the Department's monitor tests indicate a statistically significant difference in the results and either of the results indicate that the material does not conform to the grading and asphalt cement content requirements of the Specifications, an investigation will be made to determine the reason for the difference. In the event it is determined from the investigation that the material does not conform to the requirements of the Contract, price adjustments will be made in accordance with the requirements of Section 211.09 of the Specifications.

Acceptance for gradation and asphalt cement content will be based upon a mean of the results of four tests performed on samples taken in a stratified random manner from each 2000 metric ton lot (4000 metric ton lots may be used when the normal daily production of the source from which the material is being obtained is in excess of 2000 metric tons). Unless otherwise approved, samples shall be obtained from the approximate center of truckloads of material. Any statistically acceptable method of randomization may be used to determine the time and location of the stratified random sample to be taken; however, the Department shall be advised of the method to be used prior to beginning production.

A lot will be considered to be acceptable for gradation and asphalt content if the mean of the test results obtained is within the tolerance allowed from the job-mix formula, as shown in Table II-15.

The temperature of the mixture at the plant shall be controlled to provide load to load uniformity during changing weather conditions and surface temperatures. The maximum temperature of mix

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



designations A and D, and Base mixes, shall not exceed 175⁰ C, unless otherwise directed by the Engineer. The maximum temperature as recommended by the supplier shall not be exceeded for an E, (M), or (S) designated mix.

In the event the job-mix formula is modified within a lot, the mean test results of the samples taken will be compared to the applicable process tolerance shown in Table II-15.

**TABLE II-15
PROCESS TOLERANCE**

Tolerance on Each Laboratory Sieve and Asphalt Content - Percent Plus and Minus

Number Tests	Top Size	37.5	25.0	19.0	12.5	9.5	4.75	2.36	600	300	75	A.C.
		mm	mm	mm	mm	mm	mm	mm	µm	µm	µm	
1	0.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	6.0	5.0	2.0	.60
2	0.0	5.7	5.7	5.7	5.7	5.7	5.7	5.7	4.3	3.6	1.4	0.43
3	0.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	3.3	2.8	1.1	0.33
4	0.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	2.5	1.0	0.30
8	0.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.1	1.8	0.7	0.21

Note: The Top Size is defined as the sieve that has 100% passing as defined in Table II-13.

Asphalt content will be measured as extractable asphalt or weight after ignition.

Field SUPERPAVE tests will be performed by the Department in accordance with the requirements of AASHTO PP28-99 during the production of the approved job-mixes designed by the SUPERPAVE method. Aging, as described in PP-2-99, shall not be performed. Should any Field SUPERPAVE test fail to meet the specified limits contained in Table II-14, the Department may require that production be stopped until necessary corrective action is taken by the Contractor. The Engineer will investigate and determine the acceptability of material placed and represented by failing Field SUPERPAVE test results.

Should visual examination by the Engineer reveal that the material in any load, or portion of the paved roadway, is obviously contaminated or segregated, that load, or portion of the paved roadway, will be rejected without additional sampling or testing of the lot. In the event it is necessary to determine the gradation or asphalt content of the material in any load, or portion of the paved roadway, samples will be taken, tested, and the results compared to the requirements of the approved job-mix formula. The results obtained in the testing will apply only to the material in question.

SECTION 211.09 ADJUSTMENT SYSTEM - In the event a lot of material does not conform to the acceptance requirements of Section 211.08, adjustment points will be determined as follows:

Sieve	Adjustment Points for Each 1% that The Gradation is Outside the Process Tolerance Permitted In Table II-15 (Applied in 0.1 increments)
37.5 mm	1
25.0 mm	1
19.0 mm	1
12.5 mm	1
9.5 mm	1
4.75 mm	1

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



2.36 mm	1
600 µm	2
300 µm	2
75 µm	3

One adjustment will be applied for each 0.1 percent that the material is out of the process tolerance for asphalt content.

In the event the total adjustment for a lot is greater than 25 points, the failing material shall be removed from the road. In the event the total adjustment is 25 points or less and the Contractor does not elect to remove and replace the material, the unit price for the material will be reduced 1 percent of the unit price bid for each adjustment point. The adjustment will be applied to the tonnage represented by the sample or samples. In the event adjustment points are applied against 2 successive lots, plant adjustment shall be made prior to continuing production.

The Contractor shall control the variability of his product in order to furnish a uniform mix. When the quantity of any one-type material furnished a project exceeds 3628 metric tons, the variability of the total quantity furnished will be determined on the basis of the standard deviation for each sieve size and the asphalt content. In the event the standard deviation is within the ranges shown in Table II-16, the unit bid price for the material will be adjusted as indicated herein. Adjustments for standard deviation computations will not be made on more than two job mixes for the same type material.

A separate standard deviation will be determined by the Department for each calendar year's production of each mix type produced by a plant.

The unit bid price will be reduced by 0.5 percent for each adjustment point applied for standard deviation.

The Engineer will determine the disposition of material having standard deviations larger than those shown in Table II-16.

SECTION 211.10 REFEREE SYSTEM -

(a) In the event the test results obtained from one of the four samples taken to evaluate a particular lot appear to be questionable the Contractor may request in writing that the results of the questionable sample be disregarded, whereupon, the Contractor shall have either an AASHTO accredited lab or Department lab perform tests on five additional samples taken from randomly selected locations in the roadway where the lot was placed. In the event the Engineer determines that one of the four tests results appears to be questionable, the Department will perform tests on five additional samples taken from randomly selected locations in the roadway where the lot was placed. The test results of the three original (unquestioned) samples will be averaged with test results of the five road samples and the mean of the test values obtained for the eight samples will be compared to the requirements for the mean of eight tests as shown in Table II-15.

(b) In the event the Contractor questions the mean of the four original test results obtained for a particular lot, the Contractor may request in writing approval to have either an AASHTO accredited lab or Department lab perform additional testing of that lot. In the event the Engineer determines that the mean of the four original test results are questionable, the Department will perform additional testing of that lot. The test results of the original four samples will be averaged with the test results of the four additional samples taken from randomly selected locations in the roadway where the lot was placed and the mean of test values obtained for the eight samples will be compared to the requirements for the mean result of eight tests as shown in Table II-15.

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



If the Contractor requests additional tests, as described in Paragraph (a) or (b) herein, the Contractor shall sample and have either an AASHTO accredited lab or Department lab test the material in accordance with Department approved procedures. The Engineer reserves the right to observe the sampling and testing.

In the event the mean of the test values obtained for the eight samples conforms to the requirements for the mean results of eight tests, the material will be considered acceptable. In the event the mean of the test values obtained for the eight samples does not conform to the requirements for the mean result of eight tests, the lot will be adjusted in accordance with the adjustment rate specified in Section 211.09.

Samples of the size shown herein shall be saw cut by the Contractor, without the use of liquids, for testing.

Application Rate	Minimum Sample Size
75 kg/m ²	200 by 200 mm
100 kg/m ²	185 by 185 mm
125 kg/m ²	165 by 165 mm
175 kg/m ²	130 by 130 mm

STANDARD DEVIATION

Sieve & A. C.	Standard Deviation 1 Adjustment Point For Each Sieve Size & A. C.	2 Adjustment Points For Each Sieve Size & A. C.	3 Adjustment Point For Each Sieve Size & A. C.
12.5 mm	3.8 - 4.7	4.8 - 5.7	5.8 - 6.7
9.5 mm	3.8 - 4.7	4.8 - 5.7	5.8 - 6.7
4.75 mm	3.8 - 4.7	4.8 - 5.7	5.8 - 6.7
2.36 mm	3.0 - 3.9	4.0 - 4.9	5.0 - 5.9
600 µm	2.2 - 3.1	3.2 - 4.1	4.2 - 5.1
300 µm	1.5 - 2.4	2.5 - 3.4	3.5 - 4.4
75 µm	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0
A.C.	0.27 - 0.36	0.37 - 0.46	0.47 - 0.56

SECTION 211.11 HANDLING AND STORING AGGREGATES - Aggregates shall be handled, hauled and stored in a manner which will minimize segregation and avoid contamination. Aggregates shall be stockpiled in the vicinity of the plant and on ground that is denuded of vegetation, hard, well drained or otherwise prepared to protect the aggregate from contamination. Placing aggregate directly from the crusher bins into the cold feed may be permitted, provided the material is consistent in gradation. When different size aggregates are stockpiled, the stockpiles shall be separated to prevent commingling of the aggregates.

SECTION 211.12 ASPHALT CONCRETE MIXING PLANT - Plants used for the preparation of asphalt concrete mixtures shall conform to the following requirements:

- (a) **Certification for Plant Operation and Sampling** – There shall be a certified Asphalt Plant Technician for sampling material at the plant.
- (b) **Plant Scales** - Scales shall be approved in accordance with the requirements of Section 109.01 of the Specifications.

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



- (c) **Drier** - The plant shall include a drier or driers which continuously agitate the aggregate during the heating and drying process. The aggregate shall be dried to a point at which the moisture content of the completed mixture does not exceed 1 percent as determined from samples taken at the point of discharge from the mixing operation.
- (d) **Feeder for Drier** - The plant shall be equipped with accurate mechanical means for uniformly feeding the aggregate into the drier so that uniform production and uniform temperature will be obtained. Where different size aggregates are required to meet grading specifications, they must be proportioned by feeding into the cold elevator through a multiple compartment feeder bin (one bin for each size used) equipped with positive action gates that can be securely locked to maintain desired proportioning.
- (e) **Bins** - When bins are used, adequate and convenient facilities shall be provided to make possible the sampling of representative aggregate material for each bin. Each compartment shall be provided with an overflow pipe of such size and at such location to prevent contamination of the aggregate in adjacent compartments and shall be provided with individual outlet gates which, when closed, will allow no leakage.
- (f) **Thermometric Equipment** - The plant shall be equipped with an thermometric instrument so placed at the discharge chute of the drier as to register automatically or indicate the temperature of the heated aggregate or the completed mix if the drier drum mixing plant is used.

A thermometric device shall be fixed in the asphalt feed line at a suitable location near the charging valve at the mixer unit.

All thermometric devices shall be maintained in good working condition and shall be subject to checking against the laboratory thermometer. Any instruments that do not operate or register properly shall be removed and repaired or replaced.

- (g) **Pollution Control** shall conform to the requirements of Section 107.14 of the Specifications.
- (h) **Equipment for Preparation of Asphalt Material** - Tanks for the storage of asphalt material shall be equipped with a heating system capable of heating and holding the material at the required temperatures. A separate storage tank or a storage tank having separate compartments shall be available for each grade of asphalt cement being used. The heating system shall be designed to heat the contents of the tank by means of steam, electricity or other approved means so that no flame is in contact with the heating surface of the tank. The circulating system for the asphalt material shall be designed to assure proper and continuous circulation during the operating period and to minimize oxidation. All pipelines shall be steam jacketed or insulated to prevent undue loss of heat. Storage facilities for asphalt material shall be sufficient for at least one day's operation or an equivalent means of supply shall be provided which will insure continuous operation. Provisions shall be made for measuring and sampling storage tanks. When asphalt material is proportioned by volume, the temperature of the asphalt material in storage shall be uniformly maintained ($\pm 12^{\circ}$ C) during operation of the plant by means of an automatic temperature control device. A sampling valve shall be provided for sampling of each asphalt storage tank used in production of the mix. If there are multiple storage tanks, then a dedicated valve for each tank shall be provided.
- (i) **Asphalt Control** - Asphalt material shall be accurately proportioned by volume or weight. When volumetric methods are used, measurements shall be made by means of meters or pumps calibrated for accuracy. The section of the asphalt line between the charging valve and the spray bar shall be provided with an outlet valve for checking the meter.

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

When proportioned by weight, the asphalt material shall be weighed on approved scales. Dial scales shall have a capacity of not more than 15 percent of the capacity of the mixer. The value of the minimum graduation shall not be greater than 1.0 kilogram.

Except when drier-drum mixing plant is used, the asphalt material bucket, its valves and spray bar shall be steam jacketed or heated by other approved means. The bucket shall have a capacity of at least 115 percent of the weight of the asphalt material required in any mixture and shall be supported by fulcrums.

The asphalt shall be delivered to the mixer in multiple uniform streams for the full width of the mixer.

- (j) **Proportioning Aggregates** - Mineral filler and any bag house fines the Contractor uses shall be metered or introduced by means of an approved device for uniform proportioning by weight or by volume.

The weigh hopper shall be of sufficient size to hold the maximum required weight of aggregate for one batch without hand raking or running over. Sufficient clearance between the weigh hopper and supporting devices shall be provided to prevent accumulation of foreign materials.

The discharge gate of the weigh hopper shall be situated in such a manner that the aggregates will not segregate when dumped into the mixer. Gates on the bins and weigh hopper shall be constructed to prevent leakage when closed.

- (k) **Drum Mixer** - The aggregate shall be proportioned by a positive weight control at the cold aggregate feed by use of a belt scale which will automatically regulate the supply of material being fed and permit instant correction of variations in load. The cold feed flow shall be automatically coupled with the asphalt flow to maintain the required proportions.
- (l) **Batch Mixer** - The batch mixer shall be of a twin pugmill or other approved type, steam jacketed or heated by other approved means and capable of producing uniform mixtures within the specified tolerances. It shall be equipped with a sufficient number of paddles or blades, operated at such speeds as to produce a properly and uniformly mixed batch. The number and arrangement of the mixer paddles shall be subject to the approval of the Engineer. Worn or defective blades shall not be used in mixing operations.

The mixer shall be provided with an approved time lock which will lock the discharge gate after the aggregates and asphalt have been placed in mixer and will not release the gate until the specified time has elapsed.

Batch type mixing plants used to produce asphalt concrete shall be equipped with approved automatic proportioning devices. Such devices shall include equipment for accurately proportioning batches of the various components of the mixture by weight or volume in the proper sequence and for controlling the sequence and timing of mixing operations. The automated system shall be designed to interrupt and stop the batching operation at any time batch quantities are not satisfied for each of the materials. A means shall be provided for observing the weight of each material during the batching operation.

The aggregate may be proportioned by cold feed controls in lieu of plant screens provided the cold aggregate feed conforms to the requirements specified in Section 211.12(j).

Should the automatic proportioning devices become inoperative, the plant may be allowed to batch and mix asphalt materials for a period of not more than 48 hours from the time the breakdown occurs provided alternate proportioning facilities are approved by the Engineer.

Written permission of the Engineer will be required for operation without automatic proportioning facilities for periods longer than 48 hours.

- (m) **Continuous Mixing Plant** - Continuous mixing plant shall include a means for accurately proportioning each size of aggregate either by weighing or volumetric measurement. When gradation control is by volume, the unit shall include a feeder mounted under the compartment bins. Each bin shall have an accurately controlled individual gate to form an orifice for volumetrically measuring the material drawn from each respective bin compartment. The orifice shall be rectangular, with one dimension adjustable by positive mechanical means and shall be provided with a lock. Indicators shall be provided to show the individual gate opening in inches. The plant shall be equipped with a satisfactory revolution counter.

The plant shall include a means for calibrating gate openings by weight. The materials fed out of the bins through individual orifices shall be bypassed to a suitable test box, with each component material confined in a separate section. The plant shall be equipped to conveniently handle test samples weighing up to 100 kilograms per bin and accurate platform scales shall be provided for this purpose.

Positive interlocking control shall be provided between the flow of aggregate from the bins and the flow of asphalt material from the meter or other proportioning device. This shall be accomplished by approved interlocking devices or other approved positive means.

Accurate control of the asphalt material shall be obtained by weighing, metering or volumetric measurement.

The aggregate may be proportioned by cold feed controls in lieu of plant screens provided the cold aggregate feed conforming to the requirements specified in Section 211.12(j).

The plant shall include a continuous mixer of an approved type, which is steam jacketed or heated by other approved means. The paddles shall be of any adjustable type for angular position on the shafts and reversible to retard the flow of the mixture.

There shall be interlock cutoff circuits to interrupt and to stop the proportioning and mixing operations when the aggregate level in the plant or the asphalt material in storage fall below that necessary to produce the specified mixture.

- (n) **Trucks, Truck Scales, and Automatic Printer System** shall conform to the requirements of Section 109.01 of the Specifications.

SECTION 211.13 PREPARATION OF MIXTURE - The asphalt and aggregate shall be introduced into the mixer at a temperature that will produce a mixture within the requirements of the job-mix formula.

After the required amounts of aggregate and asphalt material have been introduced into the mixer, the materials shall be mixed until a uniform coating of asphalt and a thorough distribution of the aggregate throughout the mixture is secured within the requirements of the Ross Count procedure described in AASHTO T195. Wet mixing time, based on the procedures of AASHTO T195, shall be determined by the Contractor at the beginning of production and approved by the Engineer for each individual plant or mixer and for each type of aggregate used; however, in no case shall the wet mixing time be less than 20 seconds. The wet mixing time is the interval of time between the start of introduction of the asphalt material into the mixer and the opening of the discharge gate. A wet mixing time which will result in fully coating a minimum of 95 percent of the coarse particles, based on the average of the 3 samples, and provided that none of the 3 samples result in fully coating less than 92 percent of the coarse particles, shall be the minimum wet mixing time requirement. A dry mixing

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

time of up to 15 seconds may be required by the Engineer to accomplish the degree of aggregate distribution necessary to obtain complete and uniform coating of the aggregate with asphalt.

SECTION 211.14 STORAGE SYSTEM - In the event the Contractor elects to use a storage system, the system shall be capable of conveying the mix from the plant to the storage bins and storing the mix without a loss in temperature, segregation or oxidation of the mix. Storage time shall be limited by the ability of the bins to maintain the mix within the quality requirements specified herein with a maximum time limit not to exceed 10 days. Material may be stored in bins for no more than 24 hours without an approved heating system.

The conveyor system may be a continuous or skip bucket type. Continuous type conveyors shall be enclosed so that the mix temperature is maintained.

The storage bins shall be designed in such a manner as to prevent segregation of the mix during discharge from the conveyor into the bins and shall be equipped with discharge gates that will not cause segregation of the mix while loading the mix into the trucks.

Approval for the use of storage bins may be withdrawn by the Engineer in the event there is an excessive amount of heat loss, segregation or oxidation of the mix.

SECTION 211.15 INITIAL PRODUCTION - At the start of production of a mix not previously used on a state roadway, the Contractor shall place 90 to 272 metric tons or up to one day's production as directed by the Engineer at an approved site (may be project site) so the Engineer can examine the mixing plant's process control, the Contractor's placement procedures, surface appearance, of the mix compaction patterns of the Contractor's roller(s) and correlation of the nuclear density device.

**GUIDELINES - PROJECTS HAVING BRIDGE STRUCTURES WITH SILICONE SEALER CLASS D (NOT PREFORMED AND BOX CULVERT).
EXCEPTIONS: NONE.**

SM212A0B-0197

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 212 JOINT MATERIALS

November 27, 1995
Reissued January 1, 1997

SECTION 212.02 (b) SILICONE SEALANTS of the Specifications is amended as follows:

The first sentence of the first paragraph is replaced with the following:

Silicone Sealants shall be furnished in a one or two part formulation.

The second paragraph is amended to include the following:

Class D - An ultra low modulus self-leveling rapid curing two part silicone used to seal expansion joints on bridge decks. It can also be used to seal joints subject to dynamic movements where rapid curing is necessary. Tooling is not normally required.

PROPERTIES	TEST METHOD	SEALANT CLASS
		D
Tensile Stress at 150% Strain (Max. kPa) (Note 1)	ASTM C1135	172
Durometer Hardness, Shore (-18 ° and 25 ° ± 1 °C) (Note 1)	ASTM D-2240	"00" 40-80
Bond to Concrete Mortar (Min. kPa) (Note 1)(Note 3)	VTM-90	240
Tack Free Time (Skin over) (Max. Minutes) (Note 2)	VTM-90 (Note 4)	30
Extrusion Rate (Min. Grams/Minute)	VTM-90	200
Non-volatile (Min.%) Specific Gravity	VTM-90 ASTM D-792 (Method A)	90 1.2 - 1.5
Shelf Life (from date of shipment)	-	6 months
Movement Capability & Adhesion (Note 1)	VTM-90	No adhesive or cohesive failure after 10 cycles at - 18 °C
Ozone and U. V. Resistance (Note 1)	ASTM C-793-75	No chalking, cracking, or bond loss after 5,000 hours

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



**GUIDELINES—PROJECTS REQUIRING DAMP-PROOFING AND WATERPROOFING OF MATERIALS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM213A0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 213—DAMP-PROOFING AND WATERPROOFING MATERIAL

June 12, 2006

SECTION 213—DAMP-PROOFING AND WATERPROOFING MATERIALS of the Specifications is replaced with the following:

213.01—Description.

These specifications cover materials, generally asphalt based, that are intended to prevent or delay the passage of water, usually through a section of hydraulic cement concrete.

213.02—Detail Requirements.

- (a) **Asphalt** shall conform to the requirements of ASTM D312 Type II and shall be asbestos-free. Primer shall conform to the requirements of AASHTO M140 types SS-1h, QS-1H, or AASHTO M208 types CSS-1h, CQS-1h.
- (b) **Fabric** shall conform to the requirements of AASHTO M288. When cotton fabric is used, it shall be saturated with asphalt. Glass fiber shall conform to the requirements of ASTM D1668.
- (c) **Joint sealers** for horizontal joints shall be an asphalt cement, viscosity grade AC-40, conforming to the requirements of Section 210 of the Specifications. Sealers for vertical joints shall have fiber added, 20 percent by mass. Fiber and asphalt shall be mixed by the manufacturer to ensure a uniform mixture.
- (d) **Membrane** shall conform to ASTM D6153.

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



GUIDELINES - ALL FEDERALLY FUNDED PROJECTS HAVING HYDRAULIC CEMENT CONCRETE. ALSO, STATE FUNDED PROJECTS HAVING HYDRAULIC CEMENT CONCRETE WHEN LOW PERMEABILITY CONCRETE IS REQUESTED BY THE DESIGNER. EXCEPTIONS: NONE.

SM217A0B-1103

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
LOW PERMEABILITY CONCRETES

December 2, 2002c

SECTION 217 of the Specifications is amended as follows:

Section 217.02 (h) is replaced with the following:

- (h) **Fly ash** shall conform to the requirements of Section 241. Class F fly ash shall be between 20 percent and 25 percent by mass of the cementitious material. However, no more than 15 percent of the Portland cement of a standard mixture shall be replaced.

Section 217.02 (k) is amended to add the following:

- (k) **Silica fume** shall conform to the requirements of AASHTO M307 or ASTM C1240. Silica fume shall replace between 7 percent and 10 percent by mass of the cementitious material. Only silica fume at the rate of 3 percent to 7 percent may be added to all combinations to reduce the early permeability after the approval of the Engineer.

Section 217.08 is amended to add the following:

- (c) **Quality Assurance for Low Permeability Concrete (for Concrete in Bridges Only):**

General:

At least two trial batches, using job materials, with permissible combination of cementitious materials shall be prepared, and test specimens shall be cast by the contractor and tested by the Department for permeability and strength at least a month before the field application. The permeability samples shall be cylindrical specimens with a 100 mm diameter and at least 100 mm length. They shall be moist-cured as the strength cylinders for acceptance except that the last 3 weeks of cure shall be at 38 degrees C \pm 6 degrees C. Cylinders shall be tested at 28 days in accordance with AASHTO T 277. The test value shall be the result of the average values of tests on two specimens from each batch. Permeability values obtained from trial batches shall be 500 coulombs below the maximum values specified in Table II-17.

Acceptance Tests:

A quality assurance and acceptance procedure that provides for periodic tests of the field concrete for permeability using AASHTO T 277 shall be established. This should include provisions for testing frequency; the range of coulomb values for which full or partial payments would be made; and the values that would require corrective measures to be taken, or rejection of the concrete, should be stated. The following are quality assurance procedures for field evaluations:

A lot shall be a day's production of concrete for the job and shall be used for statistical acceptance procedure for bridge concrete. For each set of cylinders made for compressive strength tests, two additional cylinders shall be made for the permeability

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

test. The Contractor shall be responsible for making all test cylinders, and the Department shall be responsible for the testing of the specimens.

For all classes of concrete, initially one set of permeability cylinders shall be tested for each lot in accordance with AASHTO T 277. If the average coulomb value for this test is less than the coulomb value shown in Table II-17, the lot will be accepted at the full bid price.

If the average test result exceeds the coulomb value in Table II-17, payment for the concrete in that element (in-place cost) shall be reduced 0.005 percent for each coulomb above the coulomb value in Table II-17, however, the reduction in price will not exceed 5 percent of the bid price of the concrete. Concrete with a coulomb value that exceeds the maximum required in Table II-17 by 1000 coulomb will be rejected. However, bridge deck with the coulomb value exceeding the maximum required by over 1000 coulomb may be accepted by the Engineer at 95 percent of the bid price if it has the required strength and meets other specification requirements, and the Contractor applies, at his own expense, an approved epoxy concrete overlay to the top of the deck. In such case, deck grooving will not be required. The adjustment to the roadway grade shall be made as required by the Engineer at the Contractor's expense.

Similarly, concrete in abutments and pier caps with coulomb value exceeding the maximum required in Table II-17, by more than 1000 coulomb may be accepted at 95 percent of the bid price if it has the required strength and meets other specification requirements, and the Contractor applies at his own expense an approved epoxy, Type EP-3B and EP-3T in conformance with the requirements of Section 243.02, on top of the pier cap or abutment seat.

The reduction in the bid prices mentioned above shall be applied to the total volume of concrete in bridge members, eg deck slab of a single span, deck slab of a group of continuous spans, pier or abutment, for which any portion of the concrete in the member did not meet the permeability test requirements.

SECTION 404 of the Specifications is amended as follows:

Section 404.03(k)1 Bridge Deck Curing is amended to add the following:

Bridge deck and overlay concrete, including latex modified concrete, shall be moist cured for a minimum of 7 days and until 70 percent of $f'c$ is reached. Moist curing shall be maintained by wet burlap (keep wet) for the duration of the curing and covered with plastic sheeting. Immediately after screeding and until the application of wet burlap and white plastic sheeting (opaque and transparent sheeting may be used when the air temperature falls below 10°C), no surface of the freshly placed concrete shall be allowed to dry. During moist curing, the concrete temperature shall be maintained above 10°C at the outer most surfaces of the concrete mass. Immediately after removing the burlap and plastic sheeting (except for latex-modified concrete), white pigmented curing compound shall be applied while the surface is damp but has no free water standing on it. The application rate shall be 2.4 - 3.6 square meters per liter.

Section 404.03(l) 1. Weather is amended to replace the 4th paragraph with the following:

Protection shall be provided to prevent rapid drying of concrete as a result of low humidity, high wind, higher concrete temperature than atmospheric temperatures, or combinations thereof. The Contractor shall perform evaporation rate testing of bridge deck placements and concrete overlays. Immediately after screeding and until the application of wet burlap and white polyethylene sheeting, no surface of the freshly mixed concrete shall be allowed to dry. Fogging, with pressure sprayers acceptable to the Engineer and sufficient to maintain a moist surface, shall

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

be required. The protective measures taken shall be sufficient to maintain an evaporation rate of 0.5 kg/ m²/hr for normal bridge deck concrete placements or 0.3 kg/ m² /hr for concrete overlays over the exposed surface of the concrete. Other preventive measures described in ACI 308 can also be used in addition to fogging. Evaporation retardant films may be applied in a fine mist immediately after screeding to ensure that the surface remains wet until covered. If such materials are used, there shall be no disturbance of the concrete surface after placement of the retardant film and such film shall not be intermixed with the surface mortar. Placement of concrete shall be regulated at a rate such that the finishing operations can be completed and the wet burlap and polyethylene sheeting are placed prior to any drying of the concrete. If plastic shrinkage cracking occurs due to the Contractor's negligence or failure to follow specification requirements, the Engineer may direct the Contractor to make repairs by epoxy injection, concrete removal and replacement or other methods approved by the Engineer at no additional cost to the Department.

Section 404.04 is amended to add after the fifth paragraph the following:

Consolidation: In deck placements, internal vibrators and screeds with vibrating element shall be used. The minimum frequency of the vibrating element shall be 3,000 vibrations per minute. Internal vibration shall be required along transverse and longitudinal edges and joints and in areas where the thickness of concrete exceeds 75 mm.

SECTION 405 of the Specifications is amended as follows:

Section 405.02(a) is replaced with the following:

- (a) **Concrete** shall conform to the requirements of Section 217, Class 35 with the following exceptions:
1. Concrete for piles, beams, and slabs shall contain 17.3 liters per cubic meter of calcium nitrite conforming to Section 215, unless granulated iron blast-furnace slag (min. 40 percent by mass) or silica fume (min. 7 percent by mass) conforming to Section 215, is used.
 2. Concrete for structures over tidal water, beams and slabs within 4.5 meters of mean high tide and all exposed piles shall contain either 26.7 liters per cubic meter of calcium nitrite conforming to Section 215 or 9.9 liters per cubic meter of calcium nitrite with granulated iron blast-furnace slag (min. 40 percent by mass) or silica fume (min. 7 percent by mass) conforming to Section 215.

All fully or partially embedded attachments to the prestressed concrete members required for supporting forms or stay-in-place deck panels shall be galvanized in accordance with Section 233.

Section 405.05(c) is amended to replace the third paragraph with the following:

Both internal vibrators and external form vibrators shall be used for concrete with strength equal or exceeding 55 MPa. The use of external vibration for other concrete will be at the option of the Contractor with approval of the Engineer. Improper placing and vibrating may be cause for rejection.

Section 405.05(f)4. is replaced by the following:

The temperature rise in the curing enclosure shall be uniform, with a rate rise of not more than 27 degrees per hour. Concrete shall be cured at a steam temperature of not more than 82 degrees C, with the steam temperature uniform throughout the curing enclosure, and with a variation of not more than 7 degrees C. Maximum concrete temperature during the curing cycle shall be 88 degrees C. Approved recording thermometers shall be placed so that temperatures can be

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

recorded at a minimum of two locations spaced at or near the third of the length in each curing enclosure and at least one sensor shall measure the temperature in the concrete.

TABLE II-17 Requirements for Hydraulic Cement Concrete of the Specifications is amended to add the following:

Class of Concrete	Design Max. Laboratory Permeability at 28 Days (Coulombs)
35-60 Prestressed and other special designs	1,500
35 General	2,500
30 General	2,500
30 Post & rails	2,500
25 General	2,500
20 General	3,500
20 Paving	3,500
15 Massive or lightly re-inforced	N.A.
10 Massive Un-reinforced	N.A.
20 T Tremie seal	N.A.
25 Latex hydraulic cement concrete overlay	1,500
35 Silica fume concrete overlay	1,500

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

**GUIDELINES — PROJECTS REQUIRING ITEMS CAST FROM METAL TO A SPECIFIC DESIGN IN A MANUFACTURING PLANT.
EXCEPTIONS: NONE.**

SM224A0B-0708

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 224—CASTINGS

November 15, 2007

SECTION 224—CASTINGS of the Specifications is amended as follows:

Section 224.02—Materials is amended as follows:

The following is added as the first paragraph:

All casting suppliers/manufacturers shall have an approved QA/QC plan on file with the Department. Junction boxes that are to be installed within that portion of the roadway not protected by a guardrail or barrier shall be designed in accordance with the requirements of AASHTO M306 and M105, Class 35B.

Section 224.02(b) is replaced with the following:

- (b) **Gray iron castings** used in that portion of the roadway not protected by a guardrail or barrier shall conform to the requirements of AASHTO M306 and M105, Class 35B. All other castings shall conform to AASHTO M105, Class 35B.

Section 224.02(c) is replaced with the following:

- (c) **Ductile iron castings** used in that portion of the roadway not protected by a guardrail or barrier shall conform to AASHTO M306. All other ductile iron castings shall conform to ASTM A536, Grade 60-40-18.

Section 224.03—Detail Requirements is replaced with the following:

If castings are supplied from materials conforming to sections 224.02 (a), (d) and (e), all tolerances and workmanship requirements for castings shall conform to AASHTO M306. If used in that portion of the roadway not protected by a guardrail or barrier, the load testing shall conform to the requirements of AASHTO M306. When the alternate load test is used, test bars shall be present and fully identifiable with regard to the casting lot. Each casting in a lot must have the same markings as all of the other castings in the lot; if not, each group of castings with the same markings within the original lot, becomes a new lot.

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



**GUIDELINES - PROJECTS HAVING STRUCTURAL STEEL (OVERHEAD SIGN AND CANTILEVERS)
EXCEPTIONS: NONE**

SM226A0B-1297

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 226 STRUCTURAL STEEL

June 26, 1997c

Section 226 - Structural Steel of the Specifications is amended as follows:

Table II-18 CVN Toughness Requirements is deleted.

Section 226.02 (c) 1. is amended to replace the first sentence with the following:

Anchor bolts for general use shall conform to the requirements of AASHTO M314, Grade 36.

Section 226.02 (c) 2. is replaced with the following:

High strength anchor bolts shall conform to the requirements of AASHTO M314, Grade 55 with supplemental requirements of S1. Nuts and washers shall conform to the requirements of Section 226.02 (h) of the Specifications.

Section 226.02 (c) 4. is replaced with the following:

Anchor bolts for railings shall conform to the requirements of Section 226.02 (c)1. and shall be hot dipped galvanized.

Section 226.02 (g) Bolts, Nuts and Washers is amended to add the following:

Lock washers shall conform to the requirements of ANSI B18.21.2M.

Section 226.02 (h) is amended to replace the table with the following:

High-Strength Bolts	Nuts for use with High-Strength Bolts, Heavy Hex	Washers (Hardened)	Direct Tension Indicators
A325M, Type 1	A563M, Grade 8S A194M, Grade 2H A563M, Grade 8S3	F436M	F959M
A325M, Type 3	A563M, Grade 10S	F436M	F959M
A325M, Galvanized			
A490M, Types 1 or 2	A563M, Grade 10S A194M, Grade 2H	F436M	F959M
A490M, Type 3	A563M, Grade 10S3	F436M	F959M

Section 226.02 (h) 1. is replaced with the following:

1. ASTM A490M bolts, nuts and washers shall be plain (uncoated) and ASTM A325M Type 1 bolts, nuts and washers shall be galvanized. High strength bolts used with unpainted

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



weathering steel shall conform to ASTM A325M, Type 3 or when specified, ASTM A490M, Type 3.

Section 226.02 (h) 3.e. is amended to replace the first paragraph with the following:

Galvanized bolts, nuts and washers shall be hot dipped galvanized by the hot dipped method in accordance with the requirements of ASTM A153M. If the bolts are to be topcoated with paint, mechanically galvanized bolts, nuts and washers in accordance with the requirements of ASTM B695M, Class 50 may be used.

GUIDELINES - PROJECTS REQUIRING PAINTING OF STEEL STRUCTURES
EXCEPTIONS: NONE

SM231C2B-0305

VIRGINIA DEPARTMENT OF TRANSPORTATION
 SPECIAL PROVISION FOR
SECTION 231—PAINT

November 29, 2004c

SECTION 231—PAINT of the Specifications is amended as follows:

231.01—Description.

These specifications cover a mixture of pigment in a liquid vehicle that, when applied, will dry to an opaque solid film. Use of paint in these specifications refers to the requirements of highway construction. Paint materials not specified herein shall be as specified by the manufacturer.

231.02—Materials.

The paint shall not be formulated with any compounds of the heavy metals listed in 40CFR 261.24 Table 1, except that barium sulfate is allowed. Except for barium sulfate, total heavy metal levels shall not exceed 20 times the specified regulatory limits. Volatile Organic Compound (VOC) content shall not exceed 340 g/L as applied, except zinc rich primers shall not exceed 420 g/L as applied.

When Federal Standard (FS) color numbers are specified such numbers refer to color only, and not to gloss requirements.

(a) **Paint vehicles** shall conform to the following:

Vehicle	Specification
Acrylic resin	100% straight acrylic polymer dispersed in water
Alkyd resin	FS TT-R-266, Type I, Class A or B
Linseed oil	
Boiled	ASTM D260 Type I
Heat bodied	FS TT-L-201
Raw	ASTM D234
Methyl ethyl ketone	ASTM D740
Mineral spirits	ASTM D235
Soybean oil	
Refined	ASTM D1462
Degummed	ASTM D124
Spar varnish	FS TT-V-121
Toluene	ASTM D841
Tricresyl-phosphate	ASTM D363
Volatile thinners	ASTM D235
2-ethoxyethanol acetate	ASTM D3728

(b) **Paint pigments** shall conform to the following:

Pigment	Specification
Aluminum paste	ASTM D962
Carbon black	ASTM D561 Type I
Lamp black	ASTM D209
Magnesium silicate	ASTM D605

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



Micaceous iron oxide	Processed specular hematite ore with lamellar structure which conforms to the requirements of ASTM D 5532 Type I
Organo montmorillonite	Fine, creamy white powder, with high gelling efficiency in a wide range of organic liquids; water content less than 30% and fineness less than 5% retained on 75 µm sieve
Raw Sienna	Fine, creamy white powder, with high gelling efficiency in a wide range of organic liquids; water content less than 30% and fineness less than 5% retained on No. 200 sieve
Titanium dioxide	ASTM D765
Yellow iron oxide	ASTM D476, Rutile
Zinc dust	ASTM D768
Zinc oxide	ASTM D520, Type II
	ASTM D79

231.03—Detail Requirements.

Paints shall not settle excessively or cake in the container; shall be readily broken up with a paddle or power mixer to a smooth uniform paint of acceptable consistency and working properties with a minimum of foaming; shall not thicken, liver, skim, or curdle; and shall retain these properties in storage for at least 12 months.

When applied in accordance with the standard practice, paint shall show good leveling properties; be free from laps, brush marks, orange peel, sags, or other surface defects; and shall flow out to a uniform, smooth finish.

Paints will be inspected, sampled, and tested in accordance with the requirements of Federal Test Method Standard No. 141.

Paint containers shall be plainly marked with the name of the material, date of manufacture, lot number and/or batch number, Department color, quantity contained therein, and name and address of the manufacturer. A manufacturer's product data sheet shall also be provided. Any package or container not provided as specified will be rejected.

- (a) **Zinc-rich paint systems** (System B) shall consist of a zinc-rich primer, an intermediate coat when recommended by the manufacturer and a topcoat, which shall be selected from the Department's approved products list. Zinc-acrylic-acrylic systems shall be tested in accordance with the requirements of VTM-73. Zinc-rich-epoxy-urethane paint systems approved by the Northeast Protective Coating Committee (NEPCOAT) or those systems tested according to AASHTO R-31 will be evaluated for inclusion to the Qualified Low Volatile Organic Compound Zinc Rich Qualified Product List.

Primer for shop application shall be inorganic zinc and shall conform to the slip coefficient requirements of AASHTO 1995 Interim Provision, Division I, Design, Table 10.32.3C, Class B.

- (b) **No. 14 paint, aluminum epoxy mastic** (System F) shall be a two-component, modified epoxy coating, aluminum in color.

1. **Composition:** Pigment shall be flake metallic aluminum and shall contain rust-inhibiting and inert pigments.

The paint vehicle shall be a modified epoxy resin and curing agent and shall not contain coal tar. Paint shall be supplied as a two-package material with a 1:1 mixture ratio by volume.

2. **Physical requirements:** The epoxy mastic shall contain at least 90-percent solids by weight when tested in accordance with the requirements of ASTM D1644, modified to a drying time of 72-hours at 38 degrees C.

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

The shelf life of epoxy mastic components shall be at least 6-months. There shall not be skinning, gelling, or hard indispensible settling.

The viscosity of mixed paints, measured immediately after blending and mixing of components, shall be from 80- to 140-Kreb units at 25 ± 1 degrees C.

The density of the mixed paint shall be at least 1.29 kg/L at 25 ± 1 degrees C.

The appearance of the dry applied film shall be bright aluminum.

The epoxy mastic shall be suitable for use over properly prepared, inorganic zinc-rich primers. A mist coat may be required to minimize bubbling.

Mixed paint, when thinned in accordance with the manufacturer's recommendations for application over wire-brushed rusty steel, shall be capable of being spray applied in one coat at a wet film thickness of 250 μ m without runs or sags.

The epoxy mastic, when applied in a dry film thickness of 125 μ m and air dried at 24 degrees C, shall be dry to the touch within 24-hours; dry enough to handle in 48-hours; and provide a hard tough film after 5-days.

The usable pot life of the mixture of components reduced as recommended shall be at least 3-hours at 21 degrees C and 1 1/2-hours at 32 degrees C.

The epoxy-mastic coating shall possess such flexibility that, when applied in a dry film thickness of 125 μ m to a 3.18 mm steel panel that has been blast cleaned in accordance with the requirements of SSPC-5 and cured for 2-weeks at 24 degrees C, it shall not display signs of cracking or loss of adhesion when the panel is uniformly bent 180 degrees around a mandrel 200 mm in diameter.

3. **Resistance:** Steel test panels conforming to the requirements of ASTM D609 shall be abrasive blasted in accordance with the requirements of SSPC-SP 5, exposed to the atmosphere for 30-days so that a uniform rusting occurs, and then hand cleaned with a wire brush in accordance with the requirements of SSPC-SP 2. The panel shall then be spray applied with epoxy mastic to achieve a dry film thickness of 125 μ m and cured according to the manufacturer's recommendations.
 - a. **Fresh water:** Coated panels shall be scribed down to base metal with an X having at least 50 mm legs and immersed in fresh tap water at 24 ± 3 degrees C. Upon examination after 30-days of immersion, panels shall be unaffected except for discoloration of the epoxy-mastic coating. There shall not be blistering, softening, or visible rusting of the coating beyond 1.6 mm from the edge of the scribe mark.
 - b. **Salt water:** Panels shall be scribed down to the base metal with an X having at least 50 mm legs and immersed in a 5-percent sodium chloride solution at 24 ± 3 degrees C. Panels shall be unaffected, except for discoloration of the epoxy-mastic coating, upon inspection after 7-, 14-, and 30-days of immersion. There shall not be blistering, softening, or visible rusting of the coating beyond 1.6 mm from the center of the scribe mark. The sodium chloride solution shall be replenished with fresh solution after each examination.
 - c. **Weathering:** Panels shall be tested in accordance with the requirements of ASTM G153 Cycle 1. After 1,000-hours of continuous exposure, the coating shall not show rusting, loss of adhesion to the steel test panel, or blistering.

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

- d. **Salt fog:** Panels shall be scribed with an X having at least 50 mm legs down to base metal. Test panels shall then be tested in accordance with the requirements of ASTM B117. After 1,000-hours of continuous exposure, the coating shall not show rusting or blistering beyond 1.6 mm from the center of the scribe mark or a loss of bond.
- 4. **Packaging and labeling:** Epoxy-mastic coating shall be packaged in two containers, labeled "Part A" and "Part B." Each container shall bear a label that clearly shows the manufacturer and brand name of the paint, lot number, and date of manufacture. The label on the vehicle container shall also include complete instructions for use. The container shall be coated, if necessary, to prevent attack by the paint components.
- 5. **Application:** The manufacturer's current printed instructions for applying aluminum epoxy-mastic coating shall be submitted to the Department for approval prior to application.
- 6. **Product certification:** The manufacturer shall certify that the modified aluminum epoxy mastic has been used successfully for at least 2-years in a similar service and environment and that the material was applied in one coat at a dry film thickness of 5-mils. Successful performance shall include adhesion to steel and old coatings of the type found on bridges.

Prior to approval and use of an aluminum epoxy-mastic coat, the manufacturer shall submit a certified test report from an independent testing laboratory showing specific test results conforming to all quantitative and resistance test requirements herein. The test report shall also contain the lot numbers from which the data were compiled, manufacturer's name, and brand name of the paint. Upon approval by the Department, the product will be placed on the Department's Qualified No. 14 Aluminum Epoxy Mastic list (System F) and further resistance and quantitative tests will not be required of that manufacturer for that brand name of paint unless random samples tested by the Department show nonconformance with any of the requirements herein. The manufacturer, shall submit new certified test results when the manufacturing process or paint formulation is changed.

- (c) **Colored epoxy mastic** for use as a finish coat, over No. 14 primer (System F) shall be supplied by the manufacturer of the primer and shall conform to the salt fog resistance requirements specified in (b) herein. Upon approval by the Department, the colored epoxy mastic will be placed on the No. 14 paint, aluminum epoxy mastic (System F) QPL as an approved colored topcoat.
- (d) **Colored urethane topcoats** for use as a finish coat over No. 14 primer (System F) shall be an aliphatic urethane from the Department's No. 14 paint, aluminum epoxy mastic (System F) QPL as an approved colored topcoat.
- (e) **No. 101, 102 and 103 water reducible paint**, (System W) shall be a one component acrylic water borne paint with a Volatile Organic Compound (VOC) of less than 340 g/L as applied.

1. **Composition:**

	No. 101		No. 102		No. 103	
	min	max	min	max	min	max
Pigment (% by weight)						
Red Iron Oxide (86% Fe ₂ O ₃)	20	25	35	40	10	20
Zinc Phosphate	10		5		5	
Phthalocyanine Blue		2				
Calcium Carbonate			30			
Titanium Dioxide (ASTM D476 Type II)			45			
Magnesium Silicate				12		
Tinting Compounds ¹						95
Vehicle (% by weight)	75	80	60	65	80	90

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



HG-54 solids	30		30		30	
Water		55		55		58
Methyl Carbitol	5		5		5	
Texanol	2		2		5	
Dibutyl Phthalate	2		2			
Paint Characteristics						
Mass per liter (kg)	1.16		1.32		1.08	
Solids by volume	35		37		30	
Grind	5		5		5	
Viscosity (KU)	90	100	90	100	90	100
Drying time ASTM D1640						
Set to touch (hrs.)		3		3		3
Drying time (hrs.)		24		24		24
Leneta sag	10		10		10	
Ph	8.0	8.5	8.0	8.5	8.0	8.5
Adhesion (ASTM 3359)	3B		3B		3B	
Gloss, Specular @ 80 deg.					40	

¹ All tinting compounds shall be prime hiding pigments.

2. **Mixed paint** shall not liver, thicken, curdle or gel or settle rapidly. After mixing, all coarse particles and skins shall not amount to more than 0.05-percent by weight of the total mixture when passed through a 60-mesh screen.
3. **Storage life:** The paint shall not show thickening, curdling, gelling or gassing after being stored for one year from date of manufacture, when packaged in tightly covered unopened containers at a temperature between 50 degrees and 90 degrees F.
4. **Working properties:** The paint shall spray easily and show no streaking, running, or sagging, when tested in accordance with Federal Test Method Standard 411, Methods 4331 and 4541.

**GUIDELINES— PROJECTS REQUIRING PIPE AND PIPE ARCHES.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM232A0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 232—PIPE AND PIPE ARCHES

September 26, 2006

SECTION 232—PIPE AND PIPE ARCHES of the Specifications is replaced with the following:

232.01—Description

These specifications cover materials used for the conveyance of water, including drainage, storm water, sanitary systems, and waste water.

232.02—Detail Requirements

The Contractor shall obtain and provide from his supplier a quality control plan acceptable to the Department for determination of conformance with the applicable requirements in the production of concrete and corrugated metal culvert and underdrain pipe.

(a) **Concrete Pipe:**

1. **Concrete pipe for culverts and sewers** shall be circular or elliptical in cross-section, either plain concrete or reinforced concrete, and of the modified tongue-and-groove design in sizes up to and including 450 millimeters in internal diameter and either standard or modified reinforced tongue-and-groove in sizes above 450 millimeters in internal diameter. Pipe shall conform to the specified AASHTO requirements except that pipe having an internal diameter of 900 millimeters or less shall be manufactured without lift holes. Pipe larger than 900 millimeters in internal diameter may be manufactured with lift holes provided the holes are created by molding, forming, coring, or other methods to be cylindrical or conical in shape and are sufficiently smooth to permit plugging with an elastomeric or other approved plug type.

- a. **Plain concrete culvert pipe** shall be composed of hydraulic cement, water, and mineral aggregates conforming to the requirements of b(3) and b(4) herein. Pipe shall conform to the following:

Min. Inside Diameter (mm)	Min. Wall Thickness (mm)	Groove Depth (mm)	Crushing Strength (kNm)
300	44	44	26.3
375	50	44	31.0
450	50	44	35.0
524	69	50	39.4
600	75	57	43.8

Pipe shall also comply with the requirements of AASHTO M170 for manufacture, finish, marking, inspection, and rejection.

- b. **Reinforced concrete culvert pipe:**

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



- (1) **Circular pipe** shall conform to the requirements of AASHTO M170, class as specified, or AASHTO M242. Circular pipe that does not have values listed in the AASHTO M170 design tables for diameter, wall thickness, compressive strength, and reinforcement shall be certified in accordance with the requirements of Section 105.10 of the Specifications. Pipe conforming to the requirements of AASHTO M242 shall also be certified in accordance with the requirements of Section 105.10 of the Specifications.
 - (2) **Elliptical pipe** shall conform to the requirements of AASHTO M207, class as specified. Elliptical pipe that does not have values listed in the AASHTO M207 design tables for wall thickness, compressive strength, and reinforcement shall be certified in accordance with the requirements of Section 105.10 of the Specifications.
 - (3) **Fine aggregate** shall conform to the requirements of Section 202 of the Specifications for quality except that the void content, grading, and uniformity shall be controlled as necessary to produce the specified level of strength and absorption.
 - (4) **Coarse aggregate** shall conform to the requirements of Section 203 of the Specifications for Grade A crushed stone or gravel.
 - (5) **Positioning of reinforcement** when two layers of wire or bar reinforcement are used shall be such that welded joints are at an angle of approximately 60 degrees to each other.
 - (6) **Strength tests** will be performed by the three-edge bearing method in accordance with the requirements of AASHTO T280 or by the testing of cores in accordance with the requirements of ASTM C42. Hand-cast pipe and end sections may be tested in accordance with the requirements of ASTM C39 and C31.
 - (7) **Absorption tests** will be performed in accordance with the requirements of AASHTO T280 on specimens of broken pipe or cores.
2. **Concrete pipe for underdrains** shall conform to the requirements of AASHTO M86, Class I, and the perforation requirements of AASHTO M175, Type I, except that spalls shall be not more than 38 millimeters in diameter or 5 millimeters in depth and shall not adjoin. When used as combination underdrains, pipe shall not be perforated.
- Porous concrete pipe for underdrains** shall conform to the requirements of AASHTO M176, standard strength.
3. **Concrete pipe for water lines, water mains, and sanitary sewers:**
- a. **Concrete pressure pipe** (steel cylinder) shall conform to the requirements of AWWA C300, AWWA C301, or AWWA C303 for the size, minimum working pressure, protective coating, seal coat, and type of joint as specified.
 - b. **Nonreinforced concrete sanitary sewer pipe** shall conform to the requirements of AASHTO M86 for the class specified.
 - c. **Reinforced concrete water pipe** (noncylinder) shall conform to the requirements of AWWA C302 for size, minimum working pressure, seal coat, protective coating, and type of joint specified.

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

d. **Reinforced concrete sanitary sewer pipe** shall conform to the requirements of AASHTO M170 for the class specified.

(b) **Cast Iron and Ductile Iron Pipe and Fittings:**

1. **Cast iron pipe** shall conform to the requirements of ASTM A888 for the class specified.
2. **Ductile iron pipe** shall conform to the requirements of AWWA C151 for size, joint type, class, type of coating and lining as specified, and minimum working pressure if applicable. Flanged joints shall conform to the requirements of AWWA C115.
3. **Fittings** for cast iron and ductile iron pipe for water lines, water mains, and sanitary sewers shall conform to the requirements of AWWA C110 (ANSI A21.10) or AWWA C153 (ANSI A21.53) for size, joint type, pressure rating, and type of coating and lining as specified.
4. **Cement mortar linings** shall conform to the requirements of AWWA C104 (ANSI A21.4).

(c) **Steel Pipe:**

1. **Corrugated steel culvert pipe and pipe arches** shall conform to the requirements of AASHTO M36 except that helically formed pipe shall be tested in accordance with the requirements of AASHTO T249 at the rate of one test per week per corrugation machine per work shift. Records of such test shall be maintained for a period of 24 months. Pipe shall be fabricated from materials conforming to AASHTO M218 for galvanized pipe, AASHTO M274 for aluminum coated pipe, AASHTO M246 for polymer coated pipe and AASHTO M289 for aluminum zinc alloy coated pipe. Steel spiral rib pipe shall be of smooth wall spiral rib construction. When connecting bands or flared end sections are required, helically formed pipe shall have rerolled ends with a minimum of two annular corrugations. End sections shall be produced in accordance with the general requirements of AASHTO M36 from materials conforming to the applicable requirements of AASHTO M218 for use with galvanized pipe, AASHTO M274 for use with aluminum-coated or polymer coated pipe, or AASHTO M289 for use with aluminum zinc alloy-coated pipe.

Pipe sections shall be joined with annular corrugated bands, hugger bands, or maxidimple bands conforming to the requirements of AASHTO M36 and shall be designed to form a leak-resistant joint. Maxidimple bands shall have two rows of circumferential dimples spaced approximately 100 to 150 millimeters on center. Coupling band widths shall be at least 180 millimeters for pipe 300 through 750 millimeters in diameter and 270 millimeters for pipe 900 through 3000 millimeters in diameter. Coupling bands shall be not more than 3 millimeter (12 gage) and not less than 1 millimeter (18 gage) in thickness, and the thickness shall be equal to the pipe thickness or up to two numerical thicknesses lighter than the pipe thickness. (*Example:* For 12-gage pipe, coupling bands may be 12, 14, or 16 gage.) Coupling bands shall have the same metallic or polymer coating as the pipe sections on which they are connecting.

2. **Asphalt-coated corrugated steel culvert pipe and pipe arches** shall conform to the requirements of AASHTO M190 with the following modifications:
 - a. Steel to be coated shall be free from contaminants and shall be immersed in asphalt having a temperature of 200 ± 6 degrees C. When pipe is preheated to 150 degrees C, the temperature of the asphalt shall be at least 190 degrees C.

The duration of the first immersion of the steel in the hot asphalt shall be at least as follows:

Pipe Thickness	Time
----------------	------

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



(mm)	(min)
1.3	2
1.6	2.5
2.0	3
2.8	5
3.5	6.5
4.3	8

- b. Steel shall be dipped a second time to give a total coating of at least 1 millimeter in thickness.
 - c. Coupling bands need not be coated unless required for watertightness.
 - d. Samples for testing asphalt may be taken from the dipping vat prior to coating.
 - e. When a sheet with a thickness other than the minimum specified for a particular size of pipe or arch is to be coated, an embossed seal bearing the thickness of the steel shall be attached to each pipe or arch prior to dipping the pipe or arch in asphalt. The seal shall be secured through a drilled or punched hole, having a diameter of not more than 10 millimeters, approximately 25 millimeters from the end of the section of the pipe or arch. The seal shall remain attached to the pipe or arch for rapid identification of the thickness of the steel.
 - f. A mastic may be used in lieu of applying asphalt coating in the shop. Mastic shall conform to the requirements of and be applied in accordance with the requirements of AASHTO M243.
3. **Corrugated steel pipe for underdrains** shall conform to the requirements of AASHTO M36.
4. **Black and galvanized steel pipe:**
- a. **Black steel pipe for bridge deck drains and drainage systems** shall conform to the requirements of ASTM A53, extra strong (Schedule 80), with a wall thickness of at least 8.5 millimeters except that the hydrostatic test will not be required.
 - b. **Galvanized steel pipe for handrails** shall conform to the requirements of ASTM A120 or ASTM A53 for standard or extra strong pipe as indicated except that the hydrostatic test will not be required.
 - c. **Black and galvanized steel pipe for miscellaneous items** shall conform to the requirements of ASTM A53 except that the hydrostatic test will be required only when the pipe is used as pressure pipe.
5. **Smooth wall pipe (jacked or casing for general use):**
- a. **Steel encasement pipe** shall conform to the requirements of ASTM A139 with a minimum wall thickness of 13 millimeters or ASTM A53 Standard Mass Class and shall have beveled edges suitable for welding or be threaded. The hydrostatic test for such pipe will be waived.
 - b. **Pipe for jacking** shall be of sufficient strength, diameter and wall thickness to accomplish the specific task and shall be approved by the Engineer.
6. **Steel water pipe, flanges, and fittings:**

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



- a. **Steel pipe** shall conform to the requirements of AWWA C200 for the minimum design working pressure, wall thickness, and type of pipe ends as specified. The protective coating shall conform to the requirements of AWWA C203 for coal tar protective coating, and the lining shall conform to the requirements of AWWA C205 for cement mortar lining.
 - b. **Flanges** shall conform to the requirements of AWWA C207 as specified for pressure rating and size.
 - c. **Fittings** shall conform to the requirements of AWWA C208.
7. **Galvanized steel water pipe and fittings:**
- a. **Galvanized steel pipe** shall conform to the requirements of ASTM A53, Schedule 40 or 80, for the size; method of manufacture; type, plain or threaded; couplings; and class specified.
 - b. **Fittings** shall be galvanized malleable iron conforming to the requirements of ASTM A47. Threads shall conform to the requirements of ANSI B2.1.
8. **Concrete-lined corrugated steel pipe** shall conform to the requirements of Section 232.02(c)1 of the Specifications. and shall be fabricated from material conforming to AASHTO M274 for aluminum coated pipe. The concrete lining shall be at least 3 millimeter in thickness over the inside crest of corrugation. Concrete for the lining shall be composed of cement, sand, and water, mixed to produce a dense, homogeneous lining.
- Pipe sections shall be connected using a hugger band with O-rings. After pipe is installed, the separation between pipe sections shall be filled with a cement grout. After finishing, the area shall be sprayed with a liquid membrane-forming compound.
9. **Polymer coated steel pipe** shall conform to the requirements of Section (c)1 herein. Polymer coating material shall conform to AASHTO M246 and be composed of polyethylene and acrylic acid copolymer. Polymer coating shall have a minimum thickness of 0.25 millimeter and shall be applied to both sides of the pipe material. Polymer coating shall be labeled with the brand name of the material and the manufacture in accordance with AASHTO M246.
10. Corrugated steel double wall pipe shall conform to the requirements of Section (c)1 herein. Corrugated steel double wall pipe shall consist of a standard corrugated steel exterior shell that meets the structural requirements for the pipe and a smooth interior steel liner. The interior liner is to be continuously attached to the exterior shell along the lock seam. The interior liner is to have a minimum thickness of 1 millimeter. Both the exterior shell and the interior liner are to have a polymer coating applied to both sides of the pipe material in accordance with Section (c)9, herein.
- (d) **Structural Plate Pipe, Pipe Arches, and Arches:** Pipe, pipe arches, and arches shall conform to the requirements of AASHTO M167 for corrugated steel pipe and AASHTO M219 for aluminum alloy pipe. When asphalt coating is required, it shall be an asphalt mastic applied to the structure after assembly. The asphalt mastic shall conform to the requirements of and be applied in accordance with the requirements of AASHTO M243.
- (e) **Aluminum Alloy Pipe:**

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

1. **Corrugated aluminum alloy culvert pipe and pipe arches** shall conform to the requirements of AASHTO M196. Material used to produce end sections for use with corrugated aluminum alloy pipe shall conform to the requirements of AASHTO M196.

Aluminum spiral rib pipe used for storm drains shall conform to the requirements of AASHTO M196 except that it shall be of smooth wall, spiral ribbed construction. Connecting bands for aluminum drainpipe shall conform to the thickness and the corrugations or rib of the pipe to which they are connecting.

2. **Corrugated aluminum alloy pipe underdrains** shall conform to the requirements of AASHTO M196, Type III. When used as combination underdrains, pipe shall not be perforated.
- (f) **Vitrified Clay Pipe and Fittings:** Pipe and fittings shall conform to the requirements of AASHTO M65, extra strength, or, for sanitary sewer, may conform to the requirements of ASTM C700, extra strength. Joints for sanitary sewer shall conform to the requirements of ASTM C425. Plain and perforated clay pipe for drain fields shall conform to the requirements of ASTM C700, extra strength.

(g) **Polyvinylchloride (PVC) Pipe:**

1. **PVC water and pressure sewer pipe** shall conform to the requirements of AWWA C-900, PC-150, for water facilities and ASTM D1785 for pressure sewers and shall have a pressure rating of at least 1 megapascals.
2. **PVC gravity sewer pipe** shall conform to the requirements of ASTM D3034; SDR35; ASTM F794, Series 46; or ASTM F949.
3. **PVC ribbed pipe for culverts and storm drains** shall conform to the requirements of AASHTO M304 or ASTM F949.
4. **PVC underdrains** shall conform to the requirements of ASTM F758, Type PS 28, or ASTM F949.

- (h) **Glass Fiber-Reinforced Epoxy Pipe and Fittings:** Pipe and fittings shall conform to the requirements of ASTM D2996, ASTM D2997, or AWWA C950 with a continuous rating of at least 1 megapascal at 65 degrees C for pipe, fittings, and adhesive joints.

(i) **ABS Pipe:**

1. **ABS semiround underdrain pipe with top shield** shall be at least 115 millimeters in diameter with drain holes 6 or 9 millimeters in diameter drilled at least 20 millimeters apart under the roof line. Pipe shall have a mass of at least 1.2 kilograms per meter. When used as combination underdrains, pipe shall not be perforated.
2. **ABS sewer pipe and fittings** shall conform to the requirements of ASTM D2680 for the type of joints specified and shall have a pressure rating of at least 1 megapascals.

(j) **Polythylene (PE) Pipe:**

1. **PE corrugated underdrain pipe** shall conform to the requirements of AASHTO M252. Pipe shall be supplied in individual lengths with no lengths shorter than 3 meters. Coil pipe will be permitted only in 100-millimeter or 150-millimeter diameters provided it is machine installed. If the pipe starts to recoil during installation, the Contractor shall cease operations until a method of anchoring the pipe in the trench is approved. When used as combination underdrain or outlet pipe, the pipe shall be smooth wall, nonperforated.

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

2. **PE corrugated culvert pipe** shall conform to the requirements of AASHTO M294. PE pipe used for storm drains and entrances shall conform to the requirements of classification Type S. For all other applications, PE pipe shall be Type C or S.
 3. **PE pipe and fittings** shall conform to the requirements of AWWA C-901 for water mains and ASTM D2239, Grade P34, for sanitary sewers and shall have a pressure rating of at least 1 megapascal.
- (k) **Copper Water Pipe or Tubing:** Copper water pipe or tubing shall conform to the requirements of ASTM B88 and shall have the cast or wrought pattern. Fittings for concealed soft drawn pipe may be the flared mechanical type. Unions shall be the ground joint type.
- (l) **Polybutylene Pipe and Fittings:** Pipe and fittings shall conform to the requirements of AWWA C902 for water mains and ASTM F809 for sanitary sewers.

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

**GUIDELINES— PROJECTS REQUIRING WOOD PRODUCTS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM236A0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 236—WOOD PRODUCTS

September 26, 2006

SECTION 236—WOOD PRODUCTS of the Specifications is replaced with the following:

236.01—Description

These specifications cover structural timber and lumber, miscellaneous wood products, and preservative treatments.

236.02—Detail Requirements

- (a) **Structural timber and lumber** shall conform to the requirements of AASHTO M168. The species and grade of structural lumber shall be as shown on the plans. The Engineer may approve the substitution of another species of equal or greater strength selected from the "Allowable Unit Stresses for Structural Lumber—Visually Graded" of AASHTO's *Standard Specifications for Highway Bridges* or the supplement to *National Design Specification for Stress-Grade Lumber and Its Fastenings* of the National Forest Products Association.

Except as otherwise specified, the species and grade of structural lumber, timber, and posts for the following applications shall be as follows:

1. Bridges shall be at least 10,686 kilopascals Fb and:
 - a. 125 millimeters by 125 millimeters and larger: Southern Pine, No. 1 Dense
 - b. 50 millimeters through 100 millimeters by 50 millimeters through 100 millimeters: Southern Pine, No. 2 Dense
 - c. 50 millimeter through 100 millimeter by 125 millimeter and through 150 millimeter: Southern Pine, No. 1
 - d. 50 millimeter through 100 millimeter by 200 millimeter only: Southern Pine, No. 1 Dense.
 - e. 50 millimeter through 100 millimeter by 250 millimeter only: Southern Pine, Non-Dense Select Structural.
 - f. 50 millimeter through 100 millimeter by 300 millimeter only: Southern Pine, Non-Dense Select Structural.
2. Signs shall be at least 7,583 kilopascals Fb with material being dressed on all sides and:
 - a. 100 millimeters and less in the least dimension: Southern Pine, No. 2 Non-Dense.
 - b. Over 100 millimeters in the least dimension: Southern Pine, No. 1
3. Guardrail shall be at least 8,618 kilopascals Fb Southern Pine, No. 1 Dense.

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

- a. In lieu of sawn posts, round Southern pine posts may be used. Round posts shall have at least an 200-millimeter diameter at the small end, and the diameter of the larger end shall not exceed that of the smaller end by more than 50 millimeters or be greater than 300 millimeters. Round posts shall be drilled and gained to accept the rail element or offset block.
4. Fence shall be Southern Pine, No. 2, for line, corner, and brace units.
5. Signalization and electrical service shall conform to the requirements of ANSI Class 5.1.

Sawn material, both rough and dressed, shall be certified by the mill as to grade and shall be grade marked in accordance with the grading rules and basic provisions of the *American Lumber Standards (PS-20-70)* by a lumber grading or inspection bureau or agency approved by the Department. If dressed, the grade mark shall be applied after dressing.

- (b) **Timber piles** shall conform to the requirements of ASTM D25. Piles shall be clean peeled and have a butt circumference of at least 790 millimeters. Piles for fender systems or other non-load bearing uses will be accepted under the following criteria provided the piles can be properly driven: A straight line from the center of the butt to the center of the tip may lie partly outside the body of the pile, but the distance between the line and pile shall be not more than 1/2 percent of the length of the pile or 75 millimeters, whichever is smaller.

Points for timber piles shall be steel or cast iron and of a shape that will allow a secure connection to the pile and will withstand driving.

Timber piles shall be branded prior to shipment with the supplier brand, year of treatment, species of timber and preservative treatment, retentions, class, and length. Brand symbols shall conform to the requirements of AWPA M6.

- (c) **Timber preservatives** shall be used according to their suitability for the condition of exposure to which they will be subjected and shall not be used interchangeably. Treatments shall conform to the following limitations:
 1. Waterborne preservatives shall be used for timber where a clean surface is desirable. The moisture content of wood material shall be not more than 19 percent at the time of treatment.
 2. Pentachlorophenol and creosote may be used for timber that is not to be painted. Timbers treated with pentachlorophenol or creosote shall be free of excess preservative on the wood surface.
 3. Preservatives shall conform to the requirements of the American Wood-Preservers' Association (AWPA).
 4. Pressure treatment shall conform to the requirements of the AWPA "Use Category System" as follows:
 - Lumber and timber for bridge structures including bridge decking, guardrail posts, and offset blocks shall be treated to conform to the requirements of UC4B.
 - Foundation piles shall be treated to conform to the requirements of UC4C.
 - Wood composites shall be treated to conform to the requirements of UC4A.
 - Sign posts, fence posts, and gates shall be treated to conform to the requirements of UC4A.

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

- All other sawn products and round posts less than 4.8 meters in length shall be treated to conform to the requirements of UC4A.
5. Marine applications where wood structures or products will be placed in or above salt water, brackish water, or tidal water shall be treated to conform to the requirements of UC5B.
 6. Wood used for highway construction and maintenance applications for sign posts, fence posts, wood posts, guardrail posts, bridge decking, gates, stair treads, and offset blocks shall be treated with a chromated copper arsenate (CCA) preservative. Wood used for highway construction and maintenance applications for piles, timbers, and composites may be treated with a CCA, pentachlorophenol, or creosote preservative.
 7. Wood used for hand-contact surfaces such as handrails, playground equipment, and picnic tables shall be treated with either ammoniacal copper quaternary (ACQ) salt or copper azole (CA) preservative. ACQ and CA wood treatments are highly corrosive to metal; fasteners or connectors that will be in contact with wood using ACQ or CA wood preservative treatments shall be either 304 or 316 stainless steel or hot-dipped galvanized steel that conforms to the requirements of ASTM A153 or ASTM A653, Class G185. Mechanically galvanized steel is prohibited.

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

**GUIDELINES - PROJECTS REQUIRING ELECTRICAL OR TRAFFIC SIGNAL SYSTEMS:
EXCEPTIONS: NONE.**

SM238A4B-0708

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 238—ELECTRICAL AND SIGNAL COMPONENTS

March 4, 2008

SECTION 238 ELECTRICAL AND SIGNAL COMPONENTS of the Specifications is amended as follows:

Section 238.02(a) Metal Conduit and Fittings is replaced with the following:

- (a) **Metal Conduit and Fittings:** Rigid metal conduit shall conform to, and be galvanized in accordance with the requirements of UL-6. Flexible metal conduit shall conform to, and be galvanized in accordance with the requirements of UL-360 for Liquid-tight Flexible Steel Conduit. Fittings for rigid and flexible metal conduit shall conform to, and be galvanized in accordance with the requirements of UL-514B. Metal conduit and fittings for use in underground installations, concrete encasements, or corrosive environments shall also be coated on the outside with asphalt mastic in accordance with the requirements of AASHTO M243 or shall have a PVC coating of 1.00 millimeter or another approved coating.

Section 238.02(b) PVC conduit and fittings is amended to include the following:

When used in a directional boring operation, Schedule 40 PVC shall have integral male/female couplings, gasket, locking rings and grooves designed to secure the conduit sections for installation in the bored area. Joints shall have a pull rating of 3175 kilograms for 75 millimeters, 3946 kilograms for 100 millimeters, 5125 kilograms for 125 millimeters and 6350 kilograms for 150 millimeter.

Section 238.02(c) Fiberglass reinforced epoxy resin conduit and fittings is replaced with the following:

- (c) **Fiberglass reinforced epoxy resin conduit and fittings:** Conduit shall conform to the requirements of NEMA TC-14B. Conduit used in exposed areas shall be heavy wall and sunlight resistant. Epoxy adhesive used for joining shall conform to the requirements of NEMA TC-14. Protective shields shall conform to the same requirements as those used with PVC conduit.

Section 238.02(d) PE Conduit is replaced with the following:

- (d) **PE conduit:** PE conduit shall conform to the requirements of NEMA TC-7 for high density PE duct except that the wall thickness of conduit with a diameter of 32 millimeters and less shall conform to UL-651 for heavy wall PVC conduit. Conduit shall have a carbon black loading of 2.5 ± 0.5 percent by mass per ASTM D1603. The average diameter of the carbon black shall not be larger than 40 millimicrons in accordance with the requirements of ASTM D1514. Conduit shall contain at least 1,000 parts per million of hindered phenolic long term antioxidant per ASTM D3895.

Section 238.02(h)1. Safety switches is replaced with the following:

1. **Safety switches** shall be enclosed in a raintight metal box and cover conforming to the requirements of NEMA 3R, with a lock-on/lock-off external switch handle. Safety switches shall be heavy duty, two-pole minimum with solid neutral and fused compatible with the equipment load. For signal installations, safety switches shall be rated at 100-amp/240-volts.

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

Section 238.02(h)2. Circuit breaker boxes is replaced with the following:

2. **Circuit breaker boxes** used as a service disconnect for signal equipment shall be a raintight metal box and cover conforming to the requirements of NEMA 3R. The circuit breaker box shall be rated at 100-amp/240-VAC with a solid neutral and shall contain two single pole, 120-VAC breakers with an ampere rating compatible with the equipment load and shall have provisions for padlocking. The service load shall be wired to only one breaker.

Section 238.02(h)3. Ground rods is replaced with the following:

3. **Grounding electrodes (rods)** shall be copper clad rods conforming to the requirements of UL-467. Grounding electrodes shall have a diameter of 19 millimeters and a length of 3 meters. Grounding electrodes couplers shall be bronze, stainless steel or copper clad with a solid center providing 100 percent conductivity and be UL approved.

Section 238.02(h)4. Ground wires is replaced with the following:

4. **Grounding electrode conductors** shall be no less than No. 6 AWG (bare solid wire) conforming to the requirements of ASTM B2.

Section 238.02(h)6. Signal head sections is replaced by the following:

- a. **Standard traffic signal head sections** shall conform to the ITE Standard for Vehicle Traffic Control Signal Heads, with the following exceptions and additions:
 - (1) Lenses shall be made of glass.
 - (2) Reflectors shall be made of glass or aluminum and shall be attached to the signal head housing by a hinged support system that is separate from the door and lens.
- b. **Selective view signal head sections** shall conform to the requirements of Section 4.04 of the ITE Standard for Vehicle Traffic Control Signal Heads.
- c. **Pedestrian signal head sections** shall be made of plastic, nonferrous metal, or a combination thereof. Strength requirements shall conform to the ITE Standard for Vehicle Traffic Control Signal Heads. The displays shall include "Walking Person" and "Upraised Hand" symbol indications in a separate or overlay configuration. Indications shall be illuminated using light emitting diode (LED) modules and conform to the latest ITE Performance Specifications for Pedestrian Traffic Control Signal Indications. Symbol indications shall be filled.

The Contractor shall provide with the initial catalog cut submittals for the model and type of pedestrian signal furnished the manufacturer's certificate of ITE compliance and an independent photometric laboratory certification for ITE luminous intensity requirements for the LED modules.

- d. **Lane use control signal head sections** shall conform to the ITE Standard for Lane Use Traffic Control Signal Heads, with the following exceptions and additions:
 - (1) Strength requirements shall conform to the ITE Standard for Vehicle Traffic Control Signal Heads.
 - (2) Lenses shall be made of glass.

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

- (3) Reflectors shall be attached to the signal head housing by a hinged support system that is separate from the door and lens.
- e. **Signal lamps** shall conform to the requirements of the ITE standards for Traffic Signal Lamps and shall contain no less than 89 percent Krypton gas. The manufacturer shall provide certification of ITE compliance and percent of Krypton gas from an independent testing laboratory.
- f. **Light Emitting Diode (LED) traffic signal head sections**—LED traffic signal head sections shall consist of a standard traffic signal head section (without the optical assembly) and a LED vehicle traffic signal module.

LED circular traffic signal modules shall conform to: *ITE Vehicle Traffic Control Signal Heads – Light Emitting Diode Circular Signal Supplement issued on June 27, 2005* (inclusive of any ITE documents that amend, revise and/or supersede it).

LED arrow traffic signal modules shall conform to the requirements of the *ITE Vehicle Traffic Control Signal Heads – Light Emitting Diode Vehicle Arrow Traffic* issued April 3, 2006 (inclusive of any ITE documents that amend, revise and/or supersede it).

The Contractor shall provide the LED manufacturer's certificate of ITE compliance for the LED modules furnished and independent laboratory test reports. Independent laboratory tests shall include specific test and test results of each ITE test as specified in the *ITE Design Qualification Testing Section 6.4*. Independent test reports shall be submitted at the same time as the catalog cut is submitted for the model and type of LED signal module furnished.

The Independent Laboratory utilized for LED testing shall be on the OSHA current list of Nationally Recognized Test Laboratory(s) (NRTLs). Testing laboratory shall be located within the continental United States or Canada.

LED modules shall be fully compatible with the features and functions of conflict monitors and malfunction management units. Compatibility shall include, but is not limited to, dual indication, absence of red and conflict monitoring. The Contractor shall verify compatibility of LED modules in the presence of the Engineer.

The LED's shall be mounted and soldered to a printed circuit board. Modules shall be provided with an external in-line fuse or internal fusing of the 120 VAC (+) input. The fuse shall be rated in accordance with the LED module manufacturer. The LED signal module shall utilize the same mounting hardware used to secure the incandescent lens and gasket assembly and shall only require a screwdriver or standard installation tool to complete the mounting.

The control circuitry shall prevent the current flow through the LED's in the off state to avoid any false indication as may be perceived by the human eye, during daylight and evening hours.

Manufacturer's part number, model and manufacturing date of the LED signal module shall be visible on the rear of the assembly.

LED traffic signal modules shall be warranted for 5 years against manufacturing defects. Modules shall be replaced if the module fails due to material and/or workmanship during this 5 year period.

Section 238.02(h)7.a. is deleted.

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

Section 238.02(h)7.b. is replaced with the following:

- b. **Plastic** shall be virgin ABS (acrylonitrile-butadiene-styrene) and shall contain ultraviolet inhibitors and stabilizers. Plastic shall have a tensile stress at yield of at least 36 megapascals when tested in accordance with ASTM D638; a flexural strength at yield of at least 64 megapascals when tested in accordance with ASTM D790 and a minimum impact resistance of 213 joules per meter when tested in accordance with ASTM D256, Method A. Plastic shall conform to or exceed the requirements of UL-94 test H.B. for fire retardance. The color of backplate shall be impregnated into the plastic. The thickness of the backplate shall be at least 3 millimeters. Backplates shall be vacuum formed; the inside and outside edges shall be formed with at least a 13 millimeters flange turned away from the front surface.

Section 238.02(h)11. is replaced with the following:

11. **Angle thimbleyes** shall be Rural Utilities Service (RUS) listed.

Section 238.02(h)13. Stainless steel straps is replaced with the following:

13. **Stainless steel straps** shall be solid, 15 millimeter width minimum, with a tensile strength of at least 690 megapascals.

Section 238.02(h)15. Signal lamps is deleted.

Section 238.02(h)20. Tape is replaced with the following:

20. **Tape:**

- a. **Vinyl tape** shall be for electrical use and conform to the requirements of ASTM D2301, Type 1.
- b. **Rubber tape** shall be for electrical use and conform to the requirements of ASTM D4388.

Section 238.02(h)21. Photoelectric controls is amended to replace the third sentence with the following:

The ratio of the turn-off light level to the turn-on light level shall not exceed 1.65 : 1.

Section 238.02(h)24. Splice kits is replaced with the following:

24. **Splice kits** shall be packaged containing materials from a single supplier and consist of a plastic molded body with a compound that provides a water resistant seal and insulation for the conductor cables for at least 600 volts.

Section 238.02(h)25. Balance adjusters is deleted.

Section 238.02(h) is amended to add the following:

27. **Contactors** shall be UL listed, open type. Contactor shall be rated to be compatible with equipment load and type of load
28. **Dead end strain vise clamps** shall be designed for the size of the span wire or tether wire and shall meet or exceed the tensile strength of the cable. Clamps shall be fabricated from corrosion resistant materials or shall be galvanized. Clamps shall have a release slot for holding the jaws back for retensioning and removal of the wire. Clamps shall be internally coated with inhibitor oils to prevent corrosion and to allow for the free movement of the jaws.

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

29. **Heat-shrink tubing** shall consist of an adhesive lined, polyolefin flexible material conforming to the following:

Shrinkage ratio	2:1
Water absorption	0.3 % Maximum
Electrical rating	≥ 600 Volts

30. **Guy markers** shall be white, unless otherwise specified, and shall be Poly Vinyl Chloride (PVC) or Polyolefin complete with all necessary manufacturer approved installation/mounting hardware and shall conform to the following minimum requirements:

PROPERTY	TEST METHOD	UNIT	MATERIALS	
			PVC	Polyolefin
Mechanical				
Tensile Strength	ASTM D638	Psi (MPa)	6500 (45)	4500 (31)
Tensile Modulus	ASTM D638	Psi (MPa)	380,000 (2617)	141,000 (971)
Hardness-Shore D	ASTM D2240/D2583	N/A	78	68
Notched Impact	ASTM D256	Ft-lb/In (J/m)	11.0 (587)	5.0 (267)
Thermal				
Heat Distortion Temperature at: 264 Psi (1.8MPa)	ASTM D648	F C	162 72	N/A N/A
Flammability	UL-94		V-O	N/A
Electrical				
Dielectric Constant	ASTM D150	Volts per mil of thickness	3.5	2.3
Dielectric Strength	ASTM D149	Volts per mil of thickness	480	500

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



**GUIDELINES- PROJECTS WITH FENCES,
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM242A1B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 242—FENCES

June 21, 2005

SECTION 242—FENCES of the Specifications is amended as follows:

242.02—DETAIL REQUIREMENTS is replaced by the following:

Steel posts and braces for standard fence and chain link fence may be fabricated from pregalvanized material in lieu of galvanization after fabrication provided ends and other areas of exposed metal are satisfactorily repaired using a material conforming to the requirements of Section 233 of the Specifications.

- (a) **Chain Link and Pedestrian Fences:** Fabric material shall be 3.76-millimeter diameter core, new, and shall conform to the following:
1. **Galvanized wire fabric for use in chain link fence** shall be hot dip galvanized after weaving in accordance with the requirements of AASHTO M181, Type I Class D, and for use in pedestrian fence shall be hot dip galvanized after weaving in accordance with the requirements of AASHTO M181, Type I Class C.
 2. **Aluminum alloy wire fabric** shall conform to the requirements of AASHTO M181, Type III.
 3. **Aluminum coated wire fabric** shall conform to the requirements of AASHTO M181, Type II.
 4. **Coated wire fabric**
 - a. **Vinyl coated wire fabric** shall conform to the requirements of AASHTO M181, Type IV, Class A or Class B, except that vinyl coated may be 3.76-millimeter diameter overall, including coating, provided that the core wire has a minimum zinc coat mass of 90 grams per square meter and a minimum breaking strength of 5.7 kilonewtons.
 - b. **Other conforming organic polymer-coated wire fabric** shall conform to the requirements of ASTM F 668 Class 1, Class 2a or 2b
 5. **End, corner, and gate posts** shall be one of the following:
 - a. welded or seamless steel galvanized pipe conforming to the requirements of ASTM F1083, Schedule 40
 - b. roll formed steel sections shall conform to the requirements of ASTM F1043 Group IIA Type A
 - c. aluminum alloy pipe conforming to the requirements of ASTM F 1043 Group IB.

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

- d. galvanized pipe conforming to the requirements of ASTM F 1043 Group IC with Type B external coating and Type D internal coating
 - e. vinyl or other conforming organic polymer-coated pipe conforming to the requirements of ASTM F 1043 Group IA with Type A external and internal coatings
 - f. vinyl or other conforming organic polymer-coated pipe conforming to the requirements of ASTM F 1043 Group IC with Type B external coating and Type D internal coating
6. **Line Posts** shall be one of the following:
- a. steel H-columns shall conform to the requirements of ASTM F1043 Group III, Type A
 - b. round galvanized steel pipe conforming to the requirements of ASTM F1083, Schedule 40
 - c. roll formed C-sections shall conform to the requirements of ASTM F1043 Group IIA, Type A
 - d. aluminum alloy H-columns conforming to the requirements of ASTM B221, alloy 6063-T6
 - e. aluminum alloy pipe conforming to the requirements of ASTM F 1043 Group IB
 - f. galvanized pipe conforming to the requirements of ASTM F 1043 Group IC with Type B external coating and Type D internal coating
 - g. vinyl or other conforming organic polymer-coated pipe conforming to the requirements of (a)5.e. or (a)5.f. herein
7. **Braces** shall be one of the following:
- a. welded or seamless steel galvanized pipe conforming to the requirements of ASTM F1083, Schedule 40
 - b. roll formed steel sections shall conform to the requirements of ASTM F1043 Group IIA, Type A.
 - c. aluminum alloy pipe conforming to the requirements of ASTM F 1043 Group IB.
 - d. galvanized pipe conforming to the requirements of ASTM F 1043 Group IC with Type B external coating and Type D internal coating
 - e. vinyl or other conforming organic polymer-coated pipe conforming to the requirements of (a)5.e. or (a)5.f. herein
8. **Gates** shall be complete with hinges, latches, stops, and other necessary fittings. Gate frames shall be fabricated and coated with the same material as the adjoining fence framework and fabric.
9. **Aluminum alloy post surfaces that will be in contact with concrete and up to 25 millimeters above concrete** shall be uniformly coated with an aluminum impregnated caulking compound or a solvent asphalt fiber filled and aluminum

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

pigmented coating conforming to the requirements of ASTM D 2824 Type III. Care shall be taken to prevent voids in the coating and the smearing of visible surfaces of concrete or posts, except as otherwise noted herein.

10. **Tension wire** shall conform to one of the following:

- a. Aluminum coated tension wire shall meet the requirements of AASHTO M181
- b. Zinc coated tension wire shall meet the requirements of AASHTO M181, Class 1.
- c. vinyl coated tension wire shall meet the requirements of AASHTO M181 Class A or Class B. The minimum mass of the zinc coating shall be 120 grams per square meter. The breaking strength of the core wire shall meet the requirements of AASHTO M181 for tension wire.
- d. Other conforming organic polymer-coated tension wire shall be 4.5 millimeter in diameter and conform to ASTM F 1664. The breaking strength of the core wire shall meet the requirements of AASHTO M181 for tension wire.

11. **Fittings** shall be fabricated and coated with the same material as the fence framework and fabric

(b) **Barbed Wire Fence, Woven Wire Fence and Lawn Fence:**

1. **Barbed wire** shall conform to one of the following:

- a. ASTM A121, Coating Type Z, Coating Class 3 Design Number 12-4-5-14R
- b. ASTM A121, Coating Type Z, Design Number 15-4-5-16R except that the tensile strength of the line wire shall be at least 215 kilograms per strand and the zinc coating shall be at least 210 grams per square meter.
- c. Single strand oval shaped wire having a diameter of at least 2 millimeters in its least dimension but not more than 3 millimeters in its greatest dimension and a tensile strength of at least 521 kilograms; wire shall have four barbs of 2.0-millimeter diameter wire and a zinc coating of at least 90 grams per square meter.
- d. Vinyl and other polymer-coated barbed wire shall conform to ASTM F 1665 Type I.

2. **Woven wire fence fabric** shall conform to the requirements of AASHTO M279. Standard FE-W1 shall conform to Design No. 1047-6-11, Class 3 or No. 1047-6-12 1/2, Grade 125, Class 3. Standard FE-W2 shall conform to Design No. 1047-12-11, Class 3 or No. 1047-12-12 1/2, Grade 125, Class 3.

3. **Lawn Fence** shall be the type shown on the plans, a similar type that will match the existing fence, or as desired by the landowner and approved by the Engineer.

4. **Wood post and braces:**

- a. **Species of wood:** Posts and braces for standard fence shall be Southern pine, Ponderosa pine, Douglas fir, Western hemlock, larch, or white or red cedar as defined in AASHTO M168. Locust may be used for woven wire farm fence and barbed wire fence.

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

- b. **Cutting requirements:** Round or square posts and braces shall be cut from live growing trees.
- c. **Seasoning:** Posts and braces shall be sufficiently air seasoned in an approved manner for a suitable length of time under favorable climate conditions or otherwise conditioned as part of the treating process to permit adequate penetration of preservative without damage to the wood.
- d. **Peeling:** Posts and braces shall have the inner bark removed to the extent defined by the SPIB. Knots and projections shall be cut or shaved smooth and flush with the surrounding surface of the unit.
- e. **End finish:** Butt ends of posts shall be sawn square.
- f. **Dimensions:** Posts shall not vary from the length specified on the plans by more than 25 millimeter. Thickness dimensions shall be undressed dimensions and shall not vary from the dimensions shown on the plans by more than 6 millimeters.
- g. **Straightness:** Wood posts and braces shall be free from bends in more than one place and free from short or reverse bends. The straightness of the post or brace shall be such that a straight line from the center of the tip to the center of the butt shall not depart from the center of the post by more than 2 percent of the length.
- h. **Grading for square posts and braces:** Grading shall conform to the requirements of (b)4.a. herein.
- i. **Preservative treatment:** Posts and braces, except cedar and locust, shall be treated with a preservative in accordance with section 236 except that waterborne preservatives shall not be used in the treatment of posts and braces to be erected in marshy areas. Oil-borne preservatives shall not be used where the posts and braces will come into contact with salt water.

Cutting and trimming of the ends shall be performed prior to treatment.

- 5. **Metal posts and braces:** Post anchor plates shall have a surface area of at least 10,300 square millimeters. Posts shall be in accordance with the following:
 - a. **Steel posts and braces** shall be galvanized and shall conform to the requirements of Section 233 of the Specifications.
 - b. **Galvanized pipe** conforming to the requirements of (a)5.d. herein.
- 6. **Gates** similar in type to those that exist may be substituted for gates shown on the plans or standard drawings if preferred by the landowner and approved by the Engineer.
- 7. **Brace wire** shall be 3.76-millimeter overall diameter and shall conform to AASHTO M279 No 9 Grade 60 Class 3.

(c) **Temporary Silt Fences, Geotextile Fabric, Silt Barriers, and Filter Barriers:**

- 1. **Geotextile fabric** shall conform to the requirements of Section 245 of the Specifications.

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

2. **Posts for temporary silt fences** shall be a nominal 64 by 64-millimeter or a 76-millimeter diameter No. 2 Southern pine, a nominal 50 by 50 millimeter oak, or steel having a mass of at least 1830 grams per meter and a length of at least 1.5 meters.
3. **Supports for temporary filter barriers** shall be a nominal 25 by 50-millimeter or 38 millimeter diameter No. 2 Southern Pine or oak, or steel having a mass of at least 1480 grams per meter and a length of at least 0.76 meter.

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

**GUIDELINES— PROJECTS REQUIRING EPOXY-RESIN SYSTEMS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM243A0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 243—EPOXY-RESIN SYSTEMS

June 12, 2006

SECTION 243—EPOXY-RESIN SYSTEMS of the Specifications is amended as follows:

Section 243.02(c) - Mixing Epoxy of the Specifications is amended to replace the third sentence of the first paragraph with the following:

Component B shall contain one or more hardening agents that when mixed with Component A will cause the system to polymerize and harden to conform to the requirements of Table II-21.

Section 243.03—Handling and Storing Materials Table II-22 is replaced with the following:

**TABLE II-22
Fine Aggregate (Silica Sand)**

Amounts Finer Than Each Laboratory Sieve (Sieve Opening) (% by Mass)						
Grading	2.36mm	1.18mm	850mm	600µm	425µm	150µm
D	Min 100	30-70		Max 5		Max 1
E	Min 100	99±1	95±5		Max 10	

Section 243.04—Acceptance is replaced with the following:

Shipments of less than 60 liters may be accepted upon certification. The Contractor shall submit a certification from the manufacturer that Components A and B conform to these specifications. The certification shall consist of a statement by the manufacturer that Components A and B have been sampled and tested. The certification shall be signed by an authorized agent of the manufacturer and contain actual results of tests performed in accordance with the methods specified herein.

For shipments of 60 liters or more, at least one random test sample of each component from each batch or lot number will be taken by the Department. The quantity of Component A required to react with 1 liter of Component B will be a sufficient sample for the tests specified. Components shall be furnished in as few different batches or lots as possible.

Tests will be performed in accordance with the following methods:

Characteristics	Test Method
Viscosity	VTM-115, Model DV-II Brook-field Viscometer VTM-115 Test Conditions: Determinations to be made at: Class A – 0°C Class B – 10°C

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



	Class C - 25°C
Epoxide equivalent	ASTM D1652
Volatile content	ASTM D1259, Method B, for mixed system ASTM D1259 Test Conditions: Sample cured 4 days at room temperature and mass determined on previously massed metal foil.
Filler content	AASHTO T-111 on component A
Ash content	ASTM D482
Pot life	AASHTO T237 AASHTO T237 Test Conditions: Determinations to be made at: Class A – 0°C Class B – 10°C Class C - 24°C
Tensile strength	ASTM D638
Bond strength	VTM-41
Compressive strength	VTM-41
Water absorption	ASTM D570
Thermal shear	VTM-42

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



**GUIDELINES - PROJECTS WITH ROADSIDE DEVELOPMENT.
EXCEPTIONS: NONE.**

SM244A1B-0503

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 244—ROADSIDE DEVELOPMENT MATERIALS

January 27, 2003cc

SECTION 244 ROADSIDE DEVELOPMENT MATERIALS of the Specifications is amended as follows:

Section 244.02(b) Topsoil: The first sentence of the second paragraph is replaced as follows:

2. **Class B topsoil** shall be topsoil furnished from sources outside the project limits and shall be the original top layer of a soil profile formed under natural conditions, technically defined as the "A" horizon by the Soil Science Society of America.

Section 244.02(b)4 Hydric soil for wetland mitigation is deleted.

Section 244.02(c) Seeds: The first paragraph is replaced as follows:

Kinds and varieties of seeds shall be delivered to the project in separate sacks bearing a green seed label denoting the seed has been inspected and approved by the Virginia Crop Improvement Association. Seeds shall be mixed under the observation of the Engineer on the project or at other approved locations. Seeds shall comply with applicable state and federal seed laws and contract requirements. Seed shall not be used until approved by the Engineer.

Section 244.02(c) Seeds: The second paragraph including "FORM OF AFFIDAVIT" is deleted.

Section 244.02(c) Seeds: The fourth paragraph is replaced as follows:

Seed test shall be completed within the nine-month period prior to the beginning of the "area" scheduled seeding period during which the seed is to be used.

Section 244.02(d) Fertilizers is replaced with the following:

1. **Fertilizer for seeding, sodding, sprigging, and plugging** shall have a guaranteed 1-2-1 ratio and a 15-30-15 analysis with a minimum 30% of the nitrogen from either a slow release or slowly soluble source with the remainder of the nitrogen from urea or ammonium nitrate. The following types of slow release or slowly soluble nitrogen fertilizers can be used: urea formaldehyde (UF){ureaform, methylene urea, and methylene diurea/dimethylene triurea}, isobutylidene dirurea (IBDU), sulfur coated urea (SCU) and polycoated urea (PCU). Urea formaldehyde products shall have a minimum activity index of 40%. The IBDU minimum "size guide number" (SGN) shall be 230. All UF and IBDU products shall indicate the slow release/slowly available nitrogen source on the fertilizer analysis label as Water Insoluble Nitrogen (WIN). The polycoated and sulfur coated ureas shall have a minimum of 3 month release duration for the total product. The phosphorous content of the fertilizer shall be triple superphosphate or diammonium phosphate. The potassium content of the fertilizer shall be potassium chloride commonly known as muriate of potash. All slow release or slowly soluble fertilizers can be applied with a hydraulic seeder except for SCU.

The fertilizer shall be uniform in composition, free flowing, and suitable for application with approved equipment. The fertilizer shall be delivered to the project in bags or other convenient containers, each fully labeled, and shall conform to all applicable state and federal laws and regulations. Additional nutrients shall be added only when specified. All fertilizer

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

shall be subject to testing by the Virginia Department of Agriculture and Consumer Services. The Department reserves the right to reject fertilizer materials that do not meet these specifications or to be compensated in accordance with the requirements of the Virginia Fertilizer Law. Other fertilizer products and rates may be substituted with approval from the Engineer.

2. **Fertilizer for planting plants** shall have a guaranteed 1-2-1 ratio and a 15-30-15 analysis with a minimum of 30% of the nitrogen from either a slow release or slowly soluble source with the remainder of the nitrogen from urea or ammonium nitrate. The following types of slow release or slowly soluble nitrogen fertilizers can be used: urea formaldehyde (UF){ureaform, methylene urea, and methylene diurea/dimethylene triurea}, sulfur coated urea (SCU) and polycoated urea (PCU). Urea formaldehyde products shall have a minimum activity index of 40%. The polycoated and sulfur coated ureas shall have a minimum of 3 month release duration for the total product. All slow release or slowly soluble fertilizers shall be applied as a dry surface application as shown in Volume II of the landscape section of the VDOT Road and Bridge Standards.

A copy of the material safety data sheet (MSDS) shall be provided to VDOT for each type of fertilizer supplied with each fertilizer delivery. Any fertilizer delivery that is not accompanied by the appropriate MSDS will be rejected. The fertilizer shall be uniform in composition, free flowing, and suitable for application with approved equipment. Fertilizer shall be delivered to the project in original bags or other convenient containers, each fully labeled, and shall conform to all applicable state and federal laws and regulations. Additional nutrients shall be added only when specified. All fertilizer shall be subject to testing by the Virginia Department of Agriculture and Consumer Services. Other fertilizer products and rates may be substituted with approval from the Engineer.

Section 244.02(d)2. Fertilizer for planting plants is amended to replace the first sentence as follows:

2. **Fertilizer for planting plants** shall have an NPK analysis ratio of 3-1-1, 3-1-2 or 4-1-1 slow release.

Section 244.02(d)1. Fertilizer for seeding and sodding is amended to delete the last sentence including "FORM OF AFFIDAVIT".

Section 244.02(e) Lime is replaced with the following:

Lime shall be agricultural grade ground limestone. Agricultural grade pulverized or pelletized lime products may be substituted at no additional cost to the Department.

The material source shall be registered with and approved by the Virginia Department of Agriculture and Consumer Services in accordance with the Virginia Agricultural Lime Law and shall conform to the requirements of Section 240. All lime shall be subject to testing by the Virginia Department of Agriculture and Consumer Services. Other lime products may be substituted with approval from the Engineer.

**GUIDELINES— PROJECTS REQUIRING GEOSYNTHETIC FABRICS AND OTHER GEOSYNTHETIC MATERIALS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM245A2B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 245—GEOSYNTHETICS

August 14, 2006

SECTION 245—GEOSYNTHETICS of the Specifications is completely replaced by the following:

245.01—Description

These specifications cover artificial fiber textile products to be used in transportation construction work.

245.02—Detail Requirements

Geosynthetics shall include a label that clearly shows the manufacturer or supplier name, style name, and roll number. The shipping document shall include documentation to meet the requirements of Section 245.03 herein.

Each geosynthetic roll shall be wrapped or otherwise packaged in such a manner as to protect the geosynthetic, including the ends of the roll, from damage due to shipment, water, sunlight, and contaminants. The protective wrapping shall be maintained during periods of shipment and storage.

During storage, geosynthetics rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, temperatures in excess of 71 degrees C, and other environmental condition that may damage the physical property values of the geosynthetic. Geosynthetics that are not properly protected may be subject to rejection.

245.03—Testing and Documentation

Each geosynthetic material provided to the project shall be tested by the Contractor for the material properties specified herein within 24 months of submission. Test results reported from AASHTO's National Transportation Product Evaluation Program – Laboratory Results of Evaluations on Geotextile and Geosynthetics may be used. The Contractor shall provide certification of the material in accordance with the requirements of AASHTO M 288 Section 4, Certification, and copies of the test results. The Contractor's testing, however, will not be the sole basis for acceptance.

The Department shall sample and test the geosynthetics for acceptance to verify conformance with this specification. Sampling shall be in accordance with ASTM D 4354, using the section titled, "Procedure C - Sampling for Purchaser's Specification Conformance Testing." In the absence of the Department's testing, acceptance may be based on manufacturer's certifications as a result of testing by the manufacturer of quality assurance samples obtained using the procedure for Sampling for Manufacturer's Quality Assurance (MQA) Testing. A lot size shall be considered to be the shipment quantity of the given product, or a truckload of the given product, whichever is smaller.

All property values, with the exception of apparent opening size (AOS) and Panel Vertical Strain, in these specifications represent minimum average roll values (MARV) in the weakest principal direction (i.e., average test results of any roll in a lot sampled for conformance or quality assurance testing

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

shall meet or exceed the minimum values provided herein). Values for AOS and Panel Vertical Strain represent maximum average roll values.

Perform tests in accordance with the methods referenced in this specification for the indicated application. The number of specimens to test per sample is specified by each test method. Geotextile product acceptance shall be based on ASTM D 4759. Product acceptance is determined by comparing the average test results of all specimens within a given sample to the specification MARV.

(a) Geotextile Fabric for Use in Silt Fences, Silt Barriers or Filter Barriers

Geotextile shall function as a vertical; permeable interceptor designed to remove suspended soil from overland water flow. Fabric shall filter and retain soil particles from sediment-laden water to prevent eroding soil from being transported off the construction site by water runoff. Fabric shall contain ultraviolet inhibitors and stabilizers to provide at least 6 months of expected, usable construction life at a temperature of -20 degrees C to 50 degrees C. The tensile strength of the material after 6 months of installation shall be at least 50 percent of the initial strength.

Physical Property	Test Method	Requirements
Filtering Efficiency	VTM-51	75% (min)
Flow Rate	VTM-51	0.000136 m ³ /sec/m ² (min)

In addition to these requirements the geotextile shall meet the requirements of AASHTO M 288 for Temporary Silt Fence Property Requirements, Table 6 for Grab Strength and Ultraviolet Stability.

(b) Geotextile for Use as Riprap Bedding Material

Geotextile shall meet the requirements of AASHTO M 288 for Separation Geotextile Properties Table 3 for Apparent Opening Size and Ultraviolet Stability and Geotextile Strength Property Requirements, Table 1, Class 2 for grab strength and puncture strength.

(c) Geotextile Fabric for Use in Drainage Systems (Drainage Fabric)

Drainage fabric shall be nonwoven, clog resistant, suitable for subsurface application, and stable both thermally and biologically.

The geotextile shall retain at least 75 percent of its ultimate strength when subjected to substances having a pH of a minimum of 3 and a maximum of 12 for a period of 24 hours.

Physical Property	Test Method	Requirements
Permittivity	ASTM D 4491	0.5 sec ⁻¹ (min)
Apparent Opening Size (AOS)	ASTM D 4751	0.300 mm sieve (max)

In addition to these requirements, the geotextile shall meet the requirements of AASHTO M 288 Strength Requirements, Table 1, Class 3 for grab strength.

(d) Geotextile for Use in Stabilization

Geotextiles used in saturated and or unstable conditions to provide the functions of separation and reinforcement.

1. Subgrade Stabilization Fabric

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



Physical Property	Test Method	Requirements
Apparent Opening Size (AOS)	ASTM D 4751	0.850 mm sieve (max)

In addition to this requirement, the geotextile shall meet the requirements of AASHTO M 288 for Strength Property Requirements, Table 1, Class 3 for Grab Strength, Tear Strength and Puncture Strength.

2. Embankment Stabilization Fabric – up to 1.83 meters high

Physical Property	Test Method	Requirements
Apparent Opening Size	ASTM D 4751	0.850 mm sieve (max)
Seam Strength	ASTM D 4632	90% Specified Grab Strength

In addition to this requirement, the geotextile shall meet the requirements of AASHTO M 288 for Strength Property Requirements, Table 1, Class 1 for Grab Strength, Tear Strength and Puncture Strength.

(e) Prefabricated Geocomposite Pavement Underdrain

Prefabricated geocomposite pavement underdrain shall consist of a polymeric drainage core encased in a non-woven filter fabric envelope having sufficient flexibility to withstand bending and handling without damage. Prefabricated geocomposite pavement underdrain shall conform to the following:

- Core:** The drainage core shall be made from an inert, polymeric material resistant to commonly encountered chemicals and substances in the pavement environment, and shall have a thickness of not less than 19 millimeter.

Physical Properties	Test Method	Requirements
Compressive Strength Panel Vertical Strain & Core Area Change @ 20% deflection	ASTM D 1621/D 2412	276 kPa (min)
Panel Vertical Strain & Core Area Change @ 156.5 kPa	ASTM D 6244	10% for core area & panel height (max)
Water flow rate (after 100 hours @ 69 kPa normal confining pressure gradient of no more than 7 kPa)	ASTM D 4716	0.0031 m ³ /sec/m width (for 300 mm specimen length) (min)

The core shall retain at least 75 percent of its ultimate strength when subjected to temperatures of -18 degrees C and 52 degrees C respectively for a period of 24 hours.

- Filter Fabric:** Geotextile shall be bonded to and tightly stretched over the core. Geotextile shall not sag nor block the flow channels, have equivalent life of the core material and conform to the requirements of Section 245.03(c).

(f) Geocomposite Wall Drains

Geocomposite wall drains may be used as an alternative to porous backfill when permitted by the Engineer. Geocomposite wall drains will not be permitted for use with walls considered critical by the Engineer. Critical walls shall include walls over 4.5 meters in height and walls supporting bridge abutments or other structures on spread footings.

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



Prefabricated geocomposite wall drain shall consist of a polymeric drainage core encased in a non-woven filter fabric envelope having sufficient flexibility to withstand bending and handling without damage. Geocomposite wall drains shall conform to the following:

1. **Core:** The drainage core shall be made from an inert, polymeric material resistant to commonly encountered chemicals and substances in the roadway.

Physical Property	Test Method	Requirements
Compressive Strength @ 20 % deflection	ASTM D 1621/ D 2412	276 kPa (min)
Water flow rate (after 100 hours at 69 kPa normal confining pressure and gradient of no more than 7 kPa)	ASTM D 4716	0.0031 m ³ /sec/m width (for 300 mm specimen length) (min)

The core shall retain at least 75 percent of its ultimate strength when subjected to temperatures of -18 degrees C and 52 degrees C for a period of 24 hours.

2. **Filter Fabric:** Geotextile shall be bonded to and tightly stretched over the core. Geotextile shall not sag nor block the flow channels, have equivalent life of the core material and conform to the requirements of section 245.03(c).

(g) Geomembrane Moisture Barrier

Geomembrane moisture barrier shall be resistant to biological attack. Geomembrane shall be constructed out of PVC, have a thickness of 0.75 mm and shall meet the requirements of the PVC Geomembrane Institute 1197 material specification for PVC Geomembrane or shall conform to the following requirements:

Physical Property	Test Method	Requirements
Thickness	ASTM D 5199	0.75 mm (min)
Tensile (25mm strip)	ASTM D 882	194 Mtons/m (min)
Tear (Die C)	ASTM D 1004	0.9 kilonewtons (min)
Puncture	ASTM D 4833	2.8 kilonewtons (min)

(h) Dewatering Bag:

A non-woven geotextile sewn together to form a bag that can be used in lieu of a de-watering basin for the purpose of filtering out suspended soil particles. The bag shall be capable of accommodating the water flow from the pump without leaking at the spout and seams.

Physical Property	Test Method	Requirements
Grab Strength @ Elongation < 50% (CRE/Dry)	ASTM D 4632	113 kg (min)
Seam Strength	ASTM D 4632	90% Specified Grab Strength
Puncture	ASTM D 4833	75 kg (min)
Mullen Burst	ASTM D 3786	3.8 MPa (min)
Flow Rate	ASTM D 4491	0.0176 m ³ /sec per meter (min)
Permittivity	ASTM D 4491	1.3 sec ⁻¹ (min)
UV Resistance	ASTM D 4355	70% at 500 hrs (min)

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



Apparent Opening Size (AOS) ASTM D 4751 0.150 mm sieve (max)

(i) **Paving Geosynthetics**

Paving Geosynthetics shall be used as an interlayer between pavement layers. Specific application of these Paving Geosynthetics shall be determined by the Engineer.

1. **Geotextile Paving Fabric:** The geotextile shall meet the requirements of AASHTO M 288 Paving Fabric Property Requirements, Section 9.
2. **Pavement Reinforcing Mat:** The geotextile shall meet the requirements of ASTM D7239 Geosynthetic Paving Mat, Type 1.

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



**GUIDELINES - PROJECTS REQUIRING PAVEMENT LINE MARKING.
EXCEPTIONS: NONE.**

SM246D1B-1005

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 246—PAVEMENT MARKING

February 17, 2005

SECTION 246 - PAVEMENT MARKING of the Specifications is replaced with the following:

246.01—Description

These specifications cover material for use in the various retroreflective pavement marking applications.

246.02—Detail Requirements

Materials that must be heated for application shall not exude fumes that are toxic or injurious to persons or property when heated to the application temperature.

Materials shall withstand air and roadway temperature variations from -20°C to 60°C without deforming, bleeding, staining, or discoloring and shall maintain their original dimensions and placement without chipping, spalling, or cracking. Material shall not deteriorate because of contact with sodium chloride, calcium chloride, mild alkalis and acids, or other ice control materials; oil in the pavement material; or oil and gasoline drippings from vehicles.

- (a) **White and Yellow Pavement Marking Material:** White pavement marking material shall be equal to Federal Standard Color No. 595-17886, and yellow pavement marking material shall be equal to Federal Standard Color No. 595-33538.

Color determination will be made for markings and the diffuse daytime color of the markings shall conform to the below CIE Chromaticity coordinate limits. Color determination for liquid marking materials will be made without drop on beads at least twenty-four (24) hours after application. Color determination for thermoplastic will be made in accordance with the requirements of AASHTO T 250.

Cie Chromaticity Coordinate Limits (Initial without drop-on beads)										
Color	1		2		3		4		Daytime Luminance Factor Y (%)	
	x	y	x	Y	x	y	x	y	Min	max
White (Types A; B - Classes I, II and III; and F)	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375	80.0	---
Yellow (Types A; B - Classes II and III; and F - except thermoplastic)	0.493	0.473	0.518	0.464	0.486	0.428	0.469	0.452	50.0	60.0
Yellow (Types B - Class I; and F - if thermoplastic)	0.499	0.466	0.545	0.455	0.518	0.432	0.485	0.454	40.0	60.0

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



Color readings will be determined in accordance with the requirements of ASTM E1349 using CIE 1931 2° standard observer and CIE standard Illuminant D65.

Retained daytime color of markings shall conform to the following CIE Chromaticity coordinate limits when measured on a beaded marking after a period of ninety days for construction pavement markings and one year for all other markings:

Cie Chromaticity Coordinate Limits (Retained)								
Color	1		2		3		4	
	x	y	x	y	x	y	x	y
White	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375
Yellow	0.560	0.440	0.490	0.510	0.420	0.440	0.460	0.400

Retained color readings will be determined using a 0°/45° Hunter Labminiscan Spectro-Colorimeter or equal in accordance with the requirements of ASTM E 1349 using CIE 1931 2° standard observer and CIE standard Illuminant D65.

Initial nighttime color of yellow thermoplastic and yellow epoxy pavement marking material shall conform to the following CIE chromaticity coordinate requirements when tested in accordance with VTM 111.

Cie Chromaticity Coordinate Limits (initial with drop-on beads)								
Color	1		2		3		4	
	x	y	x	y	x	y	x	y
Yellow	0.486	0.439	0.520	0.480	0.560	0.440	0.498	0.426

The marking material shall not be formulated with any compounds of the heavy metals listed in 40 CFR 261.24 Table 1 except that barium sulfate is allowed. Total heavy metal levels, with the exception of barium sulfate, shall not exceed 20 times the specified regulatory limits.

The amount and type of yellow pigment and inert filler for yellow material shall be at the option of the manufacturer provided the material complies with all other requirements of this specification.

(b) **Paint Pavement Marking Material (Type A):** Paint material shall be a fast drying water based, nonleaded, acrylic resin paint suitable for use on both asphalt and hydraulic cement concrete surfaces. Paint shall be selected from the Department's approved list. Paint products will be included on the approved list after the Department determines conformance to the specifications on both asphalt and hydraulic cement concrete roadways. Determination of conformance will include, but will not be limited to, the evaluation of test data from AASHTO's National Transportation Product Evaluation Program (NTPEP) or other Department approved facilities.

1. **Hiding Power:** Paint shall show a dry hiding quality that will give a contrast ratio of at least 0.96 at 0.38 mm (15 mil) wet film thickness.
2. **Settling Properties:** Settling shall be no less than a rating of 8 when tested in accordance with ASTM D869.
3. **Freeze-Thaw and Heat Stability:** Paint shall show no coagulation or change in viscosity greater than +/- five (5) KU.

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



4. **Water Resistance:** Paint shall show no blistering, peeling or wrinkling, softening or loss of adhesion.
5. **VOC:** The Volatile Organic Compound content shall be no greater than 150 grams/liter when tested in accordance with EPA Method 24.
6. **Flash Point:** Paint shall have a flash point of at least 60°C when tested in accordance with ASTM D93, Pensky-Martens Closed Cup.
7. **No-Track Time:** Paint shall have a 60-second maximum vehicle no-track time when measured in accordance with the NTPEP Field Test Procedures.
8. **Maintained Retroreflectivity and Durability:** Maintained retroreflectivity and durability shall conform to the following requirements after being installed on the test deck for 1 year:
 - a. **Maintained Retroreflectivity:** Photometric quantity to be measured is coefficient of retroreflected luminance (R_L) in accordance with the requirements of ASTM E 1743 for 15 meter geometry and ASTM E1710 for 30 meter geometry. R_L shall be expressed in millicandelas per square meter per lux and shall be at least either 150 for 15 meter or 100 for 30 meter when measured in the skipline or centerline areas.
 - b. **Durability:** Paint shall have a durability rating of at least 4 when determined in the wheel path area.

(c) **Thermoplastic Pavement Marking Material (Type B, Class I):** Thermoplastic material shall be suitable for use on asphalt concrete surfaces and yellow thermoplastic shall be selected from the Department's approved list. Yellow thermoplastic products will be included on the approved list after the Department determines conformance to the specifications. Thermoplastic material shall have the pigment, beads, and filler well dispersed in the resin and shall be free from skins, dirt, and foreign objects.

1. **Composition:**

Component	White (Percent by Weight)	Yellow
Binder	18.0 min	18.0 min
Glass Beads	25.0 min	25.0 min
Titanium Dioxide	8.0 min	-----
Calcium Carbonate & Inert Fillers	49.0 max	-----

The binder shall be either alkyd or hydrocarbon. If an alkyd thermoplastic is used, the binder shall consist of synthetic resins, at least one of which is solid at room temperature, and high-boiling plasticizers. At least 1/2 of the binder composition shall be a maleic-modified glycerol ester of resin and shall be at least 10% by weight of the entire material formulation.

2. **Physical requirements:**

- a. **Water absorption:** Materials shall not have more than 0.5% retained water by weight when tested in accordance with the requirements of ASTM D570, Procedure A.
- b. **Softening point:** Materials shall have a softening point of at least 90°C as determined in accordance with the requirements of ASTM E28.

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



- c. **Specific gravity:** The specific gravity of the thermoplastic compound at 25°C shall be from 1.7 to 2.2.
 - d. **Impact resistance:** Impact resistance shall be at least 1.2 joules at 25°C after material has been heated for 4 hours at 200°C and cast into bars of 25 millimeters cross-sectional area, 75 millimeters long and placed with 25 millimeters extending above the vise in a cantilever beam, Izod-type tester, conforming to the requirements of ASTM D256, using the 3 J scale.
 - e. **Drying time:** Material shall set to bear traffic in not more than 2 minutes when the road temperature is 10°C or above.
 - f. **Durability and wear resistance:** Material shall be designed to provide a life expectancy of at least 3 years under an average daily traffic count per lane of approximately 9,000 vehicles.
 - g. **Glass beads:** Glass beads shall conform to the requirements of Section 234 of the Specifications.
 - h. **Flashpoint:** The material flashpoint shall be no less than 260°C when tested in accordance with the requirements of ASTM D92.
- (d) **Polyester-Resin Pavement Marking Material (Type B, Class II):** Polyester-resin is a two-component pavement marking material suitable for use on hydraulic cement concrete surfaces.

1. **Composition (uncatalyzed material):**

	Min.	Max.
Pigment	36.0	40.0
Acrylic monomer	8.5	-----
Polyester resin	-----	55.5

2. **Physical requirements (uncatalyzed material):**

- a. **Viscosity:** Viscosity (25°C), ASTM D562, shall be 80 to 90 Krieb units.
- b. **Weight per liter:** Weight per liter shall be at least 1.38 kilograms.
- c. **Drying time:** The catalyst/resin ratio shall be adjusted by the operator so that the applied line shall dry to a no-tracking condition in 15 minutes or less when applied at an application temperature of 25°C to 37°C, a substrate temperature of at least 16°C, a wet thickness of 0.38 to 0.65 millimeter, and with 1.2 to 1.8 kilograms of glass beads, conforming to the requirements of Section 234 of the Specifications, applied per liter. No-track time shall be determined by passing over the line with a passenger car or pickup truck at a speed of 40 to 56 mph in a simulated passing maneuver. A line showing no visual deposition of the material to the pavement surface when viewed from a distance of 15 meters shall be considered as showing “no-track” and conforming for time to “no-track”.
- d. **Catalyst:** The catalytic component of the system shall be a commercially available type recommended by the manufacturer of the polyester. The peroxide shall not be exposed to any form of heat, such as direct sunlight, radiators, open flame, or sparks. Heat may cause the organic peroxide to decompose violently or burn if ignited. The

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



peroxide shall not come into contact with easily oxidized metals, such as copper, brass, or mild steel or galvanized steel as this can also initiate a violent reaction.

- e. **Weight loss:** Beaded catalyzed material shall not have a weight loss of more than 125 milligrams after 1,000 revolutions when abraded according to Federal Test Method Standard No. 141b, Method 6192, using CS-17 wheels with a 1,000-gram load on each wheel.
 - f. **Shelf life:** The shelf life of uncatalyzed material shall be at least 6 months when stored in a cool area below 30°C.
 - g. **Durability and wear resistance:** Material shall be designed to provide a life expectancy of at least 3 years under an average daily traffic count per lane of approximately 9,000 vehicles.
 - h. **Hiding:** The marking shall show a dry hiding quality that will give a contrast ratio of at least 0.96 with the Moresst Black and White Power Chart, Form 03B when drawn down at a 0.38 millimeter wet film thickness. Readings will be determined in accordance with the requirements of ASTM E 1349 using CIE 1931 2° standard observer and CIE standard Illuminant D65.
- (e) **Epoxy-Resin Pavement Marking Material (Type B, Class III):** Epoxy-resin is a two-component pavement marking material suitable for use on both asphalt and hydraulic cement concrete surfaces. Pigment, beads, and filler shall be well dispersed in the resin. Material shall be free from skins, dirt, and foreign objects and shall conform to the following:

1. **Composition**

Component	ASTM	White	Yellow
Epoxy resins	D1652	Max. 82%	Max. 77%
Titanium dioxide	D476 Type IV	Min. 18%	-----
Pigments	-----	-----	Min. 23%

2. **Physical requirements:**

- a. **Hardness:** Hardness, Shore D, ASTM D2240, shall be 75 to 100.
- b. **Tensile strength:** Tensile strength, ASTM D638, shall be at least 40 megapascals after the material has cured for 72 hours at 22±3°C.
- c. **Compression strength:** Compression strength, ASTM D695, shall be at least 80 megapascals after the material has cured for 72 hours at 22±3°C.
- d. **Adhesion to concrete:** Adhesion, ACI 503, shall be at 100% concrete failure after the material has cured for 72 hours at 22±3°C. Concrete used for the test shall have a tensile strength of at least 2 megapascals and shall be 32°C when the material is applied.
- e. **Drying time:** Material shall dry to a “no-track” condition in 15 minutes or less at pavement temperatures from 10°C to 49°C and under all humidity conditions, providing the pavement is dry. No-track time shall be determined by passing over the line with a passenger car or pickup truck at a speed of 40 to 56 kph in a simulated passing maneuver. A line showing no visual deposition of the material to the pavement surface when viewed from a distance of 15 meters shall be considered as showing “no-track” and conforming for time to “no-track”.

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



- f. **Weight per epoxy equivalent:** Weight per epoxy equivalent of Part A of the epoxy pavement marking material shall be within ± 50 of the target value provided by the manufacturer when tested in accordance with the requirements of ASTM D1652.
 - g. **Total amine value:** Total amine value of Part B of the epoxy pavement marking material shall be within ± 50 of the target value provided by the manufacturer when tested in accordance with the requirements of ASTM D2074.
 - h. **Durability and wear resistance:** Material shall be designed to provide a life expectancy of at least 3 years under an average daily traffic count per lane of approximately 9,000 vehicles.
 - i. **Abrasion resistance:** Wear index shall be no greater than 80 when abrasion resistance is tested in accordance with the requirements of ASTM D4060.
 - j. **Hiding:** The marking shall show a dry hiding quality that will give a contrast ratio of at least 0.96 with the Moreset Black and White Power Chart, Form 03B when drawn down at a 0.38 millimeter wet film thickness. Readings will be determined in accordance with the requirements of ASTM E 1349 using CIE 1931 2° standard observer and CIE standard Illuminant D65.
- (f) **Plastic-Backed Preformed Tape Pavement Marking Material (Type B, Class IV):** Plastic-backed preformed tape shall conform to the requirements of ASTM D4505 for a Type I or VI, Grade B, C, D or E material and any additions and/or exceptions indicated herein. Tape shall be suitable for use on both asphalt and hydraulic cement concrete surfaces and shall be capable of being applied to previously applied marking material of the same composition under normal conditions of use. Tape shall be selected from the Department's approved list. Tape products will be included on the approved list after the Department determines conformance to the specifications on both asphalt and hydraulic cement concrete roadways. Determination of conformance will include, but will not be limited to, the evaluation of test data from AASHTO's National Transportation Product Evaluation Program (NTPEP) or other Department approved facilities.
- 1. **Thickness (No Adhesive):** Thickness shall be at least 1.524 millimeters and no more than 2.286 millimeters.
 - 2. **Skid Resistance:** Skid resistance requirements for a Type I material shall be the same as required for a Type VI material.
 - 3. **Initial Retroreflectivity:** Initial retroreflectivity requirements for a Type VI material shall be the same as required for a Type I material.
 - 4. **Maintained Retroreflectivity, Durability and Adhesion:** Maintained retroreflectivity, durability and adhesion shall conform to the following requirements after being installed on the test deck for 1 year:
 - a. **Maintained Retroreflectivity:** Photometric quantity to be measured is coefficient of retroreflected luminance (R_L) in accordance with the requirements of ASTM E 1743 for 15 meter geometry and ASTM E1710 for 30 meter geometry. R_L shall be expressed in millicandelas per square meter per lux and shall be at least either 150 for 15 meter or 100 for 30 meter when measured in the skipline or centerline areas.
 - b. **Durability:** Tape shall have a durability rating of at least 4 when determined in the wheel path area.

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

c. **Adhesion:** No line shall have walked nor shall it be torn or missing.

(g) **Construction Pavement Marking Materials:** Construction pavement markings shall consist of removable tape, non-retroreflective black removable tape and temporary pavement marking material. Construction pavement marking materials shall be selected from the Department's approved list. Products will be included on the approved list after the Department determines conformance to the specifications on both asphalt and hydraulic cement concrete roadways and the manufacturer has supplied information to the Department indicating conformance to the below warranty requirements for the tape products except Type E material will only be evaluated for asphalt concrete roadways. Determination of conformance will include, but will not be limited to, the evaluation of test data from AASHTO's National Transportation Product Evaluation Program (NTPEP) or other Department approved facilities.

1. **Removable Tape (Type D, Class I and II):** Removable tape shall be suitable for use on both asphalt and hydraulic cement concrete surfaces and shall conform to the following requirements:

a. **Initial Skid Resistance:** Initial skid resistance value shall be at least 45 BPN.

b. **Warranty:** The manufacturer shall provide a full manufacturer's warranty on their product that shall cover the retroreflectivity, removability and adhesiveness. The warranty period shall be no less than 90 days, beginning on the date of installation and shall include all material and labor costs when installed in accordance with the manufacturer's recommendations.

c. **Maintained Retroreflectivity, Removability and Adhesion:** Maintained retroreflectivity, removability and adhesion shall conform to the following requirements after being installed on the test deck for 90 days:

(1) **Maintained Retroreflectivity:** Photometric quantity to be measured is coefficient of retroreflected luminance (R_L) in accordance with the requirements of ASTM E 1743 for 15 meter geometry and ASTM E1710 for 30 meter geometry. R_L shall be expressed in millicandelas per square meter per lux and shall be at least the following values for either 15 meter or 30 meter when measured in the wheel path area.

Coefficient of Retroreflected Luminance (R_L)				
Color	Type D, Class I (15 meter)	Type D, Class I (30 meter)	Type D, Class II (15 meter)	Type D, Class II (30 meter)
White	150	100	225	150
Yellow	100	65	150	100

(2) **Removability:** Removability value shall be at least 8 for materials submitted to NTPEP prior to the year 1998. For materials submitted to NTPEP in the year 1998 and later, the internal tape strength value shall be no greater than 3, and the adhesive bond value shall be no greater than 7. Values shall be the average of the three monthly readings for the transverse line.

(3) **Adhesion:** No line shall have walked nor shall it be torn or missing.

2. **Non-retroreflective Black Removable Tape (Type E):** Non-retroreflective black removable tape shall be suitable for use on asphalt concrete surfaces and shall conform to the following:

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



- a. **Initial Skid Resistance:** Initial skid resistance value shall be at least 45 BPN.
 - b. **Warranty:** The manufacturer shall provide a full manufacturer's warranty on their product that shall cover the removability and adhesiveness. The warranty period shall be no less than 90 days, beginning on the date of installation and shall include all material and labor costs when installed in accordance with the manufacturer's recommendations.
 - c. **Removability and Adhesion:** Removability and adhesion shall conform to the following requirements after being installed on the test deck for 90 days:
 - (1) **Removability:** Removability value shall be at least 8 for materials submitted to NTPEP prior to the year 1998. For materials submitted to NTPEP in the year 1998 and later, the internal tape strength value shall be no greater than 3, and the adhesive bond value shall be no greater than 7. Values shall be the average of the three monthly readings for the transverse line.
 - (2) **Adhesion:** No line shall have walked nor shall it be torn or missing.
3. **Temporary Pavement Marking Material (Type F, Class I and II):** Temporary pavement marking material shall be suitable for use on asphalt and hydraulic cement concrete surfaces and shall conform to the following:
- a. **Paint Products**
 - (1) **Settling Properties:** Settling rating shall be at least 8 when tested in accordance with ASTM D869.
 - (2) **Freeze-Thaw and Heat Stability:** Paint shall show no coagulation or change in viscosity greater than ± 5 KU when tested in accordance with the NTPEP test procedure.
 - (3) **Water Resistance:** Paint shall show no blistering, peeling, wrinkling, softening or loss of adhesion when tested in accordance with the NTPEP test procedure.
 - (4) **VOC:** The Volatile Organic Compound content shall be no greater than 150 grams/liter when tested in accordance with EPA Method 24.
 - b. **Tape Products**
 - (1) **Initial Skid Resistance:** Initial skid resistance value shall be at least 45 BPN.
 - (2) **Warranty:** The manufacturer shall provide a full manufacturer's warranty on their product that shall cover the retroreflectivity, removability and adhesiveness. The warranty period shall be no less than 90 days, beginning on the date of installation and shall include all material and labor costs when installed in accordance with the manufacturer's recommendations.
 - (3) **Adhesion:** No line shall have walked nor shall it be torn or missing after being installed on the test deck for 90 days.
 - c. **All Products (including paint and tape products)**
 - (1) **Thickness:** Thickness shall be no greater than 1.016 millimeters.

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

(2) **Maintained Retroreflectivity and Durability:** Maintained retroreflectivity and durability shall conform to the following requirements after being installed on the test deck for 90 days:

a) **Maintained Retroreflectivity:** Photometric quantity to be measured is coefficient of retroreflected luminance (R_L) in accordance with the requirements of ASTM E 1743 for 15 meter geometry and ASTM E1710 for 30 meter geometry. R_L shall be expressed in millicandelas per square meter per lux and shall be at least the following values for either 15 meter or 30 meter when measured in the wheel path area.

Coefficient of Retroreflected Luminance (R_L)				
Color	Type F	Type F	Type F	Type F
	Class I (15 meter)	Class I (30 meter)	Class II (15 meter)	Class II (30 meter)
White	150	100	290	190
Yellow	100	65	190	125

b) **Durability:** Marking material shall have a durability rating of at least 4 when determined in the wheel path area.

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



**GUIDELINES - PROJECTS REQUIRING REFLECTIVE SHEETING TO BE USED ON TRAFFIC CONTROL DEVICES.
EXCEPTIONS: NONE**

SM247A2B-0806

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 247—REFLECTIVE SHEETING

June 22, 2006

SECTION 247—REFLECTIVE SHEETING of the Specifications is replaced by the following:

247.01—Description.

This specification covers reflective sheeting used on traffic control devices to provide a retroreflective surface or message. Color of the reflective sheeting shall be as specified by contract documents. Reflective sheeting shall be certified in accordance with the requirements of Section 106.06 of the Specifications.

247.02—Detail Requirements.

Reflective sheeting shall be selected from the Department's qualified products list. Reflective sheeting products will be included on the qualified products list after the Department determines conformance to the Specifications and the manufacturer has supplied written information indicating conformance to the warranty requirements of Section 247.03 of the Specifications. Determination of conformance will include, but will not be limited to, the evaluation of test data from AASHTO's National Transportation Product Evaluation Program (NTPEP) or other Department approved facilities. When evaluating color test data provided by NTPEP or other Department approved facilities, color shall have been maintained within the color specification limits for the duration of the outdoor weathering test.

- (a) Reflective sheeting used on signs (except those specifically indicated otherwise herein), vertical panels (Group 2 channelizing devices), traffic gates and the "STOP" side of sign paddles (hand signaling device) shall conform to the requirements of ASTM D4956 for a Type III material.

Color shall conform to the requirements of Tables 1 and 1A of the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations.

Maintained coefficient of retroreflection of the sheeting after 3 years on the test deck shall conform to the requirements of ASTM D4956.

- (b) Reflective sheeting used on cones, tubular delineators, drums and permanent sand barrels shall conform to the requirements of ASTM D4956 including supplementary requirement S2 for a Type III reboundable material. Color shall conform to the requirements of Tables 1 and 1A of the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations except the minimum daytime luminance factor for white shall be 25 when used on cones and tubular delineators. The following supplementary table shall apply for cones, tubular delineators and drums:

**Minimum Coefficient of Retroreflection R_A
(Candelas per lux per square meter)**

Observation Angle (°)	Entrance Angle (°)	White	Orange
0.2	+50	75	25
0.5	+50	35	10

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



Reflective sheeting used on cones and tubular delineators is not required to be tested by NTPEP.

- (c) Reflective sheeting used to delineate the trailer's back frame of portable changeable message signs, arrow boards and portable lights shall conform to the requirements of the USDOT specification for a Grade DOT-C2 truck conspicuity marking as contained in 49 CFR 571.108 of the Code of Federal Regulations. References to ASTM specifications within the USDOT specification shall be interpreted to mean the latest version of that specification regardless of the date indicated in the reference. Color shall conform to the requirements of Tables 1 and 1A of the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations

This reflective sheeting is not required to be tested by NTPEP.

- (d) Reflective sheeting used on orange construction and maintenance activity signs, barrier vertical panels installed on concrete traffic barrier service, rear panel of truck mounted attenuators, temporary impact attenuators (except sand barrels) and the "SLOW" side of sign paddles shall be fluorescent prismatic lens type conforming to the following:

Color shall conform to the requirements of Tables 3 and 3A of the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations.

**Minimum Coefficient of Retroreflection R_A
(Candelas per lux per square meter)**

Observation Angle (°)	Entrance Angle (°)	Fluorescent Orange
0.2	-4	140
0.2	+30	90
0.2	+40	24
0.5	-4	90
0.5	+30	50
0.5	+40	15
1.0	-4	10
1.0	+30	5
1.0	+40	3

Maintained coefficient of retroreflection of the sheeting after 1 year on the test deck shall be at least 50 percent of the minimum coefficient of retroreflection values indicated above.

Impact resistance shall conform to the requirements of ASTM D4956.

- (e) Reflective sheeting used on temporary sand barrels shall be fluorescent orange prismatic lens reboundable type conforming to the following:

Color shall conform to the requirements of Tables 3 and 3A of the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations.

**Minimum Coefficient of Retroreflection R_A
(Candelas per lux per square meter)**

Observation Angle (°)	Entrance Angle (°)	Fluorescent Orange
0.2	-4	200
0.2	+30	120
0.2	+50	40
0.5	-4	80
0.5	+30	50
0.5	+50	30

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



Maintained coefficient of retroreflection of the sheeting after 1 year on the test deck shall be at least 50 percent of the minimum coefficient of retroreflection values indicated above.

Reflective sheeting shall conform to the supplementary requirement S2 of ASTM D4956.

- (f) Reflective sheeting used on object markers, nose of guardrails, permanent impact attenuators (except sand barrels), standard road edge delineators, special road edge delineators, barrier delineators, guardrail delineators, interstate road edge delineators, chevron panels, bridge end panel signs (VW-13) and railroad advance warning signs (including any supplemental plaques) shall conform to the requirements of ASTM D4956 for a Type IX material with the below changes to the minimum coefficient of retroreflection R_A at the 1.0 observation angle. Color shall conform to the requirements of Tables 1 and 1A of the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations.

**Minimum Coefficient of Retroreflection R_A
(Candelas per lux per square meter)**

Observation Angle (°)	Entrance Angle (°)	White	Yellow
1.0	-4	28	22
1.0	+30	16	12

- (g) Reflective sheeting used on Type III barricades shall be prismatic lens type conforming to the following:

Color shall conform to the requirements of Tables 1 and 1A of the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations.

**Minimum Coefficient of Retroreflection R_A
(Candelas per lux per square meter)**

Observation Angle (°)	Entrance Angle (°)	White	Orange
0.2	-4	600	200
0.2	+30	270	120
0.2	+40	50	20
0.5	-4	220	80
0.5	+30	105	43
0.5	+40	40	15
1.0	-4	12	4
1.0	+30	10	3
1.0	+40	10	3

Maintained coefficient of retroreflection of the sheeting after 1 year on the test deck shall be at least 50 percent of the minimum coefficient of retroreflection values indicated above.

Impact resistance shall conform to the requirements of ASTM D4956.

- (h) Reflective sheeting used on the below listed signs shall be fluorescent yellow-green high observation angle prismatic lens type conforming to the following:

- Bicycle Crossing sign (W11-1) including supplemental plaques
- Pedestrian Crossing sign (W11-2) including supplemental plaques
- Playground sign (W15-1) including supplemental plaques
- DEAF CHILD AREA sign including supplemental plaques
- WATCH FOR CHILDREN sign including supplemental plaques
- School Signing consisting of the following:
 - School Crossing sign (S1-1)

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



- School Bus Stop Ahead sign (S3-1)
- SCHOOL plaque (S4-3)
- School Portion of the School Speed Limit sign (S5-1)
- Supplemental plaques used with the above signs

Color shall conform to the requirements of Tables 3 and 3A of the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations.

**Minimum Coefficient of Retroreflection R_A
(Candelas per lux per square meter)**

Observation Angle (°)	Entrance Angle (°)	Fluorescent Yellow-Green
0.2	-4	325
0.2	+30	203
0.5	-4	238
0.5	+30	108
1.0	-4	63
1.0	+30	35

Maintained coefficient of retroreflection of the sheeting after 3 years on the test deck shall be at least 50 percent of the minimum coefficient of retroreflection values indicated above.

Impact resistance shall conform to the requirements of ASTM D4956.

- (i) Reflective sheeting used on retroreflective rollup signs shall conform to the following:

Color shall conform to the requirements of Tables 1 and 1A for white and Tables 3 and 3A for fluorescent orange of the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations.

**Minimum Coefficient of Retroreflection R_A
(Candelas per lux per square meter)**

Observation Angle (°)	Entrance Angle (°)	White	Fluorescent Orange
0.2	-4	300	200
0.2	+30	180	125
0.2	+50	90	50
0.5	-4	200	72
0.5	+30	75	36
0.5	+50	45	20

This reflective sheeting is not required to be tested by NTPEP.

- (j) Reflective sheeting used for the background on positive contrast guide signs shall conform to the requirements of ASTM D4956 for a Type III, VII, VIII, IX or X material. All positive contrast letters, numerals, symbols, arrows and borders used on guide signs shall be fabricated from prismatic sheeting conforming to the requirements of ASTM D4956 for a Type VII, VIII, IX or X material.

Color shall conform to the requirements of Tables 1 and 1A of the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations.

Maintained coefficient of retroreflection of the sheeting after 3 years on the test deck shall conform to the requirements of ASTM D4956.

247.03—Warranty Requirements.

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



The reflective sheeting manufacturer shall provide the following warranties to the Department on their products:

- (a) **Type III Sheeting (Permanent Use)** – 12 year warranty with 10 years being 100 percent full replacement covering all material and labor costs associated with fabrication and installation of the sign or device, and the final 2 years being 100 percent sheeting replacement cost.
- (b) **Type VIII, IX and High Observation Angle Prismatic Sheeting (Permanent Use)** - 10 year warranty with 7 years being 100 percent full replacement covering all material and labor costs associated with fabrication and installation of the sign or device, and the final 3 years being 100 percent sheeting replacement cost.
- (c) **Type III, Prismatic and Rollup Sign Sheeting (Work Zone Use) and Grade DOT-C2 Truck Conspicuity Marking** – 3 year full replacement warranty covering all material and labor costs associated with fabrication of the sign or device.

The warranty shall cover the loss of retroreflectivity, loss of colorfastness, cracking and any other conditions inherent to the sheeting including inks and overlay film that causes it to be ineffective in providing the direction to the motorists as intended.

Minimum values of retroreflectivity maintained during the warranty period shall be the same as those required for the maintained coefficient of retroreflection values as indicated herein, or ASTM D4956 if they do not exist herein. For reflective sheeting indicated in Section 247.02(i) of the Specifications, the minimum values of retroreflectivity maintained during the warranty period shall be no less than 50 percent of the minimum coefficient of retroreflection values indicated herein.

Loss of colorfastness is considered to have occurred if the color of the sheeting is not within the color specification limits indicated in the USDOT specification as contained in the appendix to 23 CFR, Part 655, Subpart F of the Code of Federal Regulations during the warranty period.

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

3-

— DIVISION III—ROADWAY CONSTRUCTION —

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



300 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)

**GUIDELINES— PROJECTS REQUIRING CLEARING AND GRUBBING.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

(cm301b0b-0408) **SECTION 301—CLEARING AND GRUBBING** of the Specifications is amended as follows:

Section 301.02—Procedures is amended to replace the first paragraph with the following:

If approved by the Engineer, the Contractor may clear and grub to accommodate construction equipment within the right of way up to 1.5 meters beyond the construction limits at his own expense. The Contractor shall install erosion and siltation control devices prior to beginning clearing or grubbing operations and such devices shall be functional before upland land-disturbing activities take place.

And to replace the second paragraph with the following:

The surface area of earth material exposed by grubbing, stripping topsoil, or excavation shall be limited to that necessary to perform the next operation within a given area. Grubbing of root mat and stumps shall be confined to the area which excavation shall be performed within 15-days following grubbing.

And to replace the fourth paragraph with the following:

Branches of trees that overhang the roadway or reduce sight distance and that are less than 6 meters above the elevation of the finished grade shall be trimmed using approved tree surgery practices in accordance with the requirements of Section 601.03(b) of the Specifications.

6-12-06 (SPCN)

**GUIDELINES - WHEN REQUESTED BY THE DESIGNER (NOT FOR USE IN PAVEMENT STRUCTURE AND RARELY USED IN BEDDING MATERIAL).
EXCEPTIONS: NONE.**

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



(cm303b0b-0197) **AGGREGATE MATERIAL** shall be the size specified conforming to Section 203 of the Specifications. The aggregate shall be placed at locations shown on the plans or as directed by the Engineer. Aggregate material will be measured in units of metric tons for the size specified in accordance with Section 109 of the Specifications. Payment will be made at the contract unit price per metric ton, which bid price shall be full compensation for furnishing, placing, and shaping and compaction, if required.

Payment will be made under:

Pay Item	Pay Unit
Aggregate Material (Size)	Metric Ton
5-23-95, Reissued 1-1-97 (SPCN)	

**GUIDELINES— PROJECTS WITH HYDRAULIC CEMENT STABILIZATION.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

(cm307a1b-0408) **SECTION 307 HYDRAULIC CEMENT STABILIZATION** is amended as follows:

Section 307.01—Description is replaced with the following:

This work shall consist of stabilizing roadbed material as specified or as directed by the Engineer and constructing one or more courses of the pavement structure using a mixture of soil, or approved aggregates and hydraulic cement, on a prepared surface in accordance with the requirements of these specifications and in conformity with the lines, grades, typical sections, and cross sections shown on the plans or as established by the Engineer.

Section 307.02 (a) is replaced with the following:

- (a) **Cement** shall conform to the requirements of Section 214, Type I, IP, or II. Cement shall be transported, stored, and otherwise protected in accordance with the requirements of Section 207.03 of the Specifications.

Section 307.05 (a) is amended to replace the first paragraph with the following:

- (a) **Preparing Existing Surface:** When the roadbed is to be stabilized, its surface shall be cut or bladed to the approximate line, grade, and cross section. However, compaction of the roadbed for the depth of the material to be treated will not be required prior to application of cement. When the course placed directly on the roadbed is to be stabilized, the surface of the roadbed shall be prepared in accordance with the requirements of the applicable provisions of Section 305.03 of the Specifications.

Section 307.05 (f) Protecting and Curing of the Specifications is replaced with the following:

- (f) **Protecting and Curing:** The next course may be placed after the cement stabilization has been approved. In the event the next pavement course is not placed immediately, then the cement-treated aggregate course

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



shall be moist cured continually or covered by the application of liquid asphalt to prevent surface drying until the next pavement course is placed. The Contractor shall endeavor to place the next pavement course within 7 days after cement stabilization is finished. In the event this is not possible and a liquid asphalt cover has not been applied then the Contractor shall either seal the cement stabilized layer with approved cover material or continually maintain the surface of the cement stabilized course with moisture until the next pavement course can be successfully applied. The surface of the cement-treated aggregate course shall be maintained in such a manner that the entire surface of the course remains in a moistened condition. If asphalt cover material is used, it shall be applied at the rate of approximately 1.13 liters per square meter or as shown on the plans. The Engineer shall direct the exact rate of application necessary to produce full coverage without excessive runoff. If asphalt is used, it shall be applied with an approved pressure distributor as specified in Section 314.04 and the asphalt material shall be immediately covered with the specified cover material.

Prior to placing the next course or the application of asphalt cover material the surface of the cement stabilized layer shall be lightly moistened. In no case shall the cement-treated aggregate course be allowed to dry out completely or go uncovered through the winter. The stabilized course shall be tightly knit and free from loose and extraneous material.

The Contractor shall maintain the cement stabilized course, including shoulders and ditches, within the limits of the contract in a condition satisfactory to the Engineer from the time work first starts until the work is officially accepted. Maintenance shall include immediate repairs of defects that may occur either before or after cement is applied, which work shall be performed by the Contractor and repeated as often as is necessary to keep the course continuously intact. Repairs to the course shall be performed in a manner that will ensure the restoration of a uniform surface and stability of the area repaired.

Section 307.06 Measurement and Payment is amended to replace the first and second paragraphs with the following:

Hydraulic cement stabilization will be measured in metric tons of hydraulic cement, cubic meters or metric tons of aggregate, and square meters of manipulation in accordance with the requirements of Section 109.01 and will be paid for at the contract unit price per metric ton of hydraulic cement, per metric ton or cubic meter of aggregate and per square meter of manipulation for the depth specified. This price shall include furnishing and applying water for moisture curing and, when grading is not a pay item, restoring shoulders and ditches.

Hydraulic cement-stabilized aggregate material or aggregate base material will be measured in cubic meters or metric tons and will be paid for at the contract unit price per metric ton or cubic meter. This price shall include furnishing and installing cement, aggregate, moisture for curing and, when grading is not a pay item, restoring shoulders and ditches.

6-12-06 (SPCN)

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

GUIDELINES— PROJECTS WITH SUBBASE COURSE.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

(cm308b1b-0408) **SECTION 308—SUBBASE COURSE** of the Specifications is amended as follows:

Section 308.01—Description is replaced with the following:

This work shall consist of furnishing and placing one or more courses of mineral aggregate on a prepared subgrade in accordance with the required tolerances within these specifications and in conformity with the lines, grades, typical sections, and cross sections shown on the plans or as established by the Engineer.

Section 308.02—Materials is replaced with the following:

Material shall conform to the requirements of Section 208.02(a) of the Specifications except where other types of aggregate material are specified in the Contract, in which case the applicable specifications governing the material shall apply. When material is obtained from local sources, the sources shall conform to the requirements of Section 106.03 of the Specifications.

Section 308.03—Procedures is amended to replace the second paragraph with the following:

Subbase material shall be mixed in an approved central mixing plant of the pugmill or other mechanical type in accordance with the requirements of Section 208.05 of the Specifications. The mixed material shall be placed on the subgrade by means of an approved aggregate spreader, except that the use of such spreader will not be required where the material is being applied solely for the temporary maintenance of traffic or where the width of the course shown on the plans is transitional and impracticable to place with a spreader box.

Section 308.03—Procedures is amended to replace the first sentence of the fourth paragraph with the following:

Each layer of subbase course shall be compacted at optimum moisture, within ± 2 percentage points of optimum.

And to replace the seventh paragraph with the following:

Field density determinations will be performed with a nuclear field density device using the density control strip as specified in Section 304 and VTM-10 or in accordance with the requirements of AASHTO T191. The method of density determination will be as directed by the Engineer.

6-12-06 (SPCN)

GUIDELINES— PROJECTS WITH AGGREGATE BASE COURSE.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

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



(cm309b1b-0408) **SECTION 309—AGGREGATE BASE COURSE** of the Specifications is amended as follows:

Section 309.01—Description is replaced with the following:

This work shall consist of furnishing and placing one or more courses of aggregates and additives, if required, on a prepared surface in accordance with the requirements of these specifications and in conformity with the lines, grades, and typical sections and cross sections shown on the plans or as established by the Engineer.

Section 309.02 (a) is replaced with the following:

(a) **Aggregate material** shall conform to the requirements of Section 208.02(b) of the Specifications except where other types of aggregate material are specified, in which case the applicable specifications governing the material shall apply.

Section 309.05—Density Requirements is amended to replace the first sentence of the second paragraph with the following:

After mixing and shaping, each layer shall be compacted at optimum moisture within ± 2 percentage points of optimum.

And to replace the fifth paragraph with the following:

The base course will be tested in place for depth and density. Field density determinations will be performed with a nuclear field density device, using a density control strip as specified in Section 304 and VTM 10, or in accordance with the requirements of AASHTO T191. The method of density determination will be as directed by the Engineer.

6-12-06 (SPCN)

**GUIDELINES- PROJECTS REQUIRING TACK COAT,
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

(cm310a0b-0408) **SECTION 310—TACK COAT** of the Specifications is amended as follows:

Section 310.01—Description is replaced with the following:

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

6-13-06

**GUIDELINES- PROJECTS REQUIRING PRIME COAT,
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

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



(cm311a0b-0408) **SECTION 311—PRIME COAT** of the Specifications is amended as follows:

Section 311.01—Description is replaced with the following:

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

6-13-06

GUIDELINES- PROJECTS REQUIRING SEAL COAT.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

(cm312a0b-0408) **SECTION 312—SEAL COAT** of the Specifications is amended as follows:

Section 312.01—Description is replaced with the following:

This work shall consist of applying asphalt followed by applying cover material in accordance with the requirements of these specifications and in conformity with the lines shown on the plans or as established by the Engineer.

6-13-06

GUIDELINES- PROJECTS REQUIRING PENETRATION SURFACE COURSES.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

(cm314a0b-0408) **SECTION 314—PENETRATION SURFACE COURSES** of the Specifications is amended as follows:

Section 314.0—Description is replaced with the following:

This work shall consist of constructing a wearing surface of crushed stone, slag, or crushed gravel penetrated with asphalt in accordance with the requirements of these specifications and in conformity with the lines shown on the plans or as established by the Engineer.

6-13-06

GUIDELINES - PROJECTS HAVING ASPHALT PAVEMENT WHERE RIDEABILITY DOES NOT APPLY.
EXCEPTIONS: NONE.

(cm315a0b-0197) **RIDEABILITY TESTING ON ASPHALT** - Pavement smoothness will not be tested by means of a profilograph nor will payment adjustments be made for pavement smoothness.

10-21-91 Reissued 1-1-97 (SPCN)

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



GUIDELINES - WHEN REQUESTED BY THE DESIGNER:

EXCEPTIONS:

— NA

(cm315b0b-0702) **SAW CUT ASPHALT PAVEMENT** - This work shall consist of saw cutting the existing asphalt pavement to a depth shown on the plans and as directed by the Engineer.

Saw cut asphalt concrete pavement will be measured in meters for the depth specified and will be paid for at the Contract unit price per meter, which price shall be full compensation for saw cutting the asphalt pavement to the depth specified.

Payment will be made under:

Pay Item	Pay Unit
Saw cut asphalt conc. (depth)	Meter
11-14-96 (SPCN)	

GUIDELINES – PROJECTS REQUIRING MTVs FOR ASPHALT PLANT MIX OTHER THAN STONE MATRIX ASPHALT (SMA). (MTV REQUIREMENTS FOR SMA ARE ALREADY INCLUDED IN SM315L7B).

EXCEPTIONS: NONE.

(cm315c1b-0708) **MATERIAL TRANSFER VEHICLE (MTV)**—When specified in the Contract, a MTV shall be used during the placement of designated asphalt mixes on full lane width applications. A MTV is defined as a self-propelled storage unit capable of receiving material from trucks, storing the material and transferring the material from the unit to a paver hopper insert via a conveyor system. The required paver hopper insert and unit shall have a combined minimum storage capacity of 13.5 metric tons. Prior to placing the asphalt material on the roadway surface, the storage unit or paver hopper insert must be able to remix the material in order to produce a uniform, non-segregated mix, having a uniform temperature. The cost of the MTV shall be included in the price bid for other appropriate items.

6-6-08 (SPCN)

GUIDELINES— ALL ASPHALT MAINTENANCE PROJECTS REQUIRING STONE MATRIX ASPHALT (SMA). ALSO MAY BE USED ON CONSTRUCTION PROJECTS WHERE PERMITTED BY THE DISTRICT PAVEMENT ENGINEER.

[USE BY THE JANUARY 2008 ADVERTISEMENT]

EXCEPTIONS: NONE.

(cm315f0b-0108) **SMA—SURFACE AND INTERMEDIATE MIXES USING RAP** - Asphalt concrete mixtures used in surface and intermediate courses shall conform to the requirements of the Special Provision for **STONE MATRIX ASPHALT (SMA)** except as specified herein for the following:

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



The Special Provision for **STONE MATRIX ASPHALT (SMA)** is amended as follows:

Section II.(a) Coarse Aggregate is amended to add the following:

At the discretion of the engineer, mixes containing Recycled Asphalt Pavement (RAP) may be tested for aggregate breakdown during lab compaction in accordance with VTM-99. If the percent of the total mix passing the 4.75mm sieve increases by more than 10 percent after being compacted to N_{design} then the RAP component will be changed or discontinued.

Section II.(b) Fine Aggregate is replaced by the following:

Fine Aggregate: Virgin fine aggregates shall consist of a blend of 100 percent crushed aggregate. If RAP is being used as a component in SMA then the portion of the final SMA blend passing the 2.36mm sieve shall have a minimum Fine Aggregate Angularity value of 45 percent as determined in accordance with AASHTO T 304 (Method A). The magnesium sulfate soundness loss in 5 cycles shall not exceed 20 percent. In addition, the liquid limit shall not exceed 25 as determined in accordance with AASHTO T89.

7-17-07 (SPCN)

GUIDELINES - PROJECTS HAVING HYDRAULIC CEMENT CONCRETE PAVEMENT WHERE RIDEABILITY DOES NOT APPLY.
EXCEPTIONS: NONE.

(cm316a0b-0197) **RIDEABILITY TESTING ON HYDRAULIC CEMENT CONCRETE** - Pavement smoothness will not be tested by means of a profilograph nor will payment adjustments be made for pavement smoothness.

10-21-91, Reissued 1-1-97 (SPCN)

GUIDELINES - WHEN REQUESTED BY THE DESIGNER.
EXCEPTIONS: NONE.

(cm316d0b-0702) **SAW CUT HYDRAULIC CEMENT CONCRETE PAVEMENT** - This work shall consist of saw cutting the existing hydraulic cement concrete pavement to a depth shown on the plans and as directed by the Engineer.

Saw cut hydraulic cement concrete pavement will be measured in meters for the depth specified and will be paid for at the Contract unit price per meter, which price shall be full compensation for saw cutting the hydraulic cement concrete pavement to the depth specified.

Payment will be made under:

Pay Item	Pay Unit
Saw cut hydraulic cement concrete pavement (depth)	Meter

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



8-25-98 (SPCN)

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



—**300 SERIES SPs (SPECIAL PROVISIONS)**—

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



**GUIDELINES - PROJECTS THAT ALLOW EXISTING PAVEMENT TO BE OPEN CUT (INCLUDE SPECIAL PROVISION SM312A0B BLOTTED SEAL COATS).
EXCEPTIONS: NONE.**

SM302B0B-0197

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
RESTORING EXISTING PAVEMENT**

August 1, 1991cc
Reissued January 1, 1997cc

I. DESCRIPTION

This work shall consist of restoring existing pavement, removed for installation or repair of utilities such as, but not limited to pipe culverts, conduits, water and sanitary sewer items.

II. MATERIALS

Asphalt Concrete shall conform to the requirements of Section 211 of the Specifications.

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

Asphalt Material shall conform to the requirements of Section 210 of the Specifications.

Fine Aggregate shall conform to the requirements of Section 202 of the Specifications.

Coarse Aggregate for surface treatment shall conform to the requirements of Section 203 of the Specifications.

Hydraulic Cement Concrete Class 20 shall conform to the requirements of Section 217 of the Specifications.

Steel Reinforcement shall conform to the requirements of Section 223 of the Specifications.

III. CONSTRUCTION

Pavement restoration shall be in accordance with this Provision and plan notes.

Backfill shall be in accordance with Section 302.03 (a) 2. g. of the Specifications.

Asphalt Concrete shall be placed and compacted in accordance with Section 315 of the Specifications.

Surface Treatment shall be placed in accordance with the attached drawing and Section 313 of the Specifications.

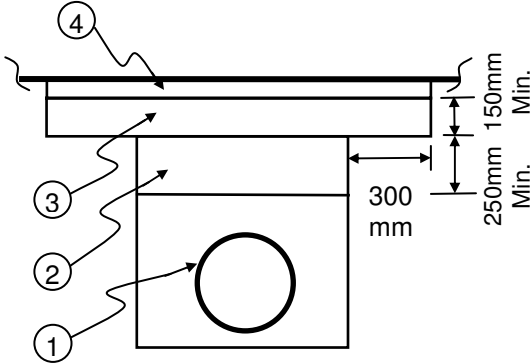
Concrete Pavement shall be placed in accordance with Section 509 of the Specifications and this Provision. Open trench in Hydraulic Cement Concrete Pavement should be located at existing transverse joints if at all possible. If concrete pavement is removed within 600 millimeters of an existing transverse joint, pavement removal shall be extended 600 millimeters beyond the joint. Reinforcing steel and dowels shall be installed in accordance with Road and Bridge Standard PR-2. Joint replacement shall be in accordance with Road and Bridge Standard PR-2.

IV. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

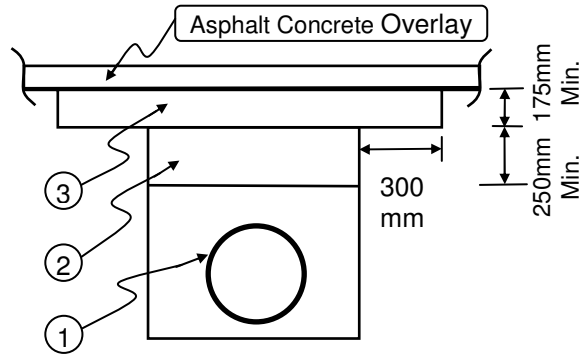
*These SPECIFICATIONS REVISIONS are subject to change on short notice.



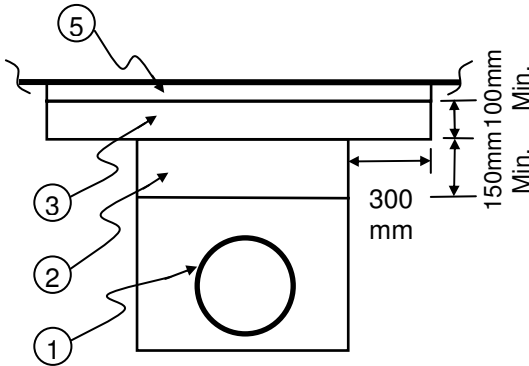
Restoring Existing Pavement unless otherwise specified will not be measured for separate payment, the cost thereof shall be included in the price bid for the utility to which it pertains in accordance with Section 302.04, Section 520.06 or Section 705.04 of the Specifications, as appropriate. However, widths and depths in excess of the attached drawing that are authorized or directed by the Engineer will be paid for in accordance with Section 109.05 of the Specifications.



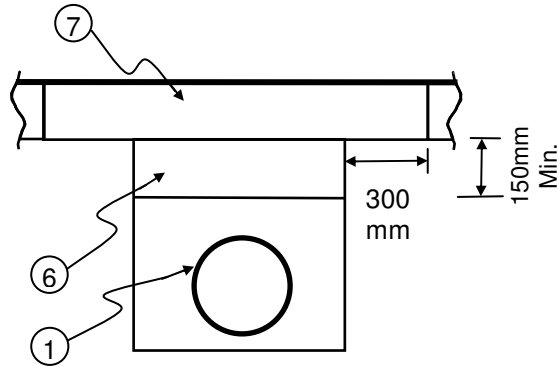
PAVEMENT STRUCTURE
Asphalt Conc. Base and Surface



PAVEMENT STRUCTURE
Scheduled for Asphalt Conc. Overlay



PAVEMENT STRUCTURE
Aggregate Base and Surface Treatment



PAVEMENT STRUCTURE
Hydraulic Cement Concrete

NOTES:

The following methods for restoring existing pavement shall be adhered to unless otherwise specified on the plans.

1. Pipe culverts, conduits and utility items shall be installed in accordance with the applicable Road and Bridge Standards and Specifications.
2. Subbase - Aggregate material Type 1, Size 21A or 21B.
3. Asphalt Concrete Type BM-25.0.
4. Surface - Asphalt Concrete Type SM-9.5D @ 90 kg/. per m².

5. Surface - Blotted Seal Coat Type C: The initial seal and final seal shall be CRS-2, CMA-2 or CMS-2h liquid asphalt material @ 0.77 l./m². with 8.14 kg per m². of No. 8P stone/. m² each. The blot seal shall be CRS-2, CMS-2 or CMS-2h liquid asphalt material @ 0.68 l./m². with 5.43 kg / m². of fine aggregate grade B sand per m².
6. Subbase - Aggregate material Type 1 Size 21B
7. Surface - Hydraulic Cement Concrete , high early strength, matching existing structure for depth and surface texture.

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

GUIDELINES - PROJECTS HAVING CULVERTS OR UNDERGROUND UTILITIES.
EXCEPTIONS: NONE.

SM302F0B-0200

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
FLOWABLE BACKFILL

November 30, 1998

I. DESCRIPTION

This work shall consist of furnishing and placing flowable backfill for use as backfill material in pipe installations or in other uses at locations as designated on the plans, and as backfill material for plugging designated abandoned pipes and culverts.

II. MATERIALS

Hydraulic Cement shall conform to the requirements of Section 214 of the Specifications.

Fly Ash shall have no specific requirement for fineness, loss of ignition, or reactivity.

Water shall conform to the requirements of Section 216 of the Specifications.

Aggregates shall conform to the requirements of Sections 202 and 203 of the Specifications with a combined gradation as determined by the Contractor.

Admixtures shall conform to the requirements of Section 215 of the Specifications.

Granulated Iron Blast Furnace Slag shall conform to the requirements of Section 215 of the Specifications.

III. MIX DESIGN

Mix design for flowable backfill shall be provided by the Contractor. When used as backfill material in pipe installations or in other uses at locations as designated on the plans flowable backfill shall have a design compressive strength of 200 to 1400 kilopascals. When used as backfill material for plugging designated abandoned pipes and culverts flowable backfill shall have a design compressive strength of 200 to 8000 kilopascals. The design compressive strength requirement shall be at 28 days when tested in accordance with AASHTO T-23. Mix design shall result in a fluid product having no less than an 200-millimeter slump at time of placement. The Contractor shall submit a mix design for approval supported by laboratory test data verifying compliance with 28 day compressive strength requirements. Mix design shall be approved by the Engineer prior to placement.

IV. PROCEDURES

Mixing and transporting shall be in accordance with Section 217 of the Specifications or by other methods approved by the Engineer.

Temperature of flowable backfill shall be at least 10 degrees Celsius at time of placement. Material shall be protected from freezing for 24 hours after placement.

When used as backfill for pipe installation and floatation or misalignment occurs, correct alignment of the pipe shall be assured by means of straps, soil anchors or other approved means of restraint.

When used to fill the voids in abandoned pipes and culverts, they shall be plugged and backfilled in accordance with the plan details or as directed by the Engineer. The plugs shall be in accordance

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

with the plan details. The backfill material shall be flowable backfill placed into the abandoned pipe or culvert without voids. The opening for culvert backfill installation shall be sealed with masonry or Class 20 concrete at completion of backfilling.

V. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Flowable Backfill will be measured and paid for in cubic meters complete-in-place. When used as backfill material in pipe installations or in other uses at locations as designated on the plans this price shall be full compensation for furnishing and placing flowable backfill, securing the pipe alignment, and for all materials, labor, tools, equipment and incidentals necessary to complete the work. When used as backfill material for plugging designated abandoned pipes and culverts the price bid shall include furnishing and placing of backfill material and furnishing and installing plugs.

Payment will be made under:

Pay Item	Pay Unit
Flowable Backfill	Cubic meter

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



GUIDELINES— PROJECTS REQUIRING DRAINAGE STRUCTURES.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

SM302G0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 302—DRAINAGE STRUCTURES

April 30, 2007

SECTION 302—DRAINAGE STRUCTURES of the Specifications is amended as follows:

Section 302.01—Description is replaced with the following:

This work shall consist of installing pipe culverts, endwalls, box culverts, precast concrete and metal arches, storm drains, drop inlets, manholes, spring boxes, junction boxes, and intake boxes and removing and replacing existing structures in accordance with the requirements of these specifications and in conformity with the lines and grades shown on the plans or as established by the Engineer.

Section 302.03(a) 2.a. Foundation is amended to delete the third and fourth paragraphs.

Section 302.03(a) 2.b. Bedding is amended to replace the first paragraph with the following:

Bedding material for culvert foundations, including foundations in soft, yielding or otherwise unsuitable material, shall be aggregate No. 25 or 26 conforming to the requirements of Section 205 of the Specifications except where standing or running water is present in the pipe foundation excavation, then pipe bedding material shall be aggregate No. 57 for the depth specified on the plans or as directed by the Engineer, capped with 100 millimeters of aggregate No. 25 or 26. Where such conditions are discovered in the field and the Contractor is directed by the Engineer to use No. 57 stone, No. 57 stone will be paid for at the existing contract unit price, or if not in the Contract, in accordance with Section 109.05 of the Specifications.

Section 302.03(a) 2.g. Backfilling is amended to delete the first, fourth paragraph, including subparagraph 1. and both paragraphs of subparagraph 2., and to add the following:

Class I backfill material shall be crusher run aggregate size no. 25 or 26, Aggregate Base Material Size 21A or 21B, or Flowable Fill.

Regular backfill material outside of the neatlines of the Class I areas shown on the Standard Drawings shall be regular excavation conforming to Section 303 of the Specifications. Regular and classified backfill shall be placed in uniform layers not more than 150 millimeters in thickness, loose measurement, before compaction. Each layer of Class I and regular backfill material shall be thoroughly compacted as specified in Section 303.04(g) of the Specifications with the exception that Class I backfill material shall be placed and compacted at a moisture content of optimum to plus 2 percentage points of optimum. Class I backfill material shall be thoroughly compacted under the haunches of pipe culverts. Each layer of Class I and regular backfill material shall be compacted by rolling, tamping with mechanical rammers, or hand tamping with heavy metal tampers with a face of at least 1600 square millimeters. If vibratory rollers are used in the backfill operations, vibratory motors shall not be activated until at least one meter of backfill has been placed and compacted over the pipe. Backfill and compaction shall be advanced simultaneously on both sides of the pipe. The fill above the top of the Class I backfill shall be completed as specified for embankment construction.

Field density determinations will be performed in accordance with the requirements of VTM-1, VTM-10 or other methods approved by the Engineer.

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

Concrete pipe with a height of cover greater than that shown in the Standard PC-1 table for Class V pipe shall be Special Design pipe with Method "A" bedding and backfill in accordance with the requirements of Standard PB-1.

Section 302.03 (b) Precast Drainage Structures is amended to replace the second sentence of the second paragraph with the following:

Concrete shall conform to Section 217 of the Specifications unless otherwise specified and have a design strength at 28 days of at least 30 megapascals and an air content of 6 ± 2 percent.

Section 302.03(b) 1.b. Standard precast drainage units is replaced with the following:

Pipe openings in precast drainage units shall not exceed the outside cross sectional dimensions of the pipes by more than a total of 200 millimeters regardless of the placement of the pipes, the angles of intersection, or the shapes of the pipes. Pipe openings shall be formed, drilled, or neatly cut.

Section 302.03(b) 1.c. Standard precast drainage units is replaced with the following

The Contractor shall use brick, masonry block, other standard masonry units, or clean, durable, and sound local stone in conjunction with mortar to fill the void between the pipe culverts and the precast drainage structures. Stone or masonry units, areas of the pipe openings, and exterior walls of pipe shall be thoroughly wetted and then bonded with mortar by standard masonry practice in such a manner as to provide a contiguous masonry connection between the precast drainage structures and the pipe culverts. The remaining exterior and interior voids shall be filled with mortar and shaped to the contour of the precast structure.

Section 302.03(c) Drop Inlets, Manholes, Spring Boxes, Intake Boxes, and End Walls is replaced with the following:

(c) **Drop Inlets, Manholes, Junction Boxes, Spring Boxes, Intake Boxes, and End Walls:** Masonry construction shall not be initiated when the air temperature is below 5 degrees C in the shade.

The foundation shall be explored below the bottom of the excavation to determine the type and condition of the foundation. Foundation exploration shall extend to a depth equal to 42 millimeters per meter of fill height or 200 millimeters, whichever is greater. The Contractor shall report findings of foundation exploration to the Engineer for approval prior to placing structure

Where unsuitable foundation is encountered at the established grade, as determined by the Engineer, such material shall be removed and replaced.

Backfill for areas where unsuitable material has been removed shall be placed and compacted in accordance with the requirements of Section 303.04(g) of the Specifications.

Bedding material shall be placed in accordance with the Standard Drawing and shall be aggregate No. 25 or 26 conforming to the requirements of Section 205 of the Specifications except where standing or running water is present in the foundation excavation, then bedding material shall be aggregate No. 57 for the depth specified on the plans or as directed by the Engineer, capped with 4 inches of aggregate No. 25 or 26. Where such conditions are discovered in the field and the Contractor is directed by the Engineer to use No. 57 stone, No. 57 stone will be paid for at the existing contract unit price, or if not in the contract, in accordance with Section 109.05 of the Specifications.

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

Bedding shall be lightly and uniformly compacted. The depth of bedding material shall be as specified in the plans.

Brick and concrete block masonry shall be placed so that each unit will be thoroughly bonded with mortar. Joints shall be full-mortar joints not more than 13 millimeters in width. Where brick masonry is used, headers and stretchers shall be arranged to bond the mass fully. Every seventh course shall be placed entirely with headers. Inside joints shall be neatly pointed, and the outside of such walls shall be plastered with mortar as they are placed.

Iron fittings entering the masonry shall be placed as the work is built up, thoroughly bonded, and accurately spaced and aligned.

Inlet and outlet pipe connections shall conform to the same requirements as the pipe to which they connect and shall be of the same size and kind. Pipe sections shall be flush on the inside of the structure wall and shall project outside sufficiently for proper connection with the next pipe section. Masonry shall fit neatly and tightly around the pipe.

Immediately following finishing operations, hydraulic cement concrete shall be cured and protected in accordance with the requirements of Section 316.04(j) of the Specifications.

Backfilling shall be performed in accordance with the requirements of Section 303.04(g) of the Specifications. Surplus material shall be removed, and the site shall be left in a neat and orderly condition.

When grade adjustment of existing structures is specified, frames, covers, and gratings shall be removed and the walls shall be reconstructed as required. Cleaned frames shall be reset at the required elevation. Upon completion, each structure shall be cleaned of silt, debris, and foreign matter and shall be kept clear of such accumulation until final acceptance.

Section 302.03—Procedures of the Specifications is amended to include the following:

When lift holes are provided in concrete pipe or precast box culverts, the Contractor shall install a lift hole plug furnished by the manufacturer in accordance with the requirements of Section 232.02 (a) 1. of the Specifications. After pipe installation and prior to backfilling, plugs shall be installed from the exterior of the pipe or box culvert and snugly seated.

The Contractor shall be responsible for anticipating and locating underground utilities and obstructions in accordance with the requirements of Section 105.07 of the Specifications.

When construction appears to be in close proximity to existing utilities, the trench(es) shall be opened a sufficient distance ahead of the work or test pits made to verify the exact locations and inverts of the utility to determine if changes in line or grade are required for the new work.

Section 302.04—Measurement and Payment is amended to delete the eleventh, twelfth and thirteenth paragraphs.

Section 302.04—Measurement and Payment is amended to replace the fifth paragraph with the following:

Pipe shall be paid for at the contract unit price per meter. This price shall include excavating, when not paid for as Minor Structure Excavation, sheeting, shoring, dewatering, disposing of surplus and unsuitable material and restoring existing surfaces. The upper 100 millimeters of bedding material and the Class I backfill material within the neatlines shown for each foundation type on the Standard PB-1 Drawings shall be included in the price for the related pipe. When unit prices for extended pipelines are not specified, the unit price for new pipe of the same size shall apply. When not a pay item, the cost of the temporary relocation of a stream to facilitate the

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

installation of the pipe shall be included in the price for the pipe. The cost of fittings, anti-seepage collars and anchor blocks shall be included in the price for the pipe.

Section 302.04—Measurement and Payment is amended to replace the fourteenth and fifteenth paragraph with the following:

Cast in place box culverts will be measured in cubic meters of concrete and kilograms of reinforcing steel and will be paid for at the contract unit price per cubic meter of concrete and per kilogram of reinforcing steel. These prices shall include excavating, when not paid for as Minor Structure Excavation, sheeting, shoring, dewatering, waterproofing, disposing of surplus and unsuitable material, restoring existing surfaces, the upper 150 millimeters of bedding material within the neatlines shown on the Standard PB-1 Drawings and all necessary work to key the bottom slab into an existing rock foundation. When not a pay item, the cost of the temporary relocation of a stream to facilitate the installation of the structure shall be included in the price for the concrete and steel.

If the Contractor elects to furnish and install precast box culverts or precast arches, payment will be made for the original quantities shown on the plans for cast-in-place units. No additional compensation will be made for casting, prestressing, or shipping precast units or performing additional work, such as waterproofing, epoxy coating, or joint sealing, required as a result of the substitution.

Precast box culverts will be measured in meters along the centerline of the barrel from face of curtain wall to face of curtain wall and will be paid for at the contract unit price per meter. This price shall include designing, casting, reinforcing, excavating, when not paid for as Minor Structure Excavation, sheeting, shoring, dewatering, installing, waterproofing, sealing joints, anchoring, disposing of surplus and unsuitable material, restoring existing surfaces, the upper 150 millimeters of bedding material within the neatlines shown on the Standard PB-1 Drawings, fittings and providing buffer zones and porous backfill for multiple lines. When not a pay item, the cost of the temporary relocation of a stream to facilitate the installation of the structure shall be included in the price for the box culvert.

Section 302.04—Measurement and Payment is amended to replace the nineteenth paragraph with the following:

Drop inlets and intake boxes will be measured as complete units, including the frame and grate or cover, and will be paid for at the contract unit price per each. The contract unit price for drop inlets will be adjusted at the rate of 5 percent per 300 millimeters for increases or decreases in the depth indicated on the plans except that no adjustment will be made for changes amounting to less than 150 millimeters in the height of a single drop inlet. Where curb or curb and gutter extend along the drop inlet, the contract unit price for drop inlets shall include that part of the curb or gutter within the limits of the structure. Bedding material, except aggregate No. 57, will be included in the price of the structure.

Section 302.04—Measurement and Payment is amended to replace the twenty-first paragraph with the following:

Manholes will be measured in meters, vertical measure, from top of foundation slab to top of masonry on which the casting frame is placed. However, when manholes are constructed as tee sections, measurement will be made to the pay limits shown on the plans. Manholes will be paid for at the contract unit price per vertical meter exclusive of frame and cover. Bedding material, except aggregate No. 57, will be included in the unit price per meter for the manhole.

Section 302.04—Measurement and Payment is amended to replace the twenty-third paragraph with the following:

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

Junction boxes will be measured in cubic meters of concrete, kilograms of reinforcing steel, kilograms of structural steel, and each complete frame and cover assembly and will be paid for at the contract unit price per cubic meter of concrete, per kilograms of reinforcing steel, kilograms of structural steel, and per each frame and cover assembly. Bedding material, except aggregate No. 57, will be included in the price of the structure.

Section 302.04—Measurement and Payment is amended to delete the following Pay Item and Pay Unit:

Pay Item	Pay Unit
Bedding material, aggregate No. ()	Metric ton

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



**GUIDELINES - PROJECTS THAT SPECIFY A TURBIDITY CURTAIN.
EXCEPTIONS: NONE.**

SM303A0B-0197

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
TURBIDITY CURTAIN

August 4, 1993c
Reissued January 1, 1997

I. DESCRIPTION

This work consists of installation, maintenance and removal of a turbidity curtain, including all necessary cables, weights and floats in accordance with this provision and in reasonably close conformity with the lines, grades and details shown on the plans or established by the Engineer. The curtain shall be provided as a temporary measure to minimize the drift of suspended material during construction of the project.

II. MATERIALS

The curtain shall be synthetic fabric coated with suitable elastomeric or polymeric compound; having high resistance to weathering, hydrocarbons, fresh and salt water, and temperature extremes. The fabric shall be impervious or pervious as shown in the contract. Pervious is defined as 20% of the fabric material allowing the passage of water. The fabric shall have a tensile strength of not less than 14 megapascals when measured lengthwise or crosswise. The curtain shall form a continuous vertical and horizontal barrier for the entire width and length of each section. Seams, if required, shall be either vulcanized welded or sewn and shall develop the full strength of the fabric.

Floatation shall be flexible, buoyant units contained in a floatation sleeve or collar attached to the curtain. Buoyancy provided by the floatation units shall be sufficient to support the required width of the curtain and maintain a freeboard of at least 75 millimeters above the water surface level, to a minimum of 300 millimeters above the bottom or a maximum 3 meters depth at all stages of water levels.

Load lines shall be fabricated into the top and bottom of the curtain. The top load line shall consist of woven webbing or vinyl sheathed steel cable and shall have a break strength in excess of 44 kilonewtons. The bottom loadline shall consist of a chain incorporated into the bottom hem of the curtain of sufficient mass to serve as ballast to hold the curtain in a vertical position. Additional anchorage shall be provided if necessary. The load lines shall have suitable devices, which develop the full breaking strength for connecting to load lines in adjacent sections.

The Contractor shall submit working drawings to the Engineer for review in accordance with Section 105.02 of the Specifications.

III. INSTALLATION

The curtain shall be placed at the locations shown on the plans and in accordance with the approved working drawings. The Contractor shall maintain the turbidity curtain in order to insure the continuous protection of the waterway.

The depth of the curtain shall be such that it shall extend from the water surface to no less than 300 millimeters above the bottom, or no more than 3 meters depth for the entire length of curtain at all stages of water level.

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

When the curtain is no longer required as determined by the Engineer, the curtain and related components shall be removed in such a manner as to minimize turbidity. The curtain and related components shall become the property of the Contractor and shall be removed from the project.

IV. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Turbidity curtain will be measured in meters from edge of the curtain along the support cable. Turbidity curtain will be paid for at the contract unit price per meter to the nearest meter, which price shall be full compensation for furnishing, installing, maintaining and removal of all materials necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Turbidity Curtain (Type)	Meter

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



**GUIDELINES - PROJECTS WITH EROSION CONTROL MULCH.
EXCEPTIONS: NONE.**

SM303C1B-0105

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
EROSION CONTROL MULCH

March 15, 2004

I. DESCRIPTION

This work shall consist of furnishing and applying mulch as a temporary erosion control treatment on slopes exposed to the elements but not at final grade during the period from December 1 to March 1 for periods of up to 30 days prior to final grading, or to areas to receive stabilization or paved surfaces within six months, in accordance with this provision and as directed by the Engineer.

II. MATERIALS

Mulch shall conform to the requirements of Section 244.02(g)1. of the Specifications.

III. PROCEDURES

Mulch shall be applied to exposed slopes requiring mulch, or to areas to be stabilized or paved, within 48 hours after performance of grading operations. Straw or hay mulch shall be applied on bare slope areas at the rate of approximately 6.83 metric tons per hectare (0.56 kg per square meter). Straw or hay mulch shall be applied at a uniform thickness in such a manner that not more than 10 percent of the soil surface will be exposed. Straw or hay mulch shall be anchored to the slope surface by one of the following methods: spraying with cellulose fiber mulch at the rate of 850 kilograms per hectare (0.08 kilogram per square meter); disking or punching the mulch partially into the soil; using approved netting; or using other materials or methods approved by the Engineer. The Contractor may use more than one method on the same project.

IV. MEASUREMENT AND PAYMENT

Erosion control mulch will be measured in square meters or hectares of surface area, complete-in-place, and will be paid for at the contract unit price per square meter or hectare of surface area. This price shall include furnishing and applying mulch; and maintaining mulched areas until placement of the final soil retention covering, seeding or paving.

Payment will be made under:

Pay Item	Pay Unit
Erosion control mulch	Square meter or hectare

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



**GUIDELINES— PROJECTS WITH AGGREGATE, EMBANKMENT, DRAINAGE OR FLOWABLE FILL,
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM303F0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**CRUSHED GLASS IN AGGREGATE, EMBANKMENT, DRAINAGE AND FLOWABLE FILL
APPLICATIONS**

July 24, 2007

I. DESCRIPTION

Crushed glass (CG) may be used for construction in drainage, embankment and backfilling applications, except for undercutting and foundation support for bridges, abutments, retaining walls and box culverts. The substitution of CG shall be permissive and shall be limited to applications using material of size 10 millimeters and smaller, and as detailed in Section III.

II. MATERIALS – The following sections of the Specifications are amended with reference to CG applications in various materials.

SECTION 101.02—TERMS is amended to replace “Embankment” with the following:

Embankment. A structure of soil, soil aggregate, soil-like materials, or broken rock between the existing ground and subgrade.

SECTION 106.07(c) Plant Inspection is amended to add the following:

For crushed glass, the plant equipment requirements are waived in lieu of an independent third-party evaluation and certification of crushed glass properties by an AASHTO Materials Reference Laboratory (AMRL)-accredited commercial soil testing laboratory demonstrating that the supplied material conforms to the specified requirements of Section 203 of the Specifications. Random triplicate samples will be evaluated and analyzed for every 1,000 metric tons of material supplied to the project. The averaged results will be used for evaluation purposes. Suppliers of crushed glass shall maintain third party certification records for a period of three years.

SECTION 203—COARSE AGGREGATE is amended as follows:

Section 203.02—Materials is amended to replace the first paragraph and add the following:

Coarse aggregate shall consist of crushed stone, crushed slag, crushed or uncrushed gravel with clean, hard, tough, and durable pieces free from adherent coatings and deleterious amounts of friable, thin, elongated, or laminated pieces; soluble salts; or organic materials. Crushed glass shall be used as follows.

- (d) **Crushed glass** shall consist of particles of curbside-collected or waste glass. It shall be free from sources of glass that include automotive glass, lead crystal, TV monitors, lighting fixtures and electronics applications. Non-glassy material associated with curbside collection (paper, capping materials, etc.), excluding fragments of broken ceramics and pottery, shall be limited to 5 percent by mass using a gravimetric determination, and including loss on ignition performed in accordance with the requirements of ASTM D2974. One hundred percent of the crushed glass shall pass the 9.5 mm sieve with less than 5 percent passing the

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

75µm sieve. Crushed glass shall not be used in hydraulic cement concrete, asphalt, base/subbase, or exposed shoulder applications.

Section 203.03(b)—Soundness is replaced with the following:

Soundness: Soundness shall conform to the requirements of Table II-4. Tests will be performed in accordance with the requirements of AASHTO T103 or T104. The requirement for soundness test for crushed glass is waived due to its preclusion from the applications shown in Table II-4.

SECTION 204—STONE FOR MASONRY, RIPRAP, POROUS BACKFILL, AND GABIONS is amended as follows:

Section 204.02(c)—Porous backfill, is replaced with the following:

- (c) **Porous backfill** shall be aggregate size No. 78 or No. 8, a minimum Grade B. Crushed glass meeting the gradation requirements specified in Section 203.02(d) of the Specifications can be directly substituted for size No. 78 and 8 aggregates.

SECTION 205—CRUSHER RUN AGGREGATE is amended as follows:

Section 205.02—Materials is amended to replace the first paragraph with the following

Crusher run aggregate shall be crushed from stone, slag, or gravel and shall contain all of the sizes produced when the original aggregate is reduced through a series of crushers to the maximum size specified. It shall be essentially free from deleterious substances in accordance with the requirements of Section 203 of the Specifications. Crushed glass shall be used as follows.

And to add (c):

- (c) **Crushed glass** will be permitted for use as crusher run aggregate provided it conforms to the physical requirements of Section 203.02(d) of the Specifications. Crushed glass having the gradation specified in Section 203.02(d) of the Specifications can be directly substituted for size No. 25 and 26 aggregates in pipe bedding and backfilling applications only.

Section 205.03(c)—Soundness loss is replaced with the following:

Soundness: Soundness shall conform to the requirements of Table II-4. Tests will be performed in accordance with the requirements of AASHTO T103 or T104. The requirement for soundness test for crushed glass is waived due to its preclusion from the applications shown in Table II-4.

SECTION 207—SELECT MATERIAL is amended as follows:

Section 207.02—Detail Requirements is amended to add the following:

- (f) **Crushed glass** that conforms to the physical requirements set forth in this special provision shall be limited to Type II and Type III applications to exclude those applications listed in Section 203.02(d) of the Specifications.

III. CONSTRUCTION PROCEDURES – The following sections of the Specifications amend procedural requirements where CG is used.

SECTION 302—DRAINAGE STRUCTURES is amended as follows:

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

Section 302.03(a)2.g.—Backfilling is amended to replace the criteria for Class I Backfill with the following:

Class I backfill material shall be crusher run aggregate size No. 25 or 26, aggregate base material size 21A or 21B, flowable fill, or crushed glass conforming to the size requirements for crusher run aggregate size 25 and 26.

SECTION 303—EARTHWORK is amended as follows:

Section 303.04(h)—Embankments, amend to add the following:

Crushed glass shall be limited within the boundaries of the embankment as follows. Crushed glass shall be a minimum of .6 meter inside the side slope and contain a minimum of .6 meter of soil embankment cap. For those areas where crushed glass is to be incorporated into the embankment, glass may constitute up to approximately ninety percent (90%) by mass of that portion of the embankment, except where 100 percent crushed glass is used for drainage purposes (including blankets).

Crushed glass shall be blended with soil and/or soil like materials as follows:

- A. The embankment shall be constructed by placing alternate 100-millimeter layers of waste glass and soil and mixing and blending by scarification or other approved methods during compaction. The thickness of uncompacted layers of soil/glass shall be a maximum of 200 millimeters (loose); or
- B. Pugmilled in predetermined ratios to a visually consistent blend and placed in lifts of a maximum of 200 millimeters (loose); or
- C. As directed by the Engineer.

Compaction of the soil/glass embankment shall be to the satisfaction of the Engineer and shall be accomplished with a vibratory compactor or other approved methods. Moisture and density requirements for the soil/glass embankments shall be the same as other conventional soil embankment in accordance with the requirements of Section 303 of the Specifications.

Normal compaction procedures and requirements are to be used for compaction of the soil embankment "cap" above the crushed glass/soil blends.

SECTION 401—STRUCTURE EXCAVATION is revised as follows:

Section 401.03(i)—Backfilling is amended to replace the fourth paragraph with the following:

Provisions shall be made for drainage of backfill. 50 millimeter crusher run aggregate, conforming to the requirements of Section 205 of the Specifications, shall be placed at the back of weep holes to extend 450 millimeters behind the entrance to the hole, 450 millimeters above the elevation of the bottom of the hole, and 450 millimeters laterally on each side of the centerline of the hole. Where crushed glass is used as porous backfill, No. 78 and/or No. 8 aggregate an 450 millimeter x 450 millimeter swatch of drainage fabric meeting the requirements of Section 245.03(c) of the Specifications shall be used to cover the #4 mesh at each weep hole opening exposed directly to crushed glass, or as approved by the Engineer.

SECTION 502—INCIDENTAL CONCRETE ITEMS is amended as follows:

Section 502.03(c)4.—Concrete Median Barriers is amended to replace the third paragraph with the following:

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

After the specified curing time has elapsed, concrete median barriers for roadways shall be backfilled to the required elevation with approved material. Where crushed glass is used as porous backfill an 450 millimeter x 450 millimeter swatch of drainage fabric meeting the requirements of Section 245.03(c) of the Specifications shall be used to cover the #4 mesh at each weep hole opening exposed directly to crushed glass, or as approved by the Engineer. Crushed glass shall be capped with concrete in accordance with the details shown on the standard drawing, or a minimum of 150 millimeters of other approved soil or aggregate material. Crushed glass shall not be used as porous backfill directly beneath paved surfaces for barrier applications. Material shall be thoroughly tamped in layers not more than 150 millimeters in depth before compaction. Delineators shall be installed on median barriers in accordance with the requirements of Section 702.03 of the Specifications.

SPECIAL PROVISION FOR FLOWABLE BACKFILL

Section II. Materials is amended to replace the fourth paragraph as follows:

Aggregate shall conform to the requirements of Section 202 and 203 of the Specifications with a combined gradation as determined by the Contractor.

IV. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

When not incorporated into the measurement and payment of the contract unit price work items, as specified herein or elsewhere, crushed glass will be measured and paid for at the contract unit price per metric ton, which shall be full compensation for furnishing, placing, manipulating and compacting. Deliveries of crushed glass shall conform to Section 109.01(a) of the Specifications.

Payment will be made as follows:

Pay Item	Pay Unit
Crushed glass	Metric ton

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



**GUIDELINES - USE ON PROJECTS DIRECTED FOR CONSTRUCTION UNDER NO PLAN OR MINIMUM PLAN CONCEPTS. (UNIT PRICE FOR EXTRA EXCAVATION MUST BE FURNISHED BY THE DISTRICT).
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM303H1B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
NO PLAN AND MINIMUM PLAN CONCEPT

December 6, 2007

I. DESCRIPTION

This work shall consist of all construction or reconstruction activities in accordance with the applicable requirements of the Specifications, except where otherwise specified in this provision, and in conformity with the lines, grades and typical sections shown or established by the Engineer. This work shall include clearing and grubbing; excavation within the area of the typical section(s), construction of embankments and shoulders, construction of connections with intersecting roads, streets and entrances, both public and private, and the construction of all ditches and channels within the area of the right-of-way or easements. Unless otherwise specified, this work shall include the removal and disposal of existing road surface material, abandoned pipe culverts and minor structures. The existing road surface material shall be salvaged and used for maintenance of traffic, except when the Engineer determines that this condition is impractical.

II. MATERIALS

Materials shall be in accordance with the applicable requirements of the Specifications, except as otherwise specified in this provision or elsewhere in the contract documents.

III. TESTING

Testing on this project will be in accordance with the policy for testing on no plan and minimum plan projects in Sections 207 and 208 of the Specifications and the Material Division's Manual of Instructions.

IV. PROCEDURES

The Contractor shall perform all construction or reconstruction activities in accordance with the applicable requirements of the Specifications, except as otherwise specified on the plans or herein.

The roadway centerline shall be in accordance with the centerline shown on the plans or established by the Engineer. The grade shall generally follow that shown on the plans. In the absence of a grade line on the plans, the proposed grade shall generally follow the existing grade as directed by the Engineer. The approximate depth of centerline cuts and fills shall be obtained from the plans, except that at certain locations and at the discretion of the Engineer, a minimum number of centerline grade stakes may be furnished by the Department whereby the approximate depth of centerline cuts and fills may be obtained therefrom. Slope tolerances specified in the Specifications are waived; however, all disturbed slopes shall be uniformly grooved or rough graded as directed by the Engineer.

The roadbed shall be shaped and worked until it is smooth and free from large clods or other material unfit for use in the roadbed. Sharp breaks in the roadbed shall be eliminated and the final grade shall be compacted. The maximum gradient on all connections with intersecting roads, streets and entrances shall not exceed 10 percent, unless otherwise noted on plans or directed by the Engineer. Ditchlines shall be graded to facilitate drainage and to prevent the impoundment of water.

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

Excess material from slides, ditches and channels, slopes or drainage easements, and unsuitable material cut from below grade, which cannot be used to flatten fill slopes within the right-of-way or easements, shall be disposed of by the Contractor in accordance with Section 106.04 of the Specifications.

The construction or clean out of ditches or channels extending beyond the roadway right-of-way, the removal and disposal of slide material and the removal and disposal of unsuitable material required to be removed from below subgrade will be classified as extra excavation.

V. MEASUREMENT AND PAYMENT

Measurement and payment for items of work shall be in accordance with the applicable requirements of the Specifications, except as specified herein.

Grading will be paid for at the contract lump sum price, which price shall be full compensation for mobilization when not specified as a separate bid item; for the cost of clearing and grubbing; for all regular excavation; for construction of embankments, grading of unpaved shoulders and ditches and channels; for allaying of dust when not specified as a separate bid item; for removal and disposal of excess or unsuitable material above grade; and for removal and disposal of existing minor structures and roadway surface materials.

Extra excavation, when specified as a bid item, will be measured in cubic meters in accordance with Section 109.01 of the Specifications and will be paid for at the contract unit price per cubic meter; which price shall be full compensation for performing the required excavation and disposing of material in accordance with Section 106.04 of the Specifications or as directed by the Engineer. When not specified as a contract bid item, extra excavation will be paid for at the unit price of _____ per cubic meter.

Payment will be made under:

Pay Item	Pay Unit
Grading	Lump Sum
Extra Excavation	Cubic Meter

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



**GUIDELINES—PROJECTS HAVING EARTHWORK (DO NOT USE NO PLAN AND MINIMUM PLAN CONCEPT PROVISION SM303H).
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM303I4B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 303—EARTHWORK

April 19, 2007

SECTION 303—EARTHWORK of the Specifications is replaced with the following:

303.01—Description

This work shall consist of constructing roadway earthwork in accordance with these specifications and in conformity with the specified tolerances for the lines, grades, typical sections, and cross sections shown on the plans or as established by the Engineer. Earthwork shall include regular, borrow, undercut, and minor structure excavation; constructing embankments; disposing of surplus and unsuitable material; shaping; compaction; sloping; dressing; and temporary erosion and siltation control work.

303.02—Materials

- (a) **Borrow excavation** shall consist of approved material required for the construction of the roadway and shall be obtained from approved sources outside the project limits. Borrow excavation shall conform to the requirements of AASHTO M57 and the requirements herein.
- (b) **Materials for temporary silt fences, geotextile fabric silt barriers, and filter barriers** shall conform to the requirements of Sections 242.02(c) and 245.03(a) of the Specifications.
- (c) **Geotextile materials used for embankment stabilization** shall conform to the requirements of Section 245.03(e) of the Specifications.
- (d) **Mulch** shall conform to the requirements of Section 244.02(g) of the Specifications.

303.03—Erosion and Siltation Control

Erosion and siltation shall be controlled through the use of the devices and methods specified herein or as is otherwise necessary. The Engineer reserves the right to require other temporary measures not specifically described herein to correct an erosion or siltation condition.

Erosion and siltation control devices and measures shall be maintained in a functional condition at all times. Temporary and permanent erosion and siltation control measures shall be inspected after each rainfall and at least daily during periods of prolonged rainfall. Deficiencies shall be immediately corrected. The Contractor shall make a daily review of the location of silt fences and filter barriers to ensure that they are properly located for effectiveness. Where deficiencies exist, corrections shall be made immediately as approved or directed by the Engineer.

When erosion and siltation control devices function by using wet storage, sediments shall be removed when the wet storage volume has been reduced by 50 percent. Sediments shall be removed from dewatering basins when the excavated volume has been reduced by 50 percent. Sediments shall be removed from all other erosion and siltation control devices when capacity, height, or depth has been reduced by 50 percent. Removed sediment shall be disposed of in accordance with the requirements of Section 106.04 of the Specifications. Sediment deposits remaining in place after the device is no longer required shall be dressed to conform with the existing grade, prepared, and seeded in accordance with the requirements of Section 603 of the Specifications.

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

Geotextile fabric that has decomposed or has become ineffective and is still needed shall be replaced. Temporary erosion and sediment control devices except brush silt barriers shall be removed within 30 days after final site stabilization or after the temporary devices are no longer needed as determined by the Engineer.

- (a) **Earth Berms and Slope Drains:** The top of earthwork shall be shaped to permit runoff of rainwater. Temporary earth berms shall be constructed and compacted along the top edges of embankments to intercept runoff water. Temporary Berms and temporary dikes are to be stabilized immediately following installation. Temporary slope drains shall be provided to intercept runoff and adequately secured to prevent movement. Slope drains may be flexible or rigid but shall be capable of being readily shortened or extended. A portable flume shall be provided at the entrance to temporary slope drains.
- (b) **Soil Stabilization:** Soil stabilization shall be applied within 7 days after attaining the appropriate grading increment for that stage of the construction operations, or upon suspension of grading operations for an anticipated duration of greater than 15 days, or upon completion of grading operation for a specific area. Areas excluded from this requirement include areas within 30 meters of the limits of ordinary high water or a delineated wetland which shall be continuously prosecuted until completed and stabilized immediately upon completion of the work in each impacted area. Soil stabilization includes: temporary and permanent seeding, riprap, aggregate, sod, mulching, and soil stabilization blankets and matting in conjunction with seeding. The applicable type of soil stabilization shall depend upon the location of areas requiring stabilization, time of year (season), weather conditions and stage of construction operations.

Cut and fill slopes shall be shaped and topsoiled where specified. Seed and mulch shall be applied in accordance with the requirements of Section 603 of the Specifications as the work progresses in the following sequence:

1. Slopes whose vertical height is 6 meters or greater shall be seeded in three equal increments of height. Slopes whose vertical height is more than 23 meters shall be seeded in 7.5-meter increments.
2. Slopes whose vertical height is less than 6 but more than 1.5 meters shall be seeded in two equal increments.
3. Slopes whose vertical height is 1.5 meters or less may be seeded in one operation.

Areas that cannot be seeded because of seasonal or adverse weather conditions should be mulched to provide some protection against erosion to the soil surface. Organic mulch shall be used, and the area then seeded as soon as weather or seasonal conditions permit in accordance with the requirements of Section 303.03(e) of the Specifications. Mulch shall be applied in accordance with the requirements of Section 603.04 of the Specifications. Organic mulch includes: straw or hay, fiber mulch, wood cellulose, or wood chips conforming to the requirements of Section 244.02(g) of the Specifications.

- (c) **Check Dams:** As an initial item of work, required check dams shall be constructed at 8-meter intervals, unless otherwise shown on the plans, below the outfall end of drainage structures.

Synthetic check dams recorded in the Department's Approved List may be substituted for Standard EC-4, Rock Check Dams, Type II, with the approval of the Engineer at no additional cost to the Department. Synthetic check dams shall be installed in accordance with the manufacturer's recommendation.

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

- (d) **Baled Straw Silt Barriers:** Baled straw silt barriers may be substituted for temporary filter barriers with the approval of the Engineer in noncritical areas, such as pavement areas and rock locations where filter barriers cannot be installed in accordance with the plans and specifications and locations where the Engineer determines that streams and water beds will not be affected.

(e) **Temporary Silt Fences, Geotextile Fabric Silt Barriers, and Filter Barriers:**

1. **Temporary silt fences:** Fences shall be erected at locations shown on the plans or determined by the Engineer. Geotextile fabric used for silt fences shall be provided, and posts shall not be spaced more than 1.8 meters apart. Posts shall be uniformly installed with an inclination toward the potential silt load area of at least 2 degrees but not more than 20 degrees. Attaching fabric to existing trees will not be permitted.

Fabric shall be firmly secured to the post or wire fence. The bottom of the fabric shall be entrenched in the ground in a minimum 150-millimeter by 150-millimeter trench. Temporary silt fence may also be entrenched using a slicing method with a minimum of 200 millimeters sliced into the ground. Fabric may be spliced only at support posts and with an overlap of at least 150 millimeters. The top shall be installed with a 25-millimeter tuck or reinforced top end section. The height of the finished fence shall be a nominal 730 millimeters.

2. **Geotextile fabric silt barriers:** Existing fences or brush barriers used along the downhill side of the toe of fills shall have geotextile fabric attached at specified locations as shown on the plans. The bottom of the fabric shall be entrenched in the ground in a minimum 150-millimeter by 150-millimeter trench, and the top shall be installed with a 25-millimeter tuck or reinforced top end section. Temporary fabric silt barriers may also be entrenched using a slicing method with a minimum of 200 millimeters sliced into the ground.

Brush barriers shall be installed prior to any major earth-disturbing activity and trimmed sufficiently to prevent tearing or puncturing fabric. Fabric shall be fastened securely to the brush barrier or existing fence. A 150-millimeter overlap of fabric for vertical and horizontal splicing shall be maintained and tightly sealed.

3. **Temporary filter barriers:** Barriers shall consist of geotextile fabric and shall be securely fastened to wood or metal supports that are spaced at not more than 1-meter intervals and driven at least 300 millimeters into the ground. At least three supports shall be used. The bottom of the fabric shall be entrenched in the existing ground in a minimum 100-millimeter by 100-millimeter trench.

Temporary filter barriers may also be entrenched using a slicing method with a minimum of 150 millimeters sliced into the ground. The top of the fabric shall be installed with a 25-millimeter tuck or reinforced top end section. The height of the finished temporary filter barrier shall be a nominal 380 millimeters.

Temporary filter barriers shall be installed at temporary locations where construction changes the earth contour and drainage runoff as directed or approved by the Engineer.

After removal and disposal of the temporary silt fence, geotextile fabric silt barrier, and temporary filter barrier, the area shall be dressed and stabilized with a permanent vegetative cover or other approved permanent stabilization practice approved by the Engineer.

- (f) **Sediment Traps and Sediment Basins:** Sediment traps are required if storm water runoff from less than 1.2 hectares flows across a disturbed area of 930 square meters or more. Sediment basins are required if storm water runoff from 1.2 or more hectares flows across a disturbed

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

area of 930 square meters or more. Once a sediment trap or basin is constructed, the dam and all outfall areas shall be stabilized immediately.

- (g) **Erosion Control Mulch:** This work shall consist of furnishing and applying mulch as a temporary erosion control treatment on slopes exposed to the elements but not at final grade during the period from December 1 to March 1 for periods of up to 30 days prior to final grading or to areas to receive stabilization or paved surfaces within 6 months in accordance with this provision and as directed by the Engineer.

Mulch shall be applied to exposed slopes requiring mulch or to areas to be stabilized or paved, within 48 hours after performance of grading operations. Straw or hay mulch shall be applied on bare slope areas at the rate of approximately 1.2 metric tons per hectare. Straw or hay mulch shall be applied at a uniform thickness in such a manner that not more than 10 percent of the soil surface will be exposed. Straw or hay mulch shall be anchored to the slope surface by one of the following methods: spraying with cellulose fiber mulch at the rate of 136 kilograms per hectare; disking or punching the mulch partially into the soil; using approved netting; or using other materials or methods approved by the Engineer. The Contractor may use more than one method on the same project.

303.04—Procedures

Loose rock 75 millimeters or larger shall be removed from the surface of cut slopes.

When slides occur, the Contractor shall remove and dispose of material as directed by the Engineer.

Where required, surface ditches shall be placed at the top of cut slopes or at the foot of fill slopes and at such other points not necessarily confined to the right of way or shown on the plans and shall be of such dimensions and grades as directed by the Engineer.

Allaying dust, when specified, shall be performed in accordance with the requirements of Section 511 of the Specifications.

Prior to the beginning of grading operations in the area, necessary clearing and grubbing shall be performed in accordance with the requirements of Section 301.02 of the Specifications.

- (a) **Regular Excavation:** Existing foundations and slabs located within the construction limits shall be removed and disposed of in a location approved by the Engineer. In lieu of removal, foundations and slabs located 1.5 meters or more below the proposed subgrade may be broken into particles not more than 450 millimeters in any dimension and reoriented to break the shear plane and allow for drainage.

Cisterns, septic tanks, wells, and other such structures shall be cleared in accordance with the requirements of Section 516 of the Specifications.

Balance points shown on the plans are theoretical and may vary because of actual field conditions.

When the material to be excavated necessitates the use of explosives, the requirements of Section 107.11 of the Specifications relating to the use of explosives shall apply. To prevent damage to newly constructed concrete, the Contractor shall schedule blasting operations in the proximity of proposed concrete structures so that work will be completed prior to placement of concrete.

Regular excavation shall consist of removing and disposing of material located within the project limits, including widening cuts and shaping slopes necessary for preparing the roadbed; removing root mat; stripping topsoil; cutting ditches, channels, waterways, and entrances; and performing

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

other work incidental thereto. The Engineer may require materials in existing pavement structures to be salvaged for use in traffic maintenance.

Undrained areas shall not be left in the surface of the roadway. Grading operations shall be conducted so that material outside construction limits will not be disturbed.

Where rock or boulders are encountered, the Contractor shall excavate and backfill in accordance with the plans and contract documents.

When the presplitting method of excavation is specified for rock cuts, work shall be performed in a manner to produce a uniform plane of rupture in the rock and so that the resulting backslope face will be unaffected by subsequent blasting and excavation operations within the section. Rock shall be presplit along rock slopes at locations, lines, and inclinations shown on the plans or as determined by field conditions. A test section shall be provided to establish the spacing of drill holes and the proper blasting charge to be used in the presplitting operation. Drill holes shall be spaced not more than 1 meter apart and shall extend to the plan grade or in lifts of not more than 7.5 meters, whichever is less. If drilled in benches, an offset may accommodate the head of the drill, but no offset shall be more than 300 millimeters. Presplitting shall extend at least 6 meters ahead of the limits of fragmentation blasting within the section.

Where the project has been designed and slopes have been staked on the assumption that solid rock will be encountered and the Contractor fails to encounter solid rock at the depth indicated, he shall cease excavation in the area and immediately notify the Engineer. If it is necessary to redesign and restake slopes, any additional excavation necessary will be paid for at the contract unit price per cubic meter.

Topsoil stockpiled for later use in the work shall be stored within the right of way unless the working area is such that the presence of the material would interfere with orderly prosecution of the work. Stockpile areas outside the right of way shall be located by the Contractor at his expense. Topsoil used in the work shall be removed first from stockpiles located on private property. Surplus topsoil remaining on private property after completion of topsoiling operations shall be moved onto the right of way and stockpiled, shaped, and seeded as directed by the Engineer.

Stripping topsoil shall be confined to the area over which grading is to be actively prosecuted within 15 calendar days following the stripping operation. Grading operations shall be confined to the minimum area necessary to accommodate the Contractor's equipment and work force engaged in the earth moving work.

- (b) **Borrow Excavation:** The Contractor shall make his own arrangements for obtaining borrow and pay all costs involved in accordance with the provisions of Section 106.03 of the Specifications.

If the Contractor places an excess of borrow and thereby causes a waste of regular excavation, the amount of such waste, unless authorized, will be deducted from the volume of borrow as measured at the source or computed by vehicle count as specified in Section 109.01 of the Specifications.

When borrow is obtained from sources within the right of way and the excavation is performed simultaneously with regular excavation, borrow excavation will be designated as regular excavation. Material secured by widening cuts beyond slope stakes, when taken from previously excavated slopes, will be designated as borrow excavation. When such a procedure is approved, slopes shall be uniform and no steeper than shown on the plans.

Borrow excavation areas shall be bladed and left in a shape to permit accurate measurements after excavation has been completed.

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

CBR values, stipulated for borrow excavation, shall apply to the uppermost 1 meter of fill below the top of earthwork, as defined in Section 101 of the Specifications. Borrow excavation, installed below the top 1 meter shall consist of suitable fill material, available from regular excavation or borrow excavation, as defined and of a quality consistent with project requirements.

- (c) **Undercut Excavation:** Undercut excavation shall consist of removing and disposing of unsuitable material located within the construction limits in accordance with the requirements of Section 303.06(a)3 of the Specifications.

Undercut excavation shall be disposed of in accordance with the requirements of Section 106.04 of the Specifications.

- (d) **Minor Structure Excavation:** Minor structure excavation shall consist of removing material necessary to accommodate the structure, such as box or arch culverts, including pipe arches, structural plate arches, structural plate pipe, pipe culverts, and storm drains with a span(s) or opening(s) of 1200 millimeters or greater. Minor structure excavation shall also include dewatering, sheeting, bracing, removing existing structures, and backfilling. Removing existing structures shall also include foundations that might be necessary to clear the site.
- (e) **Removing Unsuitable Material:** Where excavation to the finished graded section results in a subgrade or slopes of unsuitable material, such material shall be excavated below the grade shown on the plans or as directed by the Engineer. Areas so excavated shall be backfilled with approved material in accordance with (f) herein.

Excavation for structures shall be carried to foundation materials satisfactory to the Engineer regardless of the elevation shown on the plans. If foundation material is rock, the Contractor shall expose solid rock and prepare it in horizontal beds for receiving the structure. Loose or disintegrated rock and thin strata shall be removed. Excavated material, if suitable, shall be used for backfilling around the structure or constructing embankments.

Material shown on the plans as unsuitable and during construction found to be suitable for use shall first be used in embankments where needed in lieu of borrow. However, the use of this material in lieu of borrow shall not alter the provisions of Section 104.02 of the Specifications regarding underruns.

Material shown on the plans as suitable material but found at time of construction to be unsuitable shall be disposed of as unsuitable material.

Unsuitable material shall be disposed of in accordance with Section 106.04 of the Specifications.

- (f) **Backfill for Replacing Undercut Excavation:** Backfill shall be composed of regular excavation, borrow, select material, subbase material, or other material as directed by the Engineer. Backfilling operations shall be performed in accordance with (g) herein.
- (g) **Backfilling Openings Made for Structures:** Backfill shall be suitable material removed for the structure, although the Engineer may require that backfill material be obtained from a source within the construction limits entirely apart from the structure or other approved material. The opening to be backfilled shall be dewatered prior to backfilling. Backfill shall not be placed against or over cast-in-place box culverts or other structures until the top concrete slab section(s) has been in place 14 days, exclusive of days on which the average high-low ambient temperature is below 5 degrees C in the shade or until the concrete control cylinder(s) has attained a compressive strength equal to 93 percent of the 28-day design compressive strength.

Backfill shall be compacted in horizontal layers not more than 150 millimeters in thickness, loose measurement, and as specified in (h) herein. Backfill shall be placed in horizontal layers such that there will be a horizontal berm of compacted undisturbed material behind the structure for a

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

distance at least equal to the remaining height of the structure or wall to be backfilled. Backfill shall be placed in a manner to deter impoundment of water and facilitate existing drainage. Backfill around piers in areas not included in the roadway prism shall be constructed in uniformly compacted layers. However, density requirements will be waived.

Box culverts shall not be opened to construction equipment traffic until concrete has attained 100 percent of the 28-day design compressive strength and has a backfill cover of at least 1.2 meters. The minimum height of backfill cover required to protect pipe culverts from construction equipment shall be in accordance with Standard Drawing PC-1 for the type and size specified.

Where only one side of abutments, wingwalls, piers, or culvert headwalls can be backfilled, care shall be taken that the area immediately adjacent to the structure is not compacted to the extent that it will cause overturning or excessive pressure against the structure. When both sides of a concrete wall or box structure is to be backfilled, operations shall be conducted so that the backfill is always at approximately the same elevation on both sides of the structure.

Openings subject to flooding shall be backfilled as soon as practicable or as directed by the Engineer.

- (h) **Embankments:** Work shall consist of constructing roadway embankments; placing and compacting approved material within roadway areas where unsuitable material has been removed; and placing and compacting approved material in holes, pits, utility trenches, basements, and other depressions within the roadway area.

Embankment shall be constructed with approved material and placed so as to be uniformly compacted throughout. Embankment shall be placed adjacent to structures in the same manner as for backfill as described in (g) herein. Embankment shall not contain muck, frozen material, roots, sod, or other deleterious material. Embankment shall not be placed on frozen ground or areas covered with ice or snow.

Unsuitable material used in widening embankments and flattening embankment slopes shall be placed in uniform layers not more than 450 millimeters in thickness before compaction. Each layer of material placed shall be compacted to the extent necessary to produce stable and reasonably even slopes.

Wherever rock excavation is available on the project, an 200 to 380-millimeter layer of such materials shall be dump spread over the lower region of embankments in the immediate vicinity of stream crossings and used to cover ditches, channels, and other drainage ways leading away from cuts and fills. However, drainage ways shall be prepared to receive the rock excavation to the extent necessary to avoid reducing their cross section. If rock excavation is not available on the project, rip-rap, jute mesh or soil retention mats shall be used as the covering material and shall be installed in accordance with the requirements of Section 606.03(c) of the Specifications. Limits of the area to be covered will be as noted on the plans or as directed by the Engineer.

Wherever sufficient right of way exists, surplus materials shall be used to widen embankments and flatten slopes as directed by the Engineer.

Rock excavation may be placed on slopes by uniform end dumping of the material from along the top of the embankment or as directed by the Engineer. Slopes that are covered with rock excavation shall not receive topsoil or seed.

When geotextile drainage fabric is required under rock fills, preparation shall be as specified in Section 245 of the Specifications.

The Contractor shall schedule excavation and embankment work in a manner that will minimize the quantity of unsuitable material for which more than one handling is required prior to final

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

placement. Therefore, the provisions for additional payment for each rehandling of material specified in Section 303.06(a) of the Specifications will not apply to placing unsuitable material for widening embankments and flattening embankment slopes.

The surface area directly beneath the pavement and shoulders on which embankments of less than 1.5 meters in depth are to be constructed shall be denuded of vegetation. These areas shall be scarified and compacted to a depth of 150 millimeters to the same degree as the material to be placed thereon.

Areas that contain material unsuitable as foundations for embankments shall be undercut and backfilled in accordance with (e) and (f) herein.

Embankments to be placed over saturated areas that will not support the mass of hauling equipment may be constructed by end dumping successive loads in a uniformly distributed layer of a thickness capable of supporting the hauling equipment while subsequent layers are placed. The nose, or leading edge, of the embankment shall be maintained in a wedge shape to facilitate mud displacement in a manner that will prevent its entrapment in the embankment. The front slope of the embankment shall be maintained steeper than 2:1. The use of compacting equipment will not be required on the original course. However, the remainder of the embankment shall be constructed in layers and compacted in accordance with these specifications.

When geotextile for embankment stabilization is required, it shall be placed as shown on the plans. Geotextile shall be spliced by sewing double-stitched seams with stitching spaced 6 millimeter to 13 millimeter apart or as shown on the plans.

Once geotextile for embankment stabilization is placed, the initial lift of material to be placed atop shall be free draining and shall be end dumped onto the geotextile and spread to the thickness as shown on the plans. Free-draining material shall be any material of which 15 percent or less passes the 75µm sieve. If the geotextile becomes punctured or torn, the Contractor shall repair the area with geotextile lapped at least 1 meter all around the damaged area.

When embankment is to be placed and compacted on an existing road, the surface shall be scarified to such degree as will permit an ample bond between old and new material. Hydraulic cement concrete and asphalt concrete pavement structures within the proposed roadway prism shall be demolished in accordance with Section 508.02(a) of the Specifications.

Existing slopes shall be continuously benched where embankments are constructed one-half width at a time; against slopes of existing embankments or hillsides; or across existing embankments, hillsides, and depressions at a skew angle of 30 degrees or more or the existing slopes are steeper than 4:1. For slopes steeper than 4:1 but not steeper than 1-1/2:1, the bench shall be at least 1.8 meters in width. For slopes steeper than 1-1/2:1 but less than 1/2:1, the bench shall be at least 1.2 meter in width. Benching shall consist of a series of horizontal cuts beginning at the intersection with the original ground and continuing at each vertical intersection of the previous cut. Material removed during benching operations shall be placed and compacted as embankment material.

When excavated material consists predominantly of soil, embankment shall be placed in successive uniform layers not more than 200 millimeters in thickness before compaction over the entire roadbed area. Each layer shall be compacted within a tolerance of ±20 percent of optimum moisture content to a density of at least 95 percent of the theoretical maximum density as defined in Section 101.02 of the Specifications.

Material having a moisture content above optimum by more than 30 percent shall not be placed on a previously placed layer for drying unless it is shown that the layer will not become saturated by downward migration of moisture in the material.

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

Field density determinations will be performed in accordance with the requirements of AASHTO T191, modified to include material sizes used in the laboratory determination of density, with a portable nuclear field density testing device or by other approved methods. When a nuclear device is used, density determinations for embankment material will be related to the density of the same material tested in accordance with VTM-1 or VTM-12 and a control strip will not be required.

As the compaction of each layer progresses, continuous leveling and manipulating shall be performed to ensure uniform density. Prior to placement of subsequent layers, construction equipment shall be routed uniformly over the entire surface of each layer or the layer shall be scarified to its full depth in the area where the equipment is routed.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in layers of the thickness prescribed without crushing, pulverizing, or further breaking down the pieces resulting from excavation methods, such material may be placed in the embankment in layers that are not thicker than the approximate average size of the larger rocks. Rock not more than 1.2 meter in its greatest dimension may be placed in an embankment to within 3 meters of the subgrade. The remainder of the embankment to within 0.6 meters of the subgrade shall not contain rock more than 0.6 meters in its greatest dimension. Each layer shall be constructed so that rock voids are filled with rock spalls, rock fines, and earth. Rock shall be placed, manipulated, and compacted in uniform layers. However, density requirements may be waived. Rock, rock spalls, rock fines, and earth shall be distributed throughout each embankment layer and manipulated as specified herein so that the voids are filled. Rock shall not be end dumped over the edges of the layer being constructed but shall be deposited on the layer and moved ahead so as to advance the layer with a mixture of rock, rock spalls, rock fines, and earth. The 0.6 meters of the embankment immediately below the subgrade shall be composed of material that can be placed in layers of not more than 200 millimeters before compaction and compacted as specified herein for embankments. Rock more than 75 millimeters in its greatest dimension shall not be placed within 300 millimeters of the subgrade in any embankment.

Rock, broken concrete, or other solid materials shall not be placed in embankment areas where piling is to be placed or driven.

The best material shall be reserved for finishing and dressing the surface of embankments. Work necessary to ensure the reservation of such material shall be the responsibility of the Contractor. Section 303.06(a) of the Specifications will not apply to subsequent handling of capping material.

CBR values, stipulated for Embankment, shall apply to the uppermost 1 meter of fill below the top of earthwork, as defined in Section 101 of the Specifications. Embankment, installed below the top 1 meter shall consist of suitable fill material, available from regular excavation, borrow excavation or embankment, as defined and of a quality consistent with project requirements.

- (i) **Settlement Plates and Surcharge:** The Contractor shall expedite construction of embankment to provide the maximum time possible for settlement prior to completing grading operations.
1. **Settlement plates:** The base of settlement plates shall be firmly seated into original ground for the full depth of the steel fins. The base shall be leveled. The Engineer shall be provided time to obtain the elevation of the seated base and the top elevation of the pipe extensions prior to placement of embankment material. Pipe extensions shall not be more than 1.2 meter in length and shall be vertically installed as the embankment is constructed such that the top of the pipe is not covered. As each extension is added, the Engineer shall be provided time to obtain the top elevation of the existing pipe and the top elevation of the new pipe extension. Pipe extensions shall be properly flagged at all times. Care shall be taken while placing and compacting embankment material around pipe extensions. Settlement plates shall be maintained until no longer required, as determined by the Engineer. Upon completion of the

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

normal embankment plus 0.6 meters of the specified surcharge, the Contractor shall immediately commence placing the remaining surcharge to the limits shown on the plans or as directed by the Engineer. The remaining surcharge shall be placed in lifts of not more than 300 millimeters in depth and compacted uniformly with construction hauling and spreading equipment. Each lift shall be completed over the entire surcharge area before the next lift is begun.

If a settlement plate is damaged, the Contractor shall notify the Engineer immediately and promptly repair it under the observation of the Engineer to the nearest undamaged pipe. Excavation, backfill, compaction, and repair of settlement plates shall be at the Contractor's expense. The Engineer shall be provided time to obtain the top elevation of the undamaged connection and the top elevation of each subsequent pipe extension.

Settlement plates shall remain in place until settlement has been completed as indicated by elevation readings taken by the Engineer at approximately 2-week intervals. Evaluation of the readings by the Engineer will be the final and sole governing factor for releasing embankments for grading operations. Upon written release by the Engineer, extensions of settlement plate pipe shall be removed to at least 0.6 meter below the subgrade, the pipe capped, and the area backfilled and compacted.

2. **Surcharge:** When authorized by the Engineer, surcharge shall be removed to the subgrade and embankment slopes graded to the typical section. Removed surcharge shall be placed in roadway embankments not previously brought to grade or shall be disposed of in accordance with Section 106.04 or as directed by the Engineer.
- (j) **Hydraulic Embankment:** Hydraulic embankment shall consist of dredging and pumping materials approved by the Engineer from designated areas, placing the material in embankments, and dressing and completing the embankment. Material shall be nonplastic and of such grading that not more than 7 percent will pass the 75 μ m sieve.

Unless otherwise shown on the plans, material for the embankment shall not be obtained from sources closer than 91 meters from the toe of the slope of the embankment. The Engineer may reject materials considered to be unsatisfactory for use in the embankment, and such materials shall be stripped at the Contractor's expense before the embankment is built. Muck and unsuitable material shall be removed to the line, grade, and section shown on the plans. Unsatisfactory material brought to the top of the embankment shall be removed by the Contractor at his own expense, and satisfactory material shall be substituted.

In placing material in the embankment, the Contractor shall begin at the centerline and deposit material in either or both directions toward the toe of slopes. Discharge shall always be in the direction of and parallel with the centerline. The maximum distance from the bottom of the discharge pipe to the surface on which material is being deposited shall be 1.5 meters unless otherwise directed by the Engineer. Material shall be deposited in a manner that will maintain a higher elevation at the center of the roadway than on either side. The Contractor will not be permitted to construct retaining levees along the roadway of such dimensions as to cause damage to the foundation of the roadway. The Contractor shall conduct operations so as to ensure the completion of an embankment that will conform to the cross section shown on the plans except that he will be permitted to flatten side slopes. However, if material is deposited on private property, the Contractor shall obtain permission in writing from the affected property owner(s). No payment will be made for material beyond the limits of the net pay section.

The embankment shall be placed so as to ensure a minimum relative density of 80 percent of the theoretical maximum density when tested in accordance with (h) herein. If the method of placing the embankment fails to produce the required density, the Contractor shall use approved methods to obtain the specified density.

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

The Contractor shall take all necessary precautions to prevent placing material in streams. The Contractor shall be responsible for all damage to or caused by the hydraulic embankment. The Contractor shall provide sufficient material to maintain the embankment in accordance with the typical cross section as shown on the plans or as directed by the Engineer until final acceptance.

The Contractor's plan for support of suction or discharge pipes shall be submitted to and approved by the Engineer. Traffic shall be protected by the display of warning devices both day and night. If dredging operations damage an existing traveled highway, the Contractor shall cease operations and repair damage to the highway.

- (k) **Surplus Material:** Surplus material shall not be wasted or sold by the Contractor unless authorized in writing by the Engineer. When authorization has been given for surplus material to be wasted, it shall be disposed of in accordance with the requirements of Section 106.04 of the Specifications.

Material shown on the plans as surplus material will not be considered for overhaul payment.

1. **Disposal of surplus material within the right of way where the haul distance is 600 meters or less:** Surplus material shall be used or disposed of where directed within a haul distance of 600 meters of its origin. Usage in this manner will not be considered a change in the character of the work.
2. **Disposal of surplus material within the right of way where the haul distance is more than 600 meters:** The Engineer reserves the right to require the Contractor to use surplus material in lieu of furnishing borrow, or as otherwise directed, where the haul distance from the origin of the material is more than 600 meters. Disposal of surplus material at locations requiring a haul of more than 600 meters will be considered a change in the character of work unless otherwise noted on the plans.

When material is declared surplus during construction and must be transported more than 600 meters from its origin, the Department will pay the Contractor \$0.063 per station per cubic meter for overhaul. The quantity of surplus excavation will be determined by vehicle measurement in accordance with the provisions of Section 109.01 or from cross-section measurements by the average end area method. The haul distance will be measured along a line parallel to the centerline of the roadway from the center of the excavated area to the center of the placement area. Overhaul will be the product of the quantity of surplus material in cubic meters and the haul distance in excess of 600 meters in 100-meter stations.

303.05—Tolerances

- (a) **Finished grade of subgrade** shall conform to the requirements of Section 305.03(c) of the Specifications.
- (b) **Slopes** shall be graded in the following manner:
 1. **Earth excavation slopes:**
 - a. **Slopes steeper than 2:1** shall be grooved in accordance with the standard drawings and shall not deviate from the theoretical plane surface by more than 150 millimeters.
 - b. **Slopes steeper than 3:1 up to and including 2:1** shall be rough graded in a manner to provide horizontal ridges and grooves having no more than 150 millimeters deviation from the theoretical line of the typical cross section as is accomplished by the normal operation of heavy grading equipment.

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

- c. **Slopes 3:1 or flatter** shall be uniformly finished and shall not deviate from the theoretical plane surface by more than 150 millimeters.
2. **Earth embankment slopes:**
- a. **Slopes steeper than 3:1** shall not deviate from the theoretical plane slope by more than 150 millimeters and shall be rough graded in a manner to provide horizontal ridges and grooves not more than 150 millimeters from the theoretical line of the typical cross section as is accomplished by the normal operation of heavy grading equipment.
 - b. **Slopes 3:1 and flatter** shall be uniformly finished and shall not deviate from the theoretical plane surface by more than 150 millimeters.
3. **Rock slopes** shall not deviate from a plane surface by more than 600 millimeters and shall not deviate from their theoretical location by more than 600 millimeters measured along any line perpendicular to the theoretical slope line.

Finished excavation and embankment slopes shall not deviate from their theoretical location by more than 150 millimeters measured along any line perpendicular to the theoretical slope line.

303.06—Measurement and Payment

- (a) **Excavation:** Excavation will be paid for at the contract unit price per cubic meter unless otherwise specified.

Excavation requiring more than one handling prior to final placement will be paid for at the contract unit price for regular excavation for each handling approved by the Engineer unless there is a pay item for the second handling, in which case work will be paid for at the contract price for such handling.

Quantities of regular or borrow excavation used to backfill pipe, pipe culverts, and box culverts will not be deducted from quantities due the Contractor for payment.

1. **Regular excavation:** When payment is specified on a cubic meter basis, regular excavation will be measured in its original position by cross-sectioning the excavation area. This measurement will include overbreakage or slides not attributable to the carelessness of the Contractor and authorized excavation of rock, muck, root mat, or other unsuitable material except material included in undercut excavation. Volumes will be computed from cross-section measurements by the average end area method.

When it is impractical to measure material by the cross-section method, other acceptable methods involving three-dimensional measurements may be used.

Excavation for benching slopes to accommodate roadway embankments as specified in Section 303.04(h) of the Specifications will not be measured for separate payment. The cost thereof shall be included in the price for the related excavation or embankment item.

Excavation of existing roadways required to incorporate old roadway into new roadway or remove salvageable materials for use in traffic maintenance, other than those covered in Section 508 of the Specifications, will be measured as regular excavation.

When “presplitting rock cuts” is shown on the plans, the work shall be considered incidental to the cost of excavation and will not be measured for separate payment.

In cut sections, excavation of topsoil and root mat and material down to a point 300 millimeters below the elevation of the top of earthwork or to the depth specified on the plans

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

will be measured as regular excavation. When areas of unsuitable material are shown on the plans, excavation down to a point 300 millimeters below the elevation of such material shown on the plans will be measured as regular excavation.

In fill sections, excavation of topsoil and root mat and material down to an elevation of 300 millimeters below the bottom of topsoil and root mat will be measured as regular excavation. When areas of unsuitable material are shown on the plans, excavation down to a point 300 millimeters below the elevation of such material shown on the plans will be measured as regular excavation.

If slide material approved for measurement cannot be measured accurately, or if the removal of slide material will require different equipment than that being used in the regular excavation operations, payment therefor may be made on a force account basis when authorized by the Engineer.

Excavation of surface ditches specified on the plans or otherwise required by the Engineer will be paid for as regular excavation except that when required after the slopes have been completed and the work cannot be performed with mechanical equipment, the excavation will be paid for as undercut excavation.

2. **Borrow excavation:** Borrow excavation will be measured in its original position by cross-sectioning the area excavated. The number of cubic meters will be computed from cross-section measurements by the average end area method. When it is impractical to measure the borrow excavation, vehicular measurement in accordance with Section 109.01 of the Specifications may be used.

Borrow excavation with a stipulated CBR value shall be measured and paid for as borrow excavation with the CBR value as specified.

Borrow excavation without a stipulated CBR value shall be measured and paid for as borrow excavation.

3. **Undercut excavation:** Measurement will be made by cross-sectioning the undercut area. The number of cubic meters will be computed by the average end area method. When it is impractical to measure material by the cross-section method because of erratic location of isolated deposits, acceptable methods involving three-dimensional measurements may be used.

When unsuitable material must be removed from an area of the project where undercut is not shown on the plans, unsuitable material removed after reaching the depth specified in (a)1. herein, or 300 millimeters below original ground in fill sections where topsoil and root mat are not required to be removed, will be measured as undercut excavation.

Excavation of rock or unsuitable material below the elevation of the bottom of the lower theoretical slab or culvert thickness or below the excavation limits shown on the plans or standard drawings for normal earth foundations, whichever is the greater depth, of minor structures having a span(s) or opening(s) of less than 1200 millimeters will be measured for payment as undercut excavation. Such excavation for structures having a span(s) or opening(s) of 1200 millimeters or greater will be measured as minor structure excavation in accordance with (a)4. herein.

Undercut excavation will be paid for at the contract unit price per cubic meter. This price shall include removal and disposal. When not a pay item, undercut excavation will be paid for at twice the unit price per cubic meter for regular excavation.

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

4. **Minor structure excavation:** Excavation of material above the elevation of the bottom of the lower theoretical slab or culvert thickness, or above the excavation limits shown on the plans for earth foundations, whichever is the greater depth, for culverts having a maximum span or opening of less than 1200 millimeters will not be measured for payment.

Excavation of material for culverts having a span(s) or opening(s) of 1200 millimeters or greater and excavation for minor structures not covered elsewhere in these specifications will be measured in cubic meters of minor structure excavation. The quantity allowed for payment will be the actual volume of material removed as bounded by the bottom of the lower theoretical slab or culvert thickness, or lower excavation limits shown on the plans for earth foundations, whichever is the greater depth; the original ground or regular excavation pay line, whichever is the lower elevation; and vertical planes 450 millimeters outside the neat lines of the structure (excluding wingwalls and other appurtenances) or bound by vertical planes coincident with the applicable bedding excavation limits shown on the plans. Payment for excavation for wingwalls and other appurtenances to structures will be based on the ratio of the plan area of the wingwalls or appurtenances to the plan area of the barrel. Once the ratio has been determined, the pay quantity for minor structure excavation will be increased accordingly.

If embankment is placed prior to installation of a minor structure, excavation of the embankment area will not be measured for payment unless the Contract requires placement of the embankment prior to the installation of the minor structure.

The volume of the interiors of culverts, drop inlets, and other existing minor structures that must be removed will not be deducted from the overall quantity of minor structure excavation allowed for payment.

The price of minor structure excavation shall include the cost of backfill above the horizontal planes of the neatlines of the Class I or Class II backfill areas to original ground. Class I and Class II backfill shall be measured and paid for in accordance with Section 302.04 of the Specifications.

5. **Earthwork:** When a pay item, earthwork will be paid for at the contract lump sum price, wherein no measurement will be made. This price shall include regular excavation, minor structure excavation, and grading.

(b) **Embankments:**

1. **If embankment is not a pay item,** the cost of embankment construction will be considered incidental to other items of excavation.
2. **If embankment is a pay item and regular excavation is to be paid for on a plan quantity basis,** the quantity of embankment for which payment will be made will not be measured separately but will be computed in accordance with the following:
 - a. The regular excavation plan quantity will be adjusted in accordance with (C) Plan Quantities herein.
 - b. The quantity of unsuitable material will be measured and subtracted from the adjusted regular excavation quantity determined in 2.a. herein. Quantities of unsuitable material removed from fill areas or below the subgrade in cut areas will be determined by using plan dimensions and may be adjusted for deviations based on actual measurement. Actual dimensions will be used to determine the quantity of any other unsuitable material.

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

- c. The total quantity shown on the plans will be adjusted for quantities not anticipated on the plans, such as changes in grade or undercut determined to be necessary during construction.
- d. The quantity of suitable material determined in 2.b. herein will be subtracted from the adjusted total fill quantity determined in 2.c. herein. The resultant quantity will be the embankment quantity for which payment will be made.

The Contractor shall be responsible for determining the effect of the shrinkage or swell factor of the material, and no adjustment will be made in pay quantities for this factor.

Hydraulic embankment will be paid for as embankment.

3. **If embankment is a pay item and regular excavation is to be paid for on the basis of measured quantities**, the quantity of embankment will be measured in cubic meters computed by the average end area method from the dimensions of the embankment cross section.

Cross sections of the area to be covered by the embankment will be taken after the denuding or removal of unsuitable material and before any material is placed thereon. These cross sections shall extend laterally from the centerline to the toes of slopes as indicated on the typical cross section. The elevations as determined by these sections will be considered the original ground line. The pay quantity to be measured will be the volume of material included in the section above the original ground and below the upper limits of the typical cross section.

When regular excavation is a pay item, the embankment area to be cross-sectioned will exclude that portion of the fill constructed from regular excavation. Material outside the limits of typical cross sections as shown on the plans will not be measured or paid for.

4. **Extra embankment required for subsurface consolidation** will be determined by the use of settlement plates. The total settlement recorded at each settlement plate will be allowed across 75 percent of the lateral width of each section. Volumes will be computed using the average end area method. Embankment quantities will be adjusted as specified herein to include extra embankment for subsurface consolidation.

Settlement plates will be measured and paid for in units of each, complete-in-place. This price shall include furnishing, installing, maintaining, and removing when no longer required.

Surcharge placement and removal will be measured in cubic meters as determined by the plan quantity and will be paid for at the contract unit price per cubic meter. This price shall include furnishing, placing, and removing surcharge material and disposing of surplus and unsuitable materials.

5. **If geotextile drainage fabric is a pay item**, measurement and payment will be in accordance with the requirements of Section 504 of the Specifications.
6. **Geotextile for embankment stabilization** will be measured in square meters complete-in-place. Overlaps and seams will not be measured for separate payment. The accepted quantity of geotextile will be paid for at the contract unit price per square meter, which price shall be full compensation for furnishing, placing, lapping, or seaming material and for all materials, labor, tools, equipment, and incidentals necessary to complete the work.

Embankment with a stipulated CBR value shall be measured and paid for as embankment with the CBR value as specified.

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

Embankment without a stipulated CBR value shall be measured and paid for as embankment.

- (c) **Plan Quantities:** The quantity of regular excavation for which payment will be made when plan quantities are specified will be that specified in the Contract. However, borrow excavation; excavation for entrances; unsuitable material below the top of earthwork; undercut excavation; slide excavation; rock excavation that changes the slopes or causes undercut; and side, inlet, and outlet ditches not covered by plan cross sections will be measured in their original position by cross sections and computed in cubic meters by the average end area method.

Where there are authorized deviations from the lines, grades, or cross sections, measurements will be made and the volume computed in cubic meters by the average end area method for these deviations. The plan quantity will then be adjusted to include these quantities for payment.

When unauthorized deviations occur, allowances will not be made for overruns. However, if the deviation decreases the quantities specified in the Contract, only the actual volume excavated will be allowed.

- (d) **Backfill:** Furnishing and placing backfill material, including backfill for undercut, will be included in the price for excavation and will not be measured for separate payment unless specific material is a pay item for backfill or unless suitable material is not available within the construction limits. When a specific material is a pay item, the unit of measure of the material will be in accordance with the unit specified in the Contract. When suitable backfill is not available within the construction limits, the material furnished and placed by the Contractor will be paid for in accordance with the requirements of Section 109.05 of the Specifications.

(e) **Erosion Control Items:**

1. **Limiting the scope of construction operations, shaping the top of earthwork, and constructing temporary earth berms and brush silt barriers for temporary erosion and siltation control** will not be measured for payment but shall be included in the price for other appropriate pay items.
2. **Erosion control riprap** will be measured and paid for in accordance with the requirements of Section 414.04 of the Specifications.
3. **Temporary protective covering** will be measured and paid for in accordance with the requirements of Section 606.04 of the Specifications.
4. **Check dams** will be paid for at the contract unit price per each. This price shall include furnishing, excavating, constructing, maintaining, and removing check dams when no longer required.

Synthetic check dams may be substituted for Type II Rock Check Dams (Standard EC-4) at no additional cost to the Department.

5. **Temporary silt fences** will be measured in meters, complete-in-place, excluding laps, and will be paid for at the contract unit price per meter. Decomposed or ineffective geotextile fabric replaced after 6 months from the installation date will be measured in meters of temporary silt fence and paid for at 1/2 the contract unit price for temporary silt fence. Decomposed geotextile fabric required to be replaced prior to 6 months after installation will not be measured for payment. This price shall include furnishing, installing, and maintaining the silt fence, including wire reinforcement and posts; removing and disposing of these materials, and dressing and stabilizing the area.
6. **Geotextile fabric** attached to brush barriers or existing fence or used for another function specified on the plans and not included in other pay items will be measured in square meters,

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

complete-in-place, excluding laps, and will be paid for at the contract unit price per square meter. The brush barrier will not be measured for payment. The cost thereof shall be included in the price for clearing and grubbing. This price shall include trimming the brush barrier; furnishing, installing, maintaining, and removing the fabric; and dressing and stabilizing the area.

7. **Temporary filter barriers** will be measured in meters, complete-in-place, excluding laps, and will be paid for at the contract unit price per meter. Decomposed or ineffective geotextile fabric replaced after 6 months from the installation date and decomposed or ineffective burlap fabric replaced after 3 months from the installation date will be measured in meters of temporary filter barrier and paid for at 1/2 the contract unit price for temporary filter barrier. Decomposed geotextile fabric required to be replaced prior to 6 months and decomposed burlap fabric required to be replaced prior to 3 months after installation will not be measured for payment. When permitted, baled straw silt barrier used in lieu of temporary filter barrier will be paid for in meters of temporary filter barrier, complete-in-place. This price shall include furnishing, installing, and maintaining the filter barrier, including filter barrier material and posts; removing and disposing of these materials; and dressing and stabilizing the area. If the Contractor is permitted to use baled straw silt barrier in lieu of temporary filter barrier, payment will be made at the price for temporary filter barrier.
8. **Silt cleanout**, when approved or directed by the Engineer, will be measured as siltation control excavation in cubic meters of vehicular measurement in accordance with the requirements of Section 109.01 of the Specifications for the full volume of the vehicle.

Silt removal and sediment cleanout will be paid in cubic meter of siltation control excavation. Payment shall be full compensation for removal of silt and sediment approved or directed by the Engineer and for transportation and disposal of the material.

If approved or directed by the Engineer, the installation of additional temporary silt fence and temporary filter barrier in lieu of silt cleanout will be measured in meters as specified in (e)5. and (e)7. herein.
9. **Seeding materials** will be measured and paid for in accordance with the requirements of Section 603 of the Specifications.
10. **Temporary erosion and siltation measures required to correct conditions created because of the Contractor's negligence, carelessness, or failure to install permanent controls in accordance with the plans and sequence for performance of such work** will not be measured for payment.
11. **Slope drains** will be measured in units of each, per location regardless of size or length and will be paid for at the contract unit price per each. Raising of the slope drain and addition of pipe lengths will not be measured as a new location. This price shall include furnishing, installing, maintaining, and removing the drain and end section or portable flume.
12. **Sediment traps and basins** will be measured in cubic meters of sediment basin excavation and will be paid for at the contract unit price per cubic meter. This price shall include excavation, maintenance, and backfill or removing to original ground when no longer needed.
13. **Storm water management basin excavation** will be measured in cubic meters and will be paid for at the contract unit price per cubic meter. The price shall include excavation, maintenance, and shaping of basin.
14. **Temporary sediment basin excavation** will be measured in cubic meters and will be paid for at the contract unit price per cubic meter. The price shall include excavation, maintenance

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

and when no longer required the removal of dam, pipe, riser pipe, trash rack, backfill and site restoration.

- 15. **Drop inlet silt trap** will be measured in units of each and paid for only one time during the life of the project.
- 16. **Dewatering basin** will be measured and paid for at the contract unit price per each. This price shall include furnishing, installing, maintaining, and when no longer required, removing the dewatering basin; backfill; and site restoration.
- 17. **Erosion control mulch** shall be paid for per square meter or hectare. This includes all materials and equipment necessary for the application.

Payment will be made under:

Pay Item	Pay Unit
Regular excavation	Cubic meter
Borrow excavation	Cubic meter
Borrow excavation (CBR [value])	Cubic meter
Sediment basin excavation	Cubic meter
Siltation control excavation	Cubic meter
Undercut excavation	Cubic meter
Minor structure excavation (Item)	Cubic meter
Earthwork	Lump sum
Embankment	Cubic meter
Embankment (CBR [value])	Cubic meter
Settlement plate	Each
Surcharge placement and removal	Cubic meter
Geotextile (Embankment stabilization)	Square meter
Check dam (Type) (Log, rock, or straw)	Each
Temporary silt fence	Meter
Geotextile fabric	Square meter
Temporary filter barrier	Meter
Slope drain	Each
Storm water management basin excavation	Cubic meter
Temporary sediment basin excavation	Cubic meter
Drop inlet silt trap (Type)	Each
Dewatering basin	Each
Erosion control mulch	Square meter or hectare

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



**GUIDELINES— PROJECTS REQUIRING SUBGRADE AND SHOULDERS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM305A0B-0408

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 305—SUBGRADE AND SHOULDERS**

June 14, 2006

SECTION 305—SUBGRADE AND SHOULDERS of the Specifications is amended as follows:

Section 305.01—Description is replaced with the following:

This work shall consist of constructing the subgrade and shoulders to the cross section and grade shown on the plans and within the specified tolerances indicated on the plans and in these specifications.

Section 305.02—Materials is amended to add the following:

Geotextile materials used for subgrade stabilization shall conform to the requirements of Section 245.03(d) of the Specifications.

Section 305.03(a)2 Subgrade Consisting Of Treated Materials In Place is replaced with the following:

- 2. **Subgrade consisting of treated materials in place:** Subgrade shall be treated in accordance with the requirements of the applicable provisions of Section 306.03 and Section 307.05 of the Specifications except that the tolerance for depth will be waived when lime or cement is being used to bridge or correct extremely weak areas.

If lime can be satisfactorily manipulated during initial mixing, and bridging of the weak area has been performed satisfactorily, additional mixing and compacting will not be required. Additional layers of fill may be placed without delay.

Field density determinations will be performed in accordance with the requirements of AASHTO T191, modified to include material sizes used in the laboratory determination of density; with a nuclear density testing device; or by other approved methods. When a nuclear device is used, the nuclear density determination for treated in-place subgrade material will be related to the density of the same material tested in accordance with the requirements of VTM-1 or VTM-12 and a control strip will not be required.

Section 305.03(a)3 Subgrade Consisting Of Treated Materials In Place is replaced with the following:

- 3. **Subgrade consisting of imported material:** The area to receive the material shall be graded to a true crown and cross section.

Material shall be placed and compacted in accordance with the requirements of the applicable specifications governing the type of material. When select material is used, material shall be placed and compacted in accordance with the requirements of Section 308.02 of the Specifications except that the provision for mixing will be waived. The top 150 millimeters of the finished subgrade shall be compacted in accordance with the requirements of the provisions of 1. herein.

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



The provisions of 1. herein that are not specifically amended herein shall apply. Imported material shall be placed in approximately equal layers not more than 200 millimeters for commercial material and 150 millimeters for local material, compacted measure. Material will be tested after compaction for thickness and density. If material fails to conform to thickness requirements, it shall be corrected by scarifying, adding material if necessary, mixing, reshaping and recompacting, or removing and replacing. If the material fails to conform to density requirements, additional rolling will be required until the required density is obtained provided the material is compacted at optimum moisture, within ±20 percent of optimum. If the moisture content is outside the allowable tolerance, the layer shall be scarified, brought to optimum moisture within the allowable tolerance, and recompacted to the specified density.

An aggregate spreader will not be required in the placement of select material and other imported materials used as subgrade and shoulder courses.

Section 305.03—Procedures is amended to replace (d) with the following:

- (d) **Geotextile (Subgrade Stabilization):** When geotextile for subgrade stabilization is required it shall be placed as shown on the plans. Geotextile shall be spliced by an overlap of at least 0.6 meters or by sewing double stitched seams with stitching spaced 6 millimeters to 13 millimeters apart or as shown on the plans.

Section 305.03(d) Shoulders: is revised to become **Section 305.03(e) Shoulders** and amended to replace the fourth paragraph with the following:

Stabilized and paved shoulders shall be constructed in accordance with the requirements of the applicable specifications for pavement stabilization. If the aggregate shoulder material becomes overconsolidated prior to final finishing, it shall be scarified for the approximate depth, reshaped, and recompacted to conform to the specified grade and cross section.

Section 305.04—Measurement and Payment is amended to replace the eighth paragraph with the following:

Stabilized or paved shoulders shown as a pay item will be measured and paid for in accordance with the requirements of Section 306.04, Section 307.06, Section 312.05, or Section 315.08 of the Specifications, as applicable.

Geotextile for subgrade stabilization will be measured in square meters complete-in-place. Overlaps and seams will not be measured for separate payment. The accepted quantity of geotextile will be paid for at the contract unit price per square meter, which price shall be full compensation for furnishing, placing, lapping or seaming material and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

And is amended to delete the following pay item:

Pay Item	Pay Unit
Borrow (Min. CBR)	Cubic meter or metric ton

And is amended to add the following pay item:

Pay Item	Pay Unit
Geotextile (Subgrade stabilization)	Square meter

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



**GUIDELINES - PROJECTS HAVING BLOTTED SEAL COATS.
EXCEPTIONS: NONE.**

SM312A0B-0197

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
BLOTTED SEAL COATS

August 1, 1991
Reissued January 1, 1997

I. DESCRIPTION —This work shall consist of application of asphalt surface treatment in accordance with this provision and in reasonably close conformity with the line and grade shown on the plans, in the contract or designated by the Engineer.

Type B Blotted Seal is defined as two applications of liquid asphalt material, one application of cover aggregate and one application of blot fine aggregate.

Type C Blotted Seal is defined as three applications of asphalt material, two applications of cover aggregate and one application of blot fine aggregate.

Type D Blotted Seal is defined as four applications of asphalt material, three applications of cover aggregate and one application of blot fine aggregate.

II. MATERIALS — Liquid asphalt materials shall conform to Section 210 of the Specifications.

Cover aggregate shall conform to Section 203 of the Specifications.

Fine aggregate for blotting shall conform to Section 202 minimum Grading B of the Specifications except that material shall have no more than 5% passing the 75 millimeter sieve by washing.

III. APPLICATION — Application rates for asphalt and aggregate material shall be as shown on the plans. These rates of application are approximate only and such rates may be altered at the direction of the Engineer. During application, liquid asphalt material shall be maintained between 70 - 80 °C. Cover material shall be applied to a reasonably complete coverage of only one aggregate depth over the treated surface.

IV. CONSTRUCTION METHODS shall be in accordance with Section 313 of the Specifications and the following provisions:

Each coat of liquid asphalt material shall be applied to existing surface and immediately followed by an application of aggregate.

Aggregate shall be rolled one pass immediately with a self-propelled steel wheel roller. The roller mass shall be between 6000 and 8000 kilograms for tandem type and between 8000 and 10,000 kilograms for the three wheel type.

Blot coat shall be applied with a self-propelled aggregate spreader of approved design and shall be rolled one pass immediately with a self-propelled roller.

V. METHOD OF MEASUREMENT AND BASIS OF PAYMENT - Blotted seal coat will be measured and paid for in square meters for type specified complete-in-place, which price shall be full compensation for furnishing and applying liquid asphalt material, cover material and blot fine aggregate, protection of treatment, rolling, brooming and for all labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

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



Pay Item

Blotted Seal Coat (Type)

Pay Unit

Square Meter

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



**GUIDELINES - WHEN REQUESTED BY THE DESIGNER. [USE BY THE NOVEMBER 2006 ADVERTISEMENT.]
EXCEPTIONS: NONE.**

SM313B1B-1106

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
ASPHALT STABILIZED OPEN-GRADED MATERIAL**

July 11, 2005

I. DESCRIPTION

This work shall consist of furnishing and placing a course of asphalt stabilized open-graded material on a prepared subbase or subgrade in accordance with the required tolerances within these specifications and in conformity with the lines and grades shown on the plans or established by the Engineer.

II. MATERIALS

Asphalt stabilized open-graded material shall conform to the requirements of Section 211 of the Specifications except as noted herein.

Coarse aggregate shall be Grade A crushed stone conforming to the requirements of Section 203 of the Specifications and shall conform to the soundness requirements of surface course stone.

Fine aggregate shall conform to the requirements of the Section 202 of the Specifications.

Asphalt cement shall be PG 70-22.

Reclaimed asphalt pavement shall not be used as component material.

III. PROPORTIONING

Stabilized open-graded material shall be designed to have an in-place coefficient of permeability of at least 300 meters per day, when tested in accordance with VTM-84.

The following design range shall be used for asphalt stabilized open-graded material:

Sieve	% Passing	
	Min	Max
25mm	100	100
19mm	88	100
12.5mm	70	90
2.36mm	0	15
75mm	0.5	4.5
A.C. Content 4.3 ± 0.3%		

Hydrated lime shall be used in all mixtures at the rate of at least 0.5 percent by mass of the total dry aggregates. Chemical additives may be used in addition to or in lieu of lime with approval of the Engineer. Such approval will be based on previous approvals of chemicals used with the same aggregates in asphalt concrete mixes of other types as detailed in Section 211 of the Specifications.

The mix temperature shall be between 121 degrees C and 138 degrees C.

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



Design test data will not be required.

Draindown testing shall be in accordance with VTM-100 Determination of Draindown Characteristics in Uncompacted Asphalt Mixtures. Draindown shall not exceed 0.3 percent.

IV. ACCEPTANCE

Acceptance of aggregate coating in asphalt stabilized open-graded material shall be 100-percent surface coverage of the aggregate as verified by visual inspection by the Engineer.

V. PLACING LIMITATIONS

Stabilized open-graded material shall not be placed when weather or surface conditions are such that the material cannot be properly handled, finished or compacted.

Asphalt stabilized open-graded material shall be placed only when the atmospheric temperature is above 5 degrees C, and the surface temperature upon which it is to be placed is no less than 2 degrees C.

The surface upon which mixtures are to be placed shall be free of standing water at the time such materials are placed.

Asphalt stabilized open-graded course shall not be cooled with water.

Vibratory rollers shall not be used on the asphalt stabilized open-graded course.

VI. PROCEDURES

Stabilized open-graded material shall not be placed until the surface upon which it is to be placed has been approved by the Engineer. Preparation shall include provision for surface drainage away from the material to prevent contamination from surface water in the event of rainfall.

The Contractor shall prevent contamination of the stabilized open-graded material. Material that has been contaminated shall be removed and replaced promptly by the Contractor at no additional expense to the Department. Likely indications of contamination include but are not limited to the surface being clogged by dirt or other foreign material, or observable material damaged as in the cases of loss of material stability.

The finished surface of the stabilized open-graded material shall be uniform and shall not vary at any point more than 12.5 millimeters above or below the grade shown on the plans or established by the Engineer.

Stabilized open-graded material with a surface higher than 12.5 millimeters above the grade shown on the plans or established by the Engineer shall be removed and replaced with material within the proper tolerance. If permitted by the Engineer, the high spots may be removed to within specified tolerance by any method that does not produce contaminating fines or damage the base to remain in place, except that grinding will not be permitted.

Stabilized open-graded material with a surface lower than 12.5 millimeters below the grade shown on the plans or established by the Engineer shall be removed and replaced with stabilized open-graded material which complies with these specifications to the proper tolerance or, if permitted by the Engineer, low areas may be filled with the next pavement course in the same operation in which the pavement is placed at no additional expense to the Department.

The Contractor shall not use the open-graded course as a haul road or storage area. Construction traffic will not be permitted on the open-graded course except for equipment required to place the next

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

layer. Haul vehicles that are overweight or that have not had a legal load determination will not be permitted on the open-graded drainage course for any purpose.

Asphalt stabilized open-graded material shall be placed in one layer by approved equipment conforming to the requirements of Section 315.03 of the Specifications. Compaction shall begin when the internal mat temperature is approximately 66 degrees C to 93 degrees C. A static, steel, 2-wheel roller shall compact the material in 1 to 3 passes in an established pattern approved by the Engineer. A 7 to 9 metric ton roller is recommended for such use. The mat shall be compacted sufficiently to support the placement of the next layer but not to the point that it is not free draining or that the aggregate is crushed.

Placement of the next higher pavement layer shall be suspended if any visible damage occurs to the stabilized open-graded material. Construction of the next layer shall not proceed until directed by the Engineer.

VII. MEASUREMENT AND PAYMENT

Asphalt stabilized open-graded material will be measured in metric tons and paid for at the contract unit price per metric ton, complete-in-place. This price shall be full compensation for furnishing and placing asphalt material including aggregate, lime or other anti-stripping admixture.

Payment will be made under:

Pay Item	Pay Unit
Asphalt Stabilized Open-Graded Material	Metric Ton

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



**GUIDELINES - WHEN REQUESTED BY THE DESIGNER:
EXCEPTIONS: NONE.**

SM315I0B-0200

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
RUMBLE STRIP (ASPHALT)

July 19, 1999

I. DESCRIPTION

This work shall consist of constructing rumble strips on mainline shoulders of highways by cutting 13-millimeter deep concave depressions into existing asphalt concrete surfaces as shown on the detail drawings and as directed by the Engineer.

II. MATERIALS

Liquid Asphalt Coating (emulsion) shall conform to the requirements of Section 210 of the Specifications.

III. CONSTRUCTION METHODS

Rumble Strips shall be installed in accordance with detail drawings for Rumble Strips (Asphalt Shoulder). The depressions shall have a concave circular shape with a minimum 13-millimeter depth at center and maximum 16-millimeter allowable depth at center. Depressions shall have a smooth finish with a maximum 2-millimeter variance between peaks and valleys of the depression.

Prior to beginning production work on mainline shoulders, the Contractor shall demonstrate to the Engineer the ability to achieve the desired surface regarding alignment, consistency, and conformity with these specifications and the plans. Test site shall be approximately 8 meters longitudinally at a mutually agreed to site between the Contractor and the Engineer.

Following cutting and cleaning depressions of waste material, the Rumble Strip area and shall be coated entirely with liquid asphalt coating (emulsion) using a pressure distributor at an approximate rate of 0.45 liter per square meter. Overspray shall not extend more than 50 millimeters beyond the width of cut and/or shall not come in contact with pavement markings.

Rumble strips shall not be installed on shoulders of bridge decks, acceleration/deceleration lanes, surface drainage structures, or in other areas identified by the Engineer.

Waste material resulting from the operation shall be removed from the paved surface and shall not be disposed of where risk of contamination of waterways may occur.

IV. MEASUREMENT AND PAYMENT

Rumble Strips will be measured and paid for in meters of shoulder where the rumble strips are actually placed and accepted (excluding test site). This distance will be measured longitudinally along the edge of pavement with deductions for bridge decks, acceleration/deceleration lanes, surface drainage structures and other sections where the rumble strips are not installed. This price shall be full compensation for application, disposal of waste material, and all labor, tools, equipment and incidentals necessary to complete the work. Test site will not be measured for payment but shall be included in the unit price for Rumble Strip.

Liquid Asphalt Coating (emulsion) will be measured and paid for in square meter as described herein. This price shall be full compensation for cleaning rumble strips prior to application of the coating,

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

furnishing and applying coating as specified herein, and all labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under

Pay Item

Pay Unit

Rumble Strip (Asphalt)

Meter

Liquid Asphalt Coating

Square meter

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



-----The Guidelines below are not to appear in the final Proposal/Contract-----

GUIDELINES - PROJECTS REQUIRING SUPERPAVE ASPHALT CONCRETE PAVEMENT. USE WITH SPECIAL PROVISION SM211I. [INCLUDE SPECIAL PROVISION SM200A FOR TECHNICIAN AND BATCHER CERTIFICATION.]

Pay Item Codes:

10400	LIQUID ASPHALT CEMENT	METRIC TON
10500	ASPHALT CONCRETE TY. SM-2D	METRIC TON
10502	ASPHALT CONCRETE TY. SM-2E	METRIC TON
10514	ASPHALT CONCRETE TY. SM-3D	METRIC TON
10516	ASPHALT CONCRETE TY. SM-3E	METRIC TON
10520	ASPHALT CONCRETE TY. IM-1D	METRIC TON
10582	ASPHALT CONCRETE TY. SM-1	METRIC TON
10583	ASPHALT CONCRETE TY. SM-2A	METRIC TON
10584	ASPHALT CONCRETE TY. SM-2B	METRIC TON
10585	ASPHALT CONCRETE TY. SM-2C	METRIC TON
10586	ASPHALT CONCRETE TY. SM-3A	METRIC TON
10587	ASPHALT CONCRETE TY. SM-3B	METRIC TON
10588	ASPHALT CONCRETE TY. SM-3C	METRIC TON
10589	ASPHALT CONCRETE TY. IM-1A	METRIC TON
10590	ASPHALT CONCRETE TY. IM-1B	METRIC TON
10591	ASPH. CONC. BASE COURSE BM-1	METRIC TON
10592	ASPH. CONC. BASE COURSE BM-2	METRIC TON
10593	ASPH. CONC. BASE COURSE BM-3	METRIC TON
10595	ASPH.CONC.ENTR.PAVE. TY. SM-2A	METRIC TON
10596	ASPH.CONC.ENTR.PAVE. TY. SM-2B	METRIC TON
10606	ASPHALT CONCRETE TY. SM-9.5	METRIC TON
10607	ASPHALT CONCRETE TY. SM-12.5A	METRIC TON
10608	ASPHALT CONCRETE TY. SM-12.5D	METRIC TON
10609	ASPHALT CONCRETE TY. SM-12.5E	METRIC TON
10610	ASPHALT CONCRETE TY. IM-19.0A	METRIC TON
10611	ASPHALT CONCRETE TY. IM-19.0D	METRIC TON
10612	ASPH.CONC.BASE CR. TY. BM-25.0	METRIC TON
10613	ASPHALT CONCRETE TY. BM-37.5	METRIC TON
10635	ASPHALT CONCRETE TY. SM-9.5A	METRIC TON
10636	ASPHALT CONCRETE TY. SM-9.5D	METRIC TON
10637	ASPHALT CONCRETE TY. SM-9.5E	METRIC TON
10639	ASPHALT CONCRETE TY. SM-19.0	METRIC TON
10642	ASPHALT CONCRETE TY. BM-25.0A	METRIC TON
10643	ASPHALT CONCRETE TY. BM-25.0D	METRIC TON
12505	ASPH.CONC.CURB BACKUP MATERIAL	METRIC TON

EXCEPTIONS: NONE.

-----The Guidelines above are not to appear in the final Proposal/Contract-----

SM315K8B-1007

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**SECTION 315—ASPHALT CONCRETE PAVEMENT
(SUPERPAVE)**

October 3, 2007

SECTION 315—ASPHALT CONCRETE PAVEMENT of the Specifications is amended as follows:

Section 315.01—Description is replaced with the following:

This work shall consist of constructing one or more courses of asphalt concrete on a prepared foundation in accordance with the requirements of these specifications and within the specified

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



tolerances for the lines, grades, thicknesses, and cross sections shown on the plans or as established by the Engineer.

Section 315.02(c) is replaced with the following:

Curb backup material shall be asphalt concrete conforming to any surface or intermediate mixture listed in Table II-13 and II-14.

Section 315.03(b) Asphalt Pavers is replaced with the following:

(b) **Asphalt Pavers:** The asphalt paver shall be designed and recommended by the manufacturer for the type of asphalt to be placed and shall be operated in accordance with the manufacturer's recommendations. Written recommendations pertaining to handling and placing of the mix shall be made readily available on the project site to the Engineer. In the absence of manufacturer's recommendations, the recommendations of the National Asphalt Pavement Association shall be followed. The paver (including when screed extensions are used) shall be capable of producing a smooth uniform texture, dense joints and a smooth riding surface.

Section 315.04 is amended by replacing the first paragraph including subparagraphs (a),(b), and (c) with the following:

Asphalt concrete mixtures shall not be placed when weather or surface conditions are such that the material cannot be properly handled, finished or compacted. The surface upon which asphalt mixtures are to be placed shall be free of standing water and the base temperature shall conform to the following:

- (a) When the base temperature is above 27 degrees C, mixture laydown will be permitted at any temperature conforming to the limits of Section 211.
- (b) When the base temperature is between 4 degrees C and 27 degrees C, the Nomograph, Table III-2, shall be used to determine the minimum laydown temperature of the asphalt concrete mixes. At no time should the minimum base and laydown temperatures be less than the following:

Section 315.04 is amended by replacing the first paragraph including subparagraphs (1.), (2.), and (3.) with the following:

Asphalt concrete mixtures shall not be placed when weather or surface conditions are such that the material cannot be properly handled, finished or compacted. The surface upon which asphalt mixtures are to be placed shall be free of standing water and the base temperature shall conform to the following:

- (a) When the base temperature is above 27 degrees C, mixture laydown will be permitted at any temperature conforming to the limits of Section 211.
- (b) When the base temperature is between 4 degrees C and 27 degrees C, the Nomograph, Table III-2, shall be used to determine the minimum laydown temperature of the asphalt concrete mixes. At no time should the minimum base and laydown temperatures be less than the following:

Mix Designation	Minimum Base Temperature	Minimum Laydown Temperature
A	4 ⁰ C	120 ⁰ C
D	10 ⁰ C	130 ⁰ C
E	10 ⁰ C	140 ⁰ C

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



M	10 ⁰ C	140 ⁰ C
S	10 ⁰ C	140 ⁰ C

The maximum temperature of the mixture shall conform to Section 211.08 of the Specifications.

- (c) When the laydown temperature is between 149 degrees C and 163 degrees C, the number of compaction rollers will be the same number as required for 148 degrees C.

Section 315.05(a) - Base Course is replaced with the following:

The subgrade or subbase shall be prepared as specified in Section 305 of the Specifications. The course upon which the pavement is to be placed, including the area that will support the paving equipment, shall be graded and compacted to the required profile.

Section 315.05(b) Conditioning Existing Surface is amended to replace the first paragraph with the following:

- (b) **Conditioning Existing Surface:** When the surface of the existing pavement or base is irregular, it shall be brought to a uniform grade and cross section as directed by the Engineer. The surface on which the asphalt concrete is to be applied shall be prepared in accordance with the requirements of the applicable specifications and shall be graded and compacted to the required profile and cross section.

Section 315.05(c) is amended to replace the second paragraph with the following:

On new construction projects, the edge of the pavement shall be marked by means of a continuous line placed and maintained at a sufficient distance ahead of the paving operation to provide proper control of the pavement width and horizontal alignment unless otherwise directed by the Engineer. On maintenance schedule projects, a continuous line shall be not required.

Section 315.05(c) is amended to replace the fifth, sixth, seventh, eighth, ninth, tenth, eleventh, twelfth and thirteenth paragraphs with the following:

The Contractor shall have a certified Asphalt Field Technician present during paving operations where more than 90 metric tons of material is placed in a single location. Immediately after placement and screeding, the surface and edges of each layer shall be inspected and straightedged by the technician and necessary corrections performed prior to compaction. The finished pavement shall be uniform and smooth.

The placement of asphalt concrete shall be as continuous as possible and shall be scheduled such that the interruption occurring at the completion of each day's work will not detrimentally affect the partially completed work. Material that cannot be spread and finished in daylight shall not be dispatched from the plant unless the use of artificial lighting has been approved. When paving is performed at night, sufficient light shall be provided to properly perform and thoroughly inspect every phase of the operation. Such phases include cleaning planed surfaces, tack application, paving, compacting, and testing. Lighting shall be provided and positioned such as to not create a blinding hazard to the traveling public.

During compaction of asphalt concrete, the roller shall not pass over the end of freshly placed material except when a construction joint is to be formed. Edges shall be finished true and uniform.

Asphalt concrete SUPERPAVE pavement courses shall be placed in layers not exceeding 4.0 times the nominal maximum size aggregate in the asphalt mixture. The maximum thickness may be reduced if the mixture cannot be adequately placed in a single lift and compacted to required uniform density and smoothness. The minimum thickness for a pavement course shall be no less

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



than 2.5 times the nominal maximum size aggregate in the asphalt mixture. Nominal maximum size aggregate for each mix shall be defined as one sieve size larger than the first sieve to retain more than 10 percent aggregate as shown in the design range specified in Section 211.03 of the Specifications, Table II-13. Base courses to be placed in irregular shaped areas of pavement, such as transitions, turn lanes, crossovers, and entrances may be placed in a single lift.

Overlays in excess of 90 kg/m² or a milled depth greater than 38 millimeters shall be squared up prior to opening to traffic.

The milled roadway areas that are to be opened to traffic, excluding curb and gutter sections, shall have drainage outlets cut through the shoulder at locations designated by the Engineer. The Contractor shall plan and prosecute the milling operation to avoid the trapping of water on the roadway. Drainage outlets shall be restored to original grade, unless otherwise directed by the Engineer. All cost for cutting and restoring the drainage slots in the roadway shoulder shall be included in the price bid for other items of work.

The Contractor shall plan and prosecute a schedule of operations so that milled roadways will be overlaid with asphalt concrete as soon as possible, and, in no instance, shall the time lapse exceed ten days after the milling operations, unless otherwise specified. The milled areas of the roadway shall be kept free of irregularities and obstructions that may create a hazard or annoyance to traffic in accordance with the requirements of Section 104 of the Specifications.

A short ski or shoe shall be used to match the grade of the newly overlaid adjacent travel lane on all primary, interstate and designated secondary routes. Unless, otherwise directed by the Engineer a 7-meter minimum automatic grade control ski shall be used on all asphalt mixtures on all divided highways, with the exception of less than full width overlays and the first course of asphalt base mixtures over aggregate subbases. Care shall be exercised when working along curb and gutter sections to ensure a uniformed grade and joint.

The Contractor shall construct the final riding surface to tie into the existing surface by an approved method, which shall include the cutting of a notch into the pavement. In addition to notching, the Contractor may use an asphalt design containing a fine graded mix to achieve a smooth transition from the new asphalt concrete overlay to the existing pavement, with the approval of the Engineer. The material shall be of a type to insure that raveling will not occur. All cost for constructing tie-ins in the asphalt concrete overlay shall be included in the price bid for asphalt concrete.

Prior to application of tack coat and commencement of paving operations the Contractor shall clean the existing pavement surface of all accumulated dust, mud, or other debris that may affect the bond of the new overlay, as determined by the Engineer. The Contractor shall ensure the surface remains clean until commencement of paving operations. The cost for cleaning and surface preparation shall be included in the bid price for hot mix asphalt concrete.

Section 315.05(e) is amended to replace the first paragraph with the following:

(e) **Density:** Density shall be determined in accordance with the following:

Section 315.05(e)1. is amended to replace the first, second, third, and fourth paragraphs with the following:

1. The Contractor shall perform roller pattern and control strip density testing on surface, intermediate, and base courses in accordance with the requirements of VTM-76. The contractor shall have a certified Asphalt Field Technician perform all density testing.

Density shall be determined by the backscatter method of testing using a thin-lift nuclear gage with printer, conforming to the requirements of VTM-81. All density test locations for the

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

control strip and test sections shall be marked and labeled in accordance with the requirements of VTM-76. The Contractor shall furnish and operate the nuclear gage, which shall have been calibrated within the previous 12 months by an approved calibration service. In addition, the Contractor shall maintain documentation of such calibration service for a 12-month period. The required density of the compacted course shall be not less than 98.0 percent and not more than 102.0 percent of the Target Control Strip Density.

Nuclear density roller pattern and control strip density testing shall be performed on asphalt concrete overlays placed directly on surface treatment roadways and when overlays are placed at an application rate less than 25 millimeters (nominal application rate of 68 kilograms per square meter) on any surface. In these situations, sawed plugs or core samples will not be required and the minimum control strip densities as shown in Table III-3 will be waived. The required density of the compacted course shall be not less than 98.0 percent and not more than 102.0 percent of the target control strip.

The project will be divided into "control strips" and "test sections" by the Engineer for the purpose of defining areas represented by each series of tests.

Section 315.05(e)1.a. is replaced with the following:

Control Strip: Construction of control strips shall be accomplished in accordance with the requirements of these specifications and VTM-76.

The term *control strip density* is defined as the average of 10 nuclear determinations selected at stratified random locations within the control strip.

One control strip shall be constructed at the beginning of work on each roadway and shoulder course and on each lift of each course. An additional control strip shall be constructed when a change is made in the type or source of materials, or whenever a significant change occurs in the composition of the material being placed from the same source, or when there is a failing control strip. During the evaluation of the initial control strip, paving operations may continue. However, paving and production shall be discontinued during construction and evaluation of additional control strips. In the event that two consecutive control strips fail, subsequent paving operations shall cease until corrective action(s) has been made with the approval of the Engineer. If it is determined with the Engineer's approval that the density cannot be obtained because of the condition of the existing pavement structure, the target control strip density shall be determined from the roller pattern that achieves the optimum density and shall be used on the remainder of the roadway that exhibits similar pavement conditions.

Either the Department or Contractor may initiate an additional control strip at any time.

The length of the control strip shall be approximately 92 meters, regardless of the width of the course being placed. On the first day of construction or beginning of a new course, the control strip shall be started between 152 and 304 meters from the beginning of the paving operation. The control strip shall be constructed using the same paving, rolling equipment, procedures, and thickness as shall be used on the remainder of the course being placed.

One nuclear reading shall be taken at each of 10 stratified random locations. No determination shall be made within .3 meter of the edge of any application width for surface and intermediate mixes, nor within 18 inches of the edge of any application width for base mixes. The average of these 10 determinations shall be the Control Strip Density recorded to the nearest 1.6 kilogram per cubic meter. The minimum Control Strip Density shall be determined in accordance with the requirements of VTM-76.

The control strip shall be considered a lot. If the control strip density conforms to the requirements of Table III-3, the control strip will be acceptable and the control strip density shall

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

become the target control strip density. If the density does not conform to the requirements of Table III-3, the tonnage placed in the control strip and any subsequent paving prior to construction of another control strip will be paid for in accordance with Table III-4 on the basis of the percentage of the Table III-3 value achieved. The Contractor shall take corrective action(s) to meet the density requirement specified in Table III-3.

Table III-3 Density Requirements and its footnote are replaced with the following:

**TABLE III-3
Density Requirements**

Mixture Type	Min. Control Strip Density (%)
SM-9.5A, 12.5A	92.5
SM-9.5D, 12.5D	92.2
SM-9.5E, 12.5E	92.2
IM-19.0A	92.2
IM-19.0D	92.0
BM-25.0A, BM-25.0D	91.5

Note: The control strip density requirement is the percentage of theoretical maximum density of the job-mix formula by Superpave Mix Design or as established by the Engineer based on two or more production maximum theoretical density tests.

Section 315.05(e)1.b. is amended to replace the first paragraph with the following:

Test section (lot): For the purposes of acceptance, each day's production shall be divided into lots (test section). The standard size of a lot shall consist of 5,000 linear feet of any pass made by the paving train regardless of the width of the pass or the thickness of the course. Pavers traveling in echelon will be considered as two passes. Each lot shall be divided into five sublots of equal length. When a partial lot occurs at the end of a day's production or upon completion of the project, the lot size shall be redefined as follows: If the partial lot contains one or two sublots, the sublots will be added to the previous lot. If the partial lot contains three or four sublots, the partial lot will be redefined to be an entire lot. Each lot shall be tested for density by taking a nuclear density reading from two random locations selected by the Engineer within each sublot. Readings shall not be taken within 12 inches of the edge of any application width for surface and intermediate mixes, nor within 18 inches of the edge of any application width for base mixes. The average of the sublot nuclear density readings will be compared to the target nuclear control strip density to determine the acceptability of the lot. Once the average nuclear density of the lot has been determined, the Contractor will not be permitted to provide additional compaction to raise the average. If two consecutive sublots produce nuclear density results less than 98 or greater than 102 percent of the target nuclear control strip density, the Contractor shall immediately notify the Engineer and institute corrective action. By the end of the day's operations, the Contractor shall furnish the test data developed during the day's paving to the Engineer.

Section 315.05(e)1.b. is amended to replace the first paragraph with the following:

Test section (lot): For the purposes of acceptance, each day's production shall be divided into lots (test section). The standard size of a lot shall consist of 1525 meters of any pass made by the paving train regardless of the width of the pass or the thickness of the course. Pavers traveling in echelon will be considered as two passes. Each lot shall be divided into five sublots of equal length. When a partial lot occurs at the end of a day's production or upon completion of the project, the lot size shall be redefined as follows: If the partial lot contains one or two sublots, the sublots will be added to the previous lot. If the partial lot contains three or four sublots, the partial lot will be redefined to be an entire lot. Each lot shall be tested for density by taking a

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



nuclear density reading from two random locations selected by the Engineer within each subplot. Readings shall not be taken within .3 meter of the edge of any application width for surface and intermediate mixes, nor within .45 meter of the edge of any application width for base mixes. The average of the subplot nuclear density readings will be compared to the target nuclear control strip density to determine the acceptability of the lot. Once the average nuclear density of the lot has been determined, the Contractor will not be permitted to provide additional compaction to raise the average. If two consecutive sublots produce nuclear density results less than 98 or greater than 102 percent of the target nuclear control strip density, the Contractor shall immediately notify the Engineer and institute corrective action. By the end of the day's operations, the Contractor shall furnish the test data developed during the day's paving to the Engineer.

Section 315.05(e)1.b. is amended to add the following:

The Department at any time on any project may perform Lot Density Verification testing. Lot Density Verification can be performed by either using a nuclear gage or plugs. The Contractor shall be responsible for taking all plugs for testing. Testing of the plugs will be done by or in the presence of the Department.

Surface, Intermediate, and Base mixes:

When a nuclear gage is used, the Department will take 10 stratified random readings per lot. If, based on the average of the 10 readings, the density does not meet the requirement for 100 percent pay or the same pay percentage determined by the Contractor's testing for that lot, the Department will read the 10 Contractor sites then average all 20 sites together. If the density still does not conform to the requirements for 100 percent pay, payment for that lot will be in accordance with Table III-4 on the basis of the Department's average of the 20 test results. If the Contractor questions the payment for the lot, the Contractor can request the referee procedure.

The referee procedure shall consist of the Department taking 5 plugs from the 5 sites closest to the average of the Department readings of the Contractor and Department sites. The density of the plugs will be determined. If the average density of the plugs does not conform to the requirements for 100 percent pay for the lot in question, payment for that lot will be in accordance with Table III-4 on the basis of the percentage of the Table III-3 value achieved.

When plugs are used for Lot Density Verification, 5 plugs shall be taken per lot. If the density of the plugs does not conform to the requirements for the lot in question, payment for that lot will be in accordance with Table III-4 on the basis of the percentage of the Table III-3 value achieved.

Section 315.05 (e) 1. b. is amended to replace Table III-4 with the following:

**TABLE III-4
Payment Schedule for Lot Densities**

% of Target Control Strip Density	% of Payment
Greater than 102.0	95
98.0 to 102.0	100
97.0 to less than 98.0	95
96.0 to less than 97.0	90
Less than 96.0	75

Section 315.05(e)2. is deleted.

Section 315.05(e)3. is amended to replace the first sentence of the first paragraph with the following:

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



Section 315.05(e)3. is replaced with the following.

- 3. **Surface, Intermediate and Base Courses** not having sufficient quantity of material to run a nuclear density roller pattern and control strip shall be compacted to a minimum density of 91.5 percent of the theoretical maximum density as determined by VTM-22.

If the density is less than 91.5 percent, payment will be made in accordance with the requirements of Table III-5.

TABLE III-5	
Payment Schedule for Surface, Intermediate and Base Courses (Not sufficient quantity to perform nuclear density roller pattern and control)	
% TMD	% of Payment
Greater than 91.5	100
90.2-91.4	95
88.3-90.1	90
Less than 88.2	75

Any section having mixture (i.e. SM-9.0) being placed at an application rate less than 25 millimeters (nominal application rate of 68 kilogams per square meter) and not having sufficient quantity to run a nuclear density roller pattern and control strip shall be compacted by rolling a minimum of 3 passes with a minimum 7.2 metric ton roller. No density testing will be required.

Section 315.05(f) Joints is amended to replace the second sentence of the first paragraph with the following:

A coat of asphalt shall be applied to contact surfaces of transverse joints just before additional mixture is placed against the previously rolled material.

Section 315.07—Pavement Tolerances is replaced with the following:

- (a) **Surface Tolerance:** The surface will be tested by using a 3-meter straightedge. The variation of the surface from the testing edge of the straightedge between any two contacts with the surface shall be not more than 6 millimeters. Humps and depressions exceeding the specified tolerance shall be corrected, or the defective work shall be removed and replaced with new material.

Section 315.07(b) Thickness Tolerance is replaced with the following:

- (b) **Finished Grade Tolerance:** After placement of the final pavement layer, finished grade elevations shall be within +/- 12 millimeters of the elevations indicated in the plans, unless otherwise specified, provided that the actual cross slope does not vary more than 0.20 percent from the design cross slope indicated in the plans and the pavement thickness conforms to the thickness tolerances specified herein.

If determined by the Engineer that either the finished grade elevations or cross slope exceed the tolerances specified, the Contractor shall submit to the Engineer for approval a plan of corrective action.

- (c) **Thickness Tolerance:** The thickness of the base course will be determined by the measurement of cores as described in VTM 32B.

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



Acceptance of asphalt concrete base course for depth will be based on the mean result of measurements of samples taken from each lot of material placed. A *lot* of material is defined as the quantity being tested for acceptance except that the maximum lot size will be 1 kilometer of 7.2-meter-width base course.

A lot will be considered acceptable for depth if the mean result of the tests is within the following tolerance of the plan depth for the number of tests taken except that each individual test shall be within ± 15 millimeters of the plan depth: mean of two tests, ± 11 millimeters; mean of three tests, ± 9 millimeters; mean of four tests, ± 8 millimeters.

If an individual depth test exceeds the ± 15 millimeters tolerance, that portion of the lot represented by the test will be excluded from the lot. If an individual test result indicates that the depth of material represented by the test is more than 15 millimeters, the Contractor will not be paid for that material in excess of the tolerance throughout the length and width represented by the test. If an individual test result indicates that the depth of the material represented by the test is deficient by more than 15 millimeters, correction of the base course represented by the test shall be made as specified hereinafter.

If an individual depth test exceeds the ± 15 millimeters tolerance, that portion of the lot represented by the test will be excluded from the lot. If an individual test result indicates that the depth of material represented by the test is more than 15 millimeters, the Contractor will not be paid for that material in excess of the tolerance throughout the length and width represented by the test. If an individual test result indicates that the depth of the material represented by the test is deficient by more than 15 millimeters, correction of the base course represented by the test shall be made as specified hereinafter.

If the mean depth of a lot of material is excessive, the Contractor will not be paid for that material in excess of the tolerance throughout the length and width represented by the tests.

If the mean depth of a lot of material is deficient by more than the allowable tolerance, correction will not normally be required and the Contractor will be paid for the quantity of material that has been placed in the lot.

For excessive depth base courses, the rate of deduction from the metric tonnage allowed for payment as base course will be calculated at a mass of 2.4 kilograms per square meter per millimeter of depth in excess of the tolerance. For sections of base course that are deficient in depth by more than 15 millimeters and less than 40 millimeters, the Contractor shall furnish and place material specified for the subsequent course to bring the base course depth within the tolerance. This material will be measured on the basis of metric tonnage actually placed, determined from weigh tickets, and paid for at the contract unit price for the base course material. Such material shall be placed in a separate course. If the deficiency is more than 40 millimeters, the Contractor shall furnish and place base course material to bring the base course thickness within the tolerance. Corrections for deficient base course depth shall be made in a manner to provide a finished pavement that is smooth and uniform.

When the Contract provides for the construction or reconstruction of the entire pavement structure, the surface and intermediate courses shall be placed at the rate of application shown on the plans within an allowable tolerance of ± 5 percent of the specified application rate for application rates of 50 kilograms per square meter or greater and within 2.5 kilograms per square meter for application rates of less than 50 kilograms per square meter. The amount of material exceeding the allowable tolerance will be deducted from the pay quantities.

When the Contract provides for the placement of surface or intermediate courses over existing pavement, pavements constructed between combination curb and gutter, or in the construction or reconstruction of shoulders, such courses shall be placed at the approximate rate of

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

application shown on the plans. However, the specified rate of application shall be altered where necessary to produce the required riding quality.

When the Contract provides for the placement of surface or intermediate courses over existing pavement, pavements constructed between combination curb and gutter, or in the construction or reconstruction of shoulders, such courses shall be placed at the approximate rate of application shown on the plans. However, the specified rate of application shall be altered where necessary to produce the required riding quality.

-----The Guidelines below are not to appear in the final Proposal/Contract-----

GUIDELINES — PROJECTS REQUIRING STONE MATRIX ASPHALT (SMA) [INCLUDE SPECIAL PROVISIONS SM211I & SM315K (SUPERPAVE)] [INCLUDE SPECIAL PROVISION SM200A FOR TECHNICIAN AND BATCHER CERTIFICATION].

16400	STONE MATRIX ASPHALT, SMA-9.5 (70-22)	METRIC TON
16401	STONE MATRIX ASPHALT, SMA-9.5 (76-22)	METRIC TON
16402	STONE MATRIX ASPHALT, SMA-12.5 (70-22)	METRIC TON
16403	STONE MATRIX ASPHALT, SMA-12.5 (76-22)	METRIC TON
16404	STONE MATRIX ASPHALT, SMA-19.0 (70-22)	METRIC TON
16405	STONE MATRIX ASPHALT, SMA-19.0 (76-22)	METRIC TON

EXCEPTIONS: NONE.

-----The Guidelines above are not to appear in the final Proposal/Contract-----

SM315L7B-1007

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
STONE MATRIX ASPHALT (SMA)

June 15, 2007

I. DESCRIPTION

This work shall cover the furnishing, installation, acceptance criteria and materials used to provide Stone Matrix Asphalt (SMA) concrete pavement in accordance with the requirements of Section 211 and 315 of the Specifications and as specified herein. SMA consists of a combination of coarse aggregate, fine aggregate, mineral filler, fiber additives, and liquid asphalt binder mechanically mixed in a plant to produce a stable gap-graded asphalt concrete paving mixture.

II. MATERIALS

(a) **Coarse Aggregate:** Coarse aggregate shall conform to the following requirements when tested in accordance with the specified tests:

1. Los Angeles Abrasion	AASHTO T96	40% max.
2. Flat and Elongated Particles: Measured on No. 4 VTM-121 retained,		
3 to 1		20% max.
5 to 1		5% max.
3. Magnesium Sulfate Soundness Loss, 5 cycles	AASHTO T104	15% max.
4. Particles retained on No. 4 sieve shall have at least	ASTM D5821	
1 fractured face		100% min.
2 fractured faces		90% min.
5. Absorption	AASHTO T 85	2% max.

Except for the determination of flat and elongated particles (2. herein), the aggregate properties specified are for each stockpile of coarse aggregate material designated on the job mix form (Form No. TL-127). The material contained in each stockpile shall meet the minimum or maximum criteria specified.

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



For flat and elongated particles, these values are based on the mathematical blend of the coarse aggregate material designated on the job mix form (TL-127). During production, these values are based on the SMA material sampled during the acceptance process (QC testing).

The use of slag shall not be permitted.

- (b) **Fine Aggregate:** Fine aggregate shall consist of a blend of 100 percent crushed aggregate. The magnesium sulfate soundness loss in 5 cycles shall not exceed 20 percent. In addition, the liquid limit shall not exceed 25 as determined in accordance with AASHTO T89.
- (c) **Asphalt Binder:** Asphalt binders shall be performance-graded binder PG 70-22 or polymer-modified binder PG 76-22 conforming to the requirements of the mix designation (M) as designated by the Department. The supplier shall certify to the Department that the binder complies with the requirements for all properties of that grade as specified in AASHTO M320 (Provisional Specification MP-1) for performance-graded asphalt binder. This certification shall be based on testing performed on samples of binder provided to the Contractor for incorporation into the mixture. Certification based on testing performed on laboratory-produced binders will not be acceptable.

The Contractor shall submit to the Engineer for Department review the source, formulation, and PG grading of the binder at least 15 days prior to the production of the SMA mixture.

During mixture production, testing to determine the binder PG grade will be performed by the Department on samples taken from storage at the hot-mix asphalt plant as directed by the Engineer. The Contractor shall be responsible for obtaining the sample of binder when requested. In the event it is determined that the binder does not comply with the requirements of the specified PG grade, production shall be stopped until further testing indicates that the problem has been corrected.

- (d) **Mineral Filler:** Mineral filler shall consist of finely divided mineral matter such as rock or limestone dust or other suitable material. Hydrated lime and fly ash will not be allowed. Up to two mineral fillers may be blended to comply with the mineral filler requirements. Mineral filler shall conform to the requirements of Section 201 of the Specifications with the following modifications. The mineral filler or mineral filler blend used in surface and intermediate SMA shall have a minimum of 55 percent passing the 0.075-millimeter sieve. At the time of use, it shall be sufficiently dry to flow freely and be essentially free from agglomerations.
- (e) **Fiber Additive:** Cellulose fiber in either loose or pelletized form shall be used. The minimum dosage rate for cellulose is 0.3 percent by mass of the total mixture. During production, the Department may require the percentage of fiber additive to be increased if visual inspection or draindown testing on plant-produced material indicates that draindown in excess of 0.3 percent by mass of the mixture is occurring as determined in accordance with VTM-100. Allowable tolerances of fiber dosage shall be ±10 percent of the required fiber mass.

NOTE: When using pelletized fiber, the dosage rate shall be adjusted to comply with the specified minimum dosage rates for cellulose fiber. Pelletized fiber consists of cellulose fiber and a binder. The specified minimum dosage rates are based on fiber content only. Therefore, the amount of pelletized fiber added shall typically be higher than for loose fiber.

Fibers will be accepted based on the manufacturer's certification.

Cellulose Fiber Properties

Sieve Analysis

Method A: Alpine Sieve¹ Analysis

Fiber Length:		6.0mm max.
Passing	150 µm Sieve	70% (±10%)

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



Method B: Mesh Screen² Analysis

Fiber Length:		6.0mm max.
Passing	850 µm Sieve	85% (±10%)
	425 µm Sieve	65% (±10%)
	130 µm Sieve	30% (±10%)
Ash Content³		18% (±5%) non-volatile
pH⁴		7.5 (±1.0)
Oil Absorption⁵		5.0 (±1.0) (times fiber mass)
Moisture Content⁶		<5%

¹*Method A: Alpine Sieve Analysis.* Performed using an Alpine Air Jet Sieve (Type 200 LS). A representative 5-gram sample of fiber is sieved for 14 minutes at a controlled vacuum of 560mm (± 75mm) of water. The portion remaining on the screen is weighed.

²*Method B: Mesh Screen Analysis.* This test is performed using standard 850 µm, 425 µm, 250 µm, 180 µm, 150 µm, and 106 µm sieves, nylon brushes, and a shaker. A representative 10-gram sample of fiber is sieved, using a shaker and two nylon brushes on each screen. The amount retained on each sieve is weighed and the percentage passing calculated.

³*Ash Content:* A representative 2- to 3-gram sample of fiber is placed in a tared crucible and heated between 595 ° C and 650° C for not less than 2 hours. The crucible and ash are cooled in a desiccator and mass is determined.

⁴*pH Test:* Five grams of fiber is added to 100 ml of distilled water, stirred, and allowed to set for 30 minutes. The pH is determined with a probe calibrated with a pH 7.0 buffer.

⁵*Oil Absorption Test:* Five grams of fiber is accurately weighed and suspended in an excess of mineral spirits for not less than 5 minutes to ensure total saturation. It is then placed in a screen mesh strainer (with a hole size of approximately 0.5 square millimeter), and shaken on a wrist action shaker for 10 minutes (approximately 32 millimeter motion at 20 shakes/minute). The shaken mass is then transferred without touching to a tared container and mass is determined. Results are reported as the amount (number or times its own mass) the fibers are able to absorb.

⁶*Moisture Content:* The mass is determined of ten grams of fiber and placed in a 120° C forced air oven for 2 hours. The mass of the sample is then immediately determined upon removal from the oven.

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

1. SMA surface and intermediate mixtures containing RAP shall use the PG grade of asphalt cement designated by the mix specified on the plans or proposal e.g. an SMA-12.5 (76-22).
2. The final asphalt mixture shall conform to the requirements for the type specified.
3. During the production process, RAP material shall not be allowed to contact open flame.
4. RAP material shall be handled, hauled and stored in a manner that will minimize contamination. Further, the material shall be stockpiled and used in such manner that variable asphalt contents and asphalt penetration values will not adversely affect the consistency of the mixture.

III. COMPOSITION OF SMA MIXTURE

The SMA mixture shall be designed and tested using a gyratory compactor and shall conform to the requirements listed in Table I-A, Table I-B and Table I-C. One percent hydrated lime will be required as an anti-stripping additive. An alternative anti-stripping additive can be used only if permitted by the Engineer.

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



**TABLE I-A
SMA Design Range**

Percentage by Mass Passing Square Mesh Sieves (mm)								
Type No. (See Note)	1	3/4	1/2	3/8	No. 4	No. 8	No. 30	No. 200
<i>Surface Mixes</i>								
SMA 12.5	-	100	85-95	80 max.	22-30	16-24	15-20	10-12
SMA 9.5	----	100	90-100	70-85	25-40	15-25	-	10-12
<i>Intermediate Mixes</i>								
SMA 19.0	100	85-95	50-60	30-45	----	16-24	12-16	8-10

Note: The required PG binder will be shown in parentheses as part of the mix type on the plans or proposal, e.g., SMA 12.5 (76-22).

**TABLE I-B
SMA Mixture Requirements**

Mix Type	VTM ¹ (%)	VMA Design (Min. %)	VMA Production (Min. %)	VCA Design and Production ² (%)	AC (Min. %)	Draindown (%)	Design Gyration	Specimen Height ³
SMA 9.5	2.0-4.0	18.0	17.0	<VCA _{DRC}	6.3	0.3 max	75	115
SMA 12.5	2.0-4.0	18.0	17.0	<VCA _{DRC}	6.3	0.3 max	75	115
SMA19.0	2.0-4.0	17.0	16.0	<VCA _{DRC}	5.5	0.3 max	75	115

1 Asphalt content shall be selected at the midpoint of the VTM range but shall not be less than the minimum specified.

2 The voids in coarse aggregates (VCA) of the dry rodded condition (DRC) and mix shall be determined in accordance with VTM-99.

3 Specimen height after compaction shall be between 110 to 120 millimeters. The fines-effective asphalt ratio shall be 1.2-2.0

NOTE: The SUPERPAVE gyratory compactor (SGC) shall be from the approved list maintained by the Department's Materials Division. Gyratory procedures shall be performed in accordance with VTM-99. Calculations for volumetrics shall be performed in accordance with VTM-57 and VTM-58, 150 millimeter specimens.

Draindown testing shall be conducted in accordance with VTM-100.

Allowable RAP Percentages:

TABLE I-C Specified Performance Grade of Asphalt and Use of RAP	
Mix Type & PG	Allowable RAP Percentage in Mix
SMA-9.5 (70-22), SMA-12.5 (70-22) & SMA-19.0(70-22)	0.0 to 20.0
SMA-9.5 (76-22), SMA-12.5 (76-22) & SMA-19.0 (76-22)	0.0 to 15.0

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



IV. ACCEPTANCE

A lot will be considered acceptable for gradation and asphalt content if the mean of the test results obtained is within the tolerance allowed from the job-mix formula. The production tolerances for the control sieves and asphalt content shall be as follows:

PROCESS TOLERANCE

Tolerance on Each Laboratory Sieve (mm) and Asphalt Content (+/-%)									
No. Tests	Top Size	3/4	1/2	3/8	No. 4	No. 8	No. 30	No. 200	AC
1	0.0	8.0	8.0	8.0	6.0	6.0	6.0	4.0	0.60
2	0.0	5.7	5.7	5.7	4.3	4.3	4.3	2.8	0.43
3	0.0	4.4	4.4	4.4	3.3	3.3	3.3	2.2	0.33
4	0.0	4.0	4.0	4.0	3.0	3.0	3.0	2.0	0.30
8	0.0	2.8	2.8	2.8	2.1	2.1	2.1	1.4	0.21

The production tolerance for the specimen height after compaction is 110 to 120 millimeters.

The Contractor shall check and report the VCA of the mix during production for each gyratory sample. If the VCA of the mix exceeds the VCA of the DRC, the Contractor shall stop production and notify the Engineer. Production shall not resume until the Contractor has taken corrective action.

The Contractor shall check and report the percentage of Flat and Elongated Particles (F&E) in the Coarse Aggregates of the mix during production. When the SMA material is sampled for acceptance (gradation and AC content); one of the four sub-lots must be selected for F&E verification. The F&E testing will be performed on the coarse aggregate material retained on the #4 sieve (per ASTM VTM-121) after the gradation analysis is performed. At initial start-up of production, the F&E shall be determined for each of the first two lots of material produced. If passing results are obtained on each sample in the first two lots, then F&E testing shall be performed on a frequency of every second lot of material produced (i.e. – Lots 4, 6, 8, etc.). If the F&E of the mix exceeds the specified limits, the Contractor shall stop production and notify the Engineer. Production shall not resume until the Contractor has taken corrective action and the Engineer has approved the corrective action. Once production has resumed, the Contractor shall determine the F&E of the mix for two consecutive lots. If passing results are obtained for these two lots, then the F&E testing frequency shall return to every second lot of material produced.

In the event the Department determines that the mixture being produced does not conform to the approved job-mix formula and volumetric properties in Table I-B based on Department or Contractor's test results, the Contractor shall immediately make corrections to bring the mixture into conformance with the approved job-mix formula or cease paving with that mixture.

Subsequent paving operations, using either a revised or other job-mix formula which has not been verified as described herein, shall be limited to a test run of 300 tons maximum if such material is to be placed in Department project work. No further paving for the Department using that specific mixture shall occur until the acceptability of the mixture being produced has been verified using the 300-ton constraint.

V. SMA MIXING PLANT

Plants used for the preparation of the SMA mixture shall conform to the following:

- (a) **Handling of Mineral Filler:** Adequate dry storage shall be provided for the mineral filler that will, at a minimum, consist of a waterproof cover that shall completely cover the stockpile at all times. Provisions shall be made for metering of the filler into the mixture uniformly and in the desired quantities. In a batch plant, mineral filler shall be added directly into the weigh hopper. In a drum plant, mineral filler shall be added directly onto the cold feed belt.

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



Equipment shall be capable of accurately and uniformly metering the large amounts of mineral filler up to 25 percent of the total mix.

- (b) **Fiber Addition:** Adequate dry storage shall be provided for the fiber additive, and provisions shall be made for accurately and uniformly metering fiber into the mixture at plus or minus 10 percent of the desired quantities.

Introduction of loose or pelletized fiber shall require a separate system that can accurately proportion, by mass, the required quantity of fiber in such a manner as to ensure consistent, uniform blending into the mixture at all rates of production and batch sizes. This supply system shall be interlocked with the other feeding devices of the plant system, and sensing devices shall provide for interruption of mixture production if the introduction of fiber fails.

Batch Plant: Loose fiber or pelletized fiber shall be added through a separate inlet directly into the weigh hopper above the pugmill. The addition of fiber shall be timed to occur during the hot aggregate charging of the hopper. Adequate dry mixing time is required to ensure proper blending of the aggregate and fiber stabilizer. Therefore, dry mixing time shall typically be increased 5 to 15 seconds. Wet mixing time shall typically be increased at least 5 seconds for cellulose fibers to ensure adequate blending with the asphalt cement.

When fiber is used, the fiber supply system shall include low level and no flow indicators and a printout of the date, time, and net batch mass of fiber.

Drum Mix Plant: When fiber is used, the fibers shall be added in such a manner as not to be entrained into the exhaust gases of the drum plant. The fiber supply system shall include low level and no flow indicators and a printout of status of feed rate in kilograms per minute.

When pelletized fibers are used, they shall be added directly into the drum mixer through the RAP inlet or a specialized fiber inlet. Operation of the drum mixer shall be such as to ensure complete blending of the pelletized fiber into the mix.

- (c) **Hot Mixture Storage:** When the hot mixture is not hauled immediately to the project and placed, suitable bins for storage shall be provided. Such bins shall be either surge bins to balance production capacity with hauling and placing capacity or storage bins that are heated and insulated and that have a controlled atmosphere around the mixture. The holding times shall be within limitations imposed by the Engineer, based on laboratory tests of the stored mixture. In no case shall the SMA mixture be kept in storage more than 8 hours.
- (d) **Mixing Temperatures:** The recommended plant mixing temperature shall be 157 to 171 degrees C and at no time shall the exceed 176 degrees C.

VI. WEATHER RESTRICTIONS

Weather Restrictions: Placement of the SMA mixture shall be permitted only when the ambient and surface temperatures are 10 degrees C or above.

VII. PLACING AND FINISHING

Placing and Finishing: The mixture temperature in the truck shall not be less than 150 degrees C for mixtures containing PG 70-22 and 155 degrees C for mixtures containing PG 76-22. The temperature immediately behind the screed shall not be less than 145 degrees C for mixtures containing PG 70-22, and shall be not less than 150 degrees C for mixtures containing PG 76-22.

A continuous paving operation that provides for constant steady movement of the paver shall be maintained. In the event that excessive stop and go of the paver is occurring, production and

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

laydown of the mixture may be stopped until the Contractor has made satisfactory changes in the production, hauling, and placement operations resulting in a constant steady movement of the paver.

A Material Transfer Vehicle (MTV) shall be used during the placement of all SMA mixes. The paving operation shall have remixing ability either in the MTV or in a paver mounted hopper. The remixing capacity shall not be less than 13.5 metric tons. In the event that breakdown occurs, paving shall be discontinued and no more material shall be shipped from the hot mix plant.

VIII.COMPACTION

Compaction: Immediately after the mixture has been spread and struck off, it shall be thoroughly and uniformly compacted by rolling. Rolling shall be accomplished with steel wheel roller(s) with a minimum mass of 9 metric tons. A minimum of three rollers shall be available at all times for compaction and/or finish rolling.

To minimize coarse aggregate fracture/breakage in the aggregate skeleton of SMA mixes, the use of vibratory rollers on SMA should be approached with caution. If a vibratory roller is used, the mat should receive not more than 3 vibratory passes. The roller shall use only the highest frequency and lowest amplitude setting.

Rolling procedures shall be adjusted to provide the specified pavement density. Rollers shall move at a uniform speed not to exceed 5 kph with the drive wheel nearest the paver. Rolling shall be continued until all roller marks are eliminated and the minimum density has been obtained. The Contractor shall monitor density during the compaction process by use of nuclear density gauges to assure that the minimum required compaction is being obtained. During the installation of the trial section, the Department will randomly select three plugs or cores locations to determine the in-place density in accordance with VTM-22.

To prevent adhesion of the mixture to the rollers, it shall be necessary to keep the wheels properly moistened with water possibly mixed with very small quantities of detergent or other approved material.

The Contractor shall perform acceptance testing for density for each day's production by obtaining one 100mm x 100mm sawed specimen or 100mm diameter core at 5 stratified random locations specified by the Engineer. The 5 cores or plugs shall be obtained and the in-place density determined in accordance with VTM-22. All core locations shall be numbered sequentially per roadway, marked on the pavement, and filled with compacted SMA mixture prior to completion of each day of production. The average density of the five cores as determined by VTM-22 shall be 94 to 98 percent for 100 percent pay. All cores or plugs shall be bulked in the presence of the Department. The Department reserves the right to have the cores or plugs bulked on the project site. The payment for density will be in accordance with the following:

PAYMENT SCHEDULE

Percent Density Achieved	Percent of Payment
More than 98.0	97
94.0 to 98.0	100
92.0 to 93.9	85
90.0 to 91.9	65
Less than 90.0	Remove and Replace

IX. TRIAL SECTION

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



Trial Section: Trial section(s), maximum 270 metric tons, shall be constructed at a site approved by the Engineer at least one week before, but not more than 30 days prior to, roadway construction to examine the mixing plant process control, mixture draindown characteristics, placement procedures, SMA surface appearance, compaction patterns and to calibrate the nuclear density device. In addition, the percentage of Flat and Elongated Particles will be calculated on the SMA material produced for the trial section per VTM-121 and compared to the maximum limits specified in the Coarse Aggregate Table in Section II(a.) herein. A passing F&E sample is required for acceptance of the trial section.

The material placed in the trial sections shall be at the specified application rate and utilize the same equipment that shall be used during production.

X. PREPAVING CONFERENCE

Prepaving Conference: The Department, prior to starting production, will hold a prepaving conference. Those attending shall include the Contractor's production supervisor and laydown supervisor, a representative of the fiber supplier, and a representative of the asphalt binder supplier.

XI. MEASUREMENT AND PAYMENT

Stone matrix asphalt will be measured in metric tons and paid for at the contract unit price per metric ton, for the mix type specified, which price shall include all materials, additives, and equipment as described herein.

The initial trial section will be paid for at the contract unit price for the mix type specified. With the approval of the Engineer, up to one additional trial sections of the mix type specified will be paid for at the contract unit price. The Department will only pay for two trial sections at the contract unit price. If more than two trial sections are needed, the Department and Contractor shall negotiate the price based upon a reduced percentage of the contract unit price and the subsequent trial sections shall be constructed at sites approved by the engineer.

Payment will be as follows:

Pay Item	Pay Unit
Stone Matrix Asphalt, SMA-9.5 (70-22)	Metric tons
Stone Matrix Asphalt, SMA-9.5 (76-22)	Metric tons
Stone Matrix Asphalt, SMA-12.5 (70-22)	Metric tons
Stone Matrix Asphalt, SMA-12.5 (76-22)	Metric tons
Stone Matrix Asphalt, SMA-19.0 (70-22)	Metric tons
Stone Matrix Asphalt, SMA-19.0 (76-22)	Metric tons

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



GUIDELINES - PROJECTS WHERE RIDEABILITY EVALUATION OF ASPHALT CONCRETE PAVEMENT IS REQUIRED IN WRITING BY THE MATERIALS ENGINEER (A PROJECT SPECIFIC COPIED NOTE STATING THE EXACT LOCATIONS AND LIMITS OF THE RIDEABILITY EVALUATION, INCLUDING INCENTIVE ONLY LOCATIONS, MUST BE INCLUDED IN THE PROPOSAL) [USE BY THE NOVEMBER 2006 ADVERTISEMENT.].
EXCEPTIONS:— RESURFACING SCHEDULE WORK PROJECTS: NOT TO BE USED

SM315M2B-1106

VIRGINIA DEPARTMENT OF TRANSPORTATION
 SPECIAL PROVISION FOR
SECTION 315 RIDEABILITY FOR ASPHALT CONCRETE PAVEMENT

June 10, 2004cc

SECTION 315—ASPHALT CONCRETE PAVEMENT of the Specifications is amended as follows:

For pavements designated for rideability testing Section 315.07(a) Surface Tolerances is amended to include the following:

Pavement smoothness will be determined by a profiler on designated lanes having a design speed of 70 kilometers per hour or higher as specified herein. A straightedge will be used to test intersections, urban areas, transition lanes, and pavement within 16 meters of bridge approach slabs.

For designated pavements, the surface course ride quality acceptance will be based on the lowest average International Roughness Index (IRI) for each 0.02-kilometer section produced by a minimum of two test runs, using a South Dakota style road profiling device and reported for each travel lane. The device shall measure both wheelpaths with laser height sensing instruments. Upon completion of the final surface course and pavement striping over the designated section the Department will complete Roughness testing within 30 calendar days, providing the contractor can allow unimpeded access to the paved surface for constant highway speed test runs. Testing shall be conducted in accordance with the requirements of VTM – 106.

Acceptance

An IRI number in millimeters per kilometer will be established for each 0.02-kilometer section for each travel lane of the surface course designated by the contract. The 0.02-kilometer section before and after a bridge, and the beginning and end 0.02-kilometer sections of the surface course will not be subject to a pay adjustment.

Areas excluded from testing by the profiler will be tested using a 3-meter straightedge. The variation of the surface from the testing edge of the straightedge between any two contacts with the surface shall not be more than 6 millimeter. Humps and depressions exceeding the specified tolerance shall be subject to correction as directed by the Engineer, at no additional cost to the Department.

The following table provides the acceptance quality rating scale of pavement based on the final rideability determination.

IRI After Completion (Millimeters Per Kilometer)	Contract Unit Price Adjustment (Percent Pavement Unit Price)
710 and Under	105
710.1 – 870	103
870.1 – 1110	100
1110.1 – 1270	90

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



1270.1 – 1420	80
1420.1 – 1580	70
Over 1580	Corrective Action Required

This contract unit price adjustment will apply to the asphalt concrete's weighted average unit price for the total theoretical tonnage representing the total thickness of the asphalt pavement structure of the 0.02-kilometer section for the lane width.

When corrections to the pavement surface are required, the Contractor's method of correction shall be approved by the Engineer. In order to produce a uniform cross section, the Engineer may require correction to the adjoining traffic lanes or shoulders. Corrections to the pavement surface and/or the adjoining traffic lanes and shoulders will be at no cost to the Department. Methods of correction shall be limited to diamond grinding, remove and replace, and AC overlay.

Where corrections are made after the official Department test, the pavement will be retested by the Department to verify that corrections have produced the acceptable ride surface. No incentives will be provided for sections on which corrective actions have been required. The contractor will have one opportunity to perform corrective action(s). In the event the corrective action(s) do not result in a minimum of 70 percent payment, then the contractor will be assessed the corresponding percent payment based on the following table.

IRI After Correction (Millimeters Per Kilometer)	Contract Unit Price Adjustment (Percent Pavement Unit Price)
1580.1 – 1900	60
1900.1 – 2210	40
2210.1 – 2525	20
Over 2525	0

Incentive Only Projects

For projects designated as "incentive only", the Contractor will not be subjected to penalties on any 0.02-kilometer section resulting from the final rideability results. Incentive only projects will not be subject to corrective action as a result of the rideability results.

Pay adjustments will be applied to the theoretical tonnage of the surface mix asphalt material for the lane width and section length tested.

This rideability specification does not relieve the Contractor from responsibility concerning workmanship in accordance with the requirements of the Specifications or as defined by the Engineer.

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



**GUIDELINES - PROJECTS HAVING SEALED SHOULDER JOINTS.
EXCEPTIONS: NONE.**

SM316A0B-0197

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SEALING SHOULDER JOINTS

August 1, 1991
Reissued January 1, 1997

I. DESCRIPTION

This work shall consist of cutting a groove between pavement and shoulder surfaces in accordance with the requirements of this provision, at locations shown on the plans or as directed by the Engineer.

II. MATERIALS

Hot-poured joint sealer shall conform to the requirements of Section 212 of the Specifications.

III. CONSTRUCTION

The Contractor shall construct a continuous groove by saw cutting or routing the asphalt shoulder material along the joint formed by the shoulder asphalt material and the edge of the contract paved surface. The size of the grooved after cutting and cleaning shall be at least 1.6-millimeters wide 1.6-millimeters deep having vertical sides. The depth measurement shall be made from the surface of the shoulder or pavement, whichever is lower. After cutting operations are completed, debris shall be promptly removed from the pavement and shoulder surfaces.

Prior to filling the grooved with joint sealer, the groove shall be cleaned of all loose materials by compressed air. The groove shall be free of dirt, dust, water, oil, grease and other materials which would prevent bonding of the joint sealer to the pavement surfaces.

At the time of placement of the sealer, the groove shall be dry and the ambient air temperature shall be at least 7 °C. The groove shall be filled level with the hot pour joint sealer by means of a sealing device which will not cause air to be entrapped in the groove.

V. MEASUREMENT AND PAYMENT

Sealing shoulder joints will be measured in meters, complete-in-place, and will be paid for at the contract unit price per meter. This price shall include groove cutting, debris removal, groove cleaning and furnishing and placement of the hot-poured sealer.

Payment will be made under:

Pay Item	Pay Unit
Sealing Shoulder Joints	Meter

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



GUIDELINES - PROJECTS WHERE RIDEABILITY EVALUATION OF HYDRAULIC CEMENT CONCRETE PAVEMENT IS REQUIRED IN WRITING BY THE MATERIALS ENGINEER (A PROJECT SPECIFIC COPIED NOTE STATING THE EXACT LOCATIONS AND LIMITS OF THE RIDEABILITY EVALUATION MUST BE INCLUDED IN THE PROPOSAL). [USE BY THE NOVEMBER 2006 ADVERTISEMENT.] EXCEPTIONS: NONE.

SM316B1B-1106

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 316 RIDEABILITY FOR HYDRAULIC CEMENT CONCRETE PAVEMENT

August 13, 2002cc

SECTION 316—HYDRAULIC CEMENT CONCRETE PAVEMENT of the Specifications is amended as follows:

For pavements designated for rideability testing Section 316.04(k) is amended to include the following:

Pavement smoothness will be determined by a profiler on designated lanes having a design speed of 70 kilometers per hour or higher as specified herein. Intersections, transition lanes, and pavement within 16 meters of bridge approach slabs or manholes will be tested by a straightedge.

Except as noted hereinbefore, the surface ride quality acceptance will be based on the lowest average International Roughness Index (IRI) for each 0.02-kilometer section produced by a minimum of two test runs, using a South Dakota type road profiling device and reported for each travel lane. The device shall measure both wheelpaths with laser height sensing instruments. The Department shall conduct the testing as soon as practical and prior to opening to public traffic, providing the Contractor can allow unimpeded access to the paved surface for constant highway speed test runs. Testing shall be conducted in accordance with the requirements of VTM – 106.

Acceptance

An IRI number in inches per mile will be established for each 0.02-kilometer section for each travel lane of the surface. The 0.02-kilometer section before and after a bridge, and the beginning and end 0.02-kilometer sections of the surface will not be subject to a pay adjustment.

Areas excluded from testing by the profiler will be tested using a 3-meter straightedge. The variation of the surface from the testing edge of the straightedge between any two contacts with the surface shall not be more than 6 millimeters. Humps and depressions exceeding the specified tolerance shall be subject to correction as directed by the Engineer, at no additional cost to the Department.

The following table provides the acceptance quality rating scale of pavement based on the final rideability determination. The pay incentive/disincentive schedule will be applied to the final surface area. The surface area, in square meters, shall be calculated based on the tested section length and lane width as shown on the plans.

IRI After Completion (Millimeters Per Kilometer)	Contract Unit Price Adjustment (Percent of Pavement Unit Price)
710 and Under	105
710.1 – 870	103
870.1 – 1110	100

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



1110.1 – 1270	90
1270.1 – 1420	80
1420.1 – 1580	70
Over 1580	Subject To Corrective Action

This contract unit price adjustment will apply to the hydraulic cement concrete's unit price for the total area of the 0.02-kilometer section for the lane width.

When corrections to the pavement surface are required, the Contractor's method of correction shall be submitted for approval by the Engineer. In order to produce a uniform cross section, the Engineer may require correction to the adjoining traffic lanes or shoulders. Corrections to the pavement surface and/or the adjoining traffic lanes and shoulders will be at no cost to the Department.

Where corrections are made after the official Department test, the pavement will be retested by the Department to verify that corrections have produced the acceptable ride surface. No incentives will be provided for sections on which corrective actions have been required. The contractor will have one opportunity to perform corrective action(s). In the event the corrective action(s) do not result in a minimum of 70% payment, then the contractor will be assessed the corresponding percent payment based on the following table.

IRI After Correction (Millimeters Per Kilometer)	Contract Unit Price Adjustment (Percent of Pavement Unit Price)
1580.1 – 1900	60
1900.1 – 2210	40
2210.1 – 2525	20
Over 2525	0

Corrective work shall be completed prior to determining pavement thickness.

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



GUIDELINES - ALL PROJECTS REQUIRING HYDRAULIC CEMENT PAVEMENT. [INCLUDE SPCN c200a TECHNICIAN AND BATCHER CERTIFICATION.] [USE BY THE NOVEMBER 2006 ADVERTISEMENT.] EXCEPTIONS: NONE.

SM316C0B-1106

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 316—HYDRAULIC CEMENT CONCRETE PAVEMENT

January 5, 2005

SECTION 316—HYDRAULIC CEMENT CONCRETE PAVEMENT of the Specifications is amended as follows:

Section 316.01—Description is replaced with the following:

This work shall consist of constructing reinforced, non-reinforced, or continuously reinforced hydraulic cement concrete pavement and approach slabs composed of hydraulic cement concrete, with or without reinforcement as specified, on a prepared subgrade or base course in accordance with the requirements of these specifications and within the specified tolerances for the lines, grades, thicknesses, and cross sections shown on the plans or as established by the Engineer.

Section 316.04(e)—Placing Concrete is amended to replace the second sentence of the second paragraph with the following:

Test specimens for this purpose shall conform to the requirements of ASTM C31 and shall be tested in accordance with the requirements of ASTM C293.

And to replace the sixth paragraph with the following:

Following concrete placement, concrete shall be struck off to conform to the cross section shown on the plans and to an elevation such that when the concrete is properly consolidated and finished, the surface of the pavement shall conform to the tolerances specified herein for the elevation and grade shown on the plans or as established by the Engineer.

Section 316.04(f)—Test Specimens is amended to replace the second sentence of the first paragraph with the following:

Beams shall be cured by a designated method as specified for the pavement in accordance with the requirements of ASTM C31.

Section 316.04(g)5.—Load transfer devices is amended to replace the fifth sentence of the second paragraph with the following:

Dowels, plastic coated in accordance with the requirements of Federal Specification L-C-530 C or epoxy coated in accordance with the requirements of ASTM-A775, may be used in lieu of painted and lubricated dowel bars.

Section 316.04(k) Rideability is replaced with the following:

(k) **Surface test:** As soon as concrete has hardened sufficiently, the pavement surface will be tested by the Engineer with a 3-meter straightedge. Areas showing high spots of more than 5 millimeters on mainline pavement and approach slabs but not exceeding 13 millimeters in 3 meters shall be marked and, after the concrete has attained the design compressive strength, cut down with an approved cutting tool to an elevation where the area or spot will not show surface deviations in excess of 5 millimeters. Areas showing high spots of more than 10

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

millimeters on ramps when tested with a 3-meter straightedge shall be marked and, after the concrete has attained the design compressive strength, corrected to within the 10-millimeter tolerance by removing and replacing or by cutting as specified herein. If the slipform method of paving is used, a straightedge tolerance of ± 6 millimeters in 3 meters will be permitted for the area within 150 millimeters of the slipformed edge except for pavement adjacent to connections and ramps. Equipment for cutting shall be designed to cut the surface of the pavement in a longitudinal direction parallel to the centerline and in a uniform planing action. However, the cutting operation shall not produce a polished pavement surface. The equipment shall be adjustable so as to vary the depth of the cut as required. Bush hammering, rubbing with carborundum stone, or hand grinding will not be permitted. Where the departure from correct cross section exceeds 0.20 percent on mainline pavement, the pavement shall be removed and replaced by and at the expense of the Contractor.

Section 316.04(o)—Opening to Traffic is amended to replace the first sentence of the first paragraph with the following:

Pavement shall not be opened to traffic until specimen beams conforming to the requirements of Section 316.04(f) have attained a modulus of rupture strength of 4 megapascals when tested by the center point loading method in accordance with the requirements of ASTM C293.

Section 316.05—Tolerances is replaced with the following:

316.05—Thickness and Finished Grade Tolerances

The thickness of pavement will be determined by average caliper measurements of cores taken therefrom, as described in VTM-26.

Areas found to be deficient in thickness by more than 25 millimeters will be evaluated by the Engineer, and if in his judgment the deficient areas warrant removal, they shall be removed and replaced with concrete of the thickness specified on the plans. The deficient area shall be the product of the full width of the slab or lane of pavement multiplied by the sum of the distances in each direction from the deficient core along the center line of the pavement to the first actual cores found not deficient in thickness by more than 25 millimeters.

The Contractor shall fill test holes with the same type of concrete as in the pavement.

After placement of the final pavement layer, finished grade elevations shall be within ± 12 millimeters of the elevations indicated in the plans, unless otherwise specified, provided that the actual cross slope does not vary more than 0.20 percent from the design cross slope indicated in the plans and the pavement thickness conforms to the thickness tolerances specified herein.

If determined by the Engineer that either the finished grade elevations or cross slope exceed the tolerances specified, the Contractor shall submit to the Engineer for approval a plan of corrective action.

Finished grades shall be constructed to the proposed cross sections and cross slopes shall be constructed to the proposed typical section slopes indicated on the plans. Areas found to deviate from the indicated cross slopes by 0.20 percent or more shall be corrected or replaced by the Contractor at no additional cost to the Department.

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



4-

— DIVISION IV—BRIDGES AND STRUCTURES —

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

— **400 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)** —

GUIDELINES- PROJECTS REQUIRING STRUCTURE EXCAVATION.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

(cm401b0b-0408) **SECTION 401—STRUCTURE EXCAVATION** of the Specifications is amended as follows:

Section 401.01—Description is replaced with the following:

This work shall consist of excavating and backfilling or disposing of material necessary for constructing substructures and superstructures of new bridges and altering existing bridges in accordance with the requirements of these specifications and in conformity with the lines and grades shown on the plans or as established by the Engineer.

Section 401.02—Materials is replaced with the following:

- (a) **Backfill** shall be approved by the Engineer and shall be free from large or frozen lumps, wood, or rocks more than 75 millimeters in their greatest dimension or other extraneous material. Porous backfill shall conform to the requirements of Section 204.02(c) of the Specifications.

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

- (b) **Pipe underdrains** shall conform to the requirements of Section 232.02 of the Specifications.

Section 401.03(i) Backfilling is amended to replace the sixth paragraph with the following:

Backfill shall be placed as soon as practicable following attainment of the required compressive strength but not later than 30 days after concrete placement. Excavation openings shall be maintained as dry as practicable at the time of backfilling. Backfill shall be placed in a manner to deter impoundment of water and facilitate existing drainage.

6-14-06 (SPCN)

GUIDELINES— PROJECTS HAVING PILES.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

(cm403a2b-0408) **SECTION 403—BEARING PILES** of the Specifications is amended as follows:

Section 403.02(a) Timber Piles is replaced with the following:

- (a) **Timber piles** shall conform to the requirements of Section 236.02(b) of the Specifications.

Section 403.03(d)4 is replaced with the following:

- 4. **Protection by painting:** When steel piles or steel pile shells extend above the ground or water surface, they shall be protected by one coat of No. 14 primer and one coat of epoxy mastic as specified in Section 231.03(b) and 231.03(c) of the Specifications. The coating thickness shall be as specified in Section 411 Table IV-6. Protection shall extend from an elevation 600 millimeters below the lowest ground or water surface up to a level 50 millimeters into the concrete in which their tops are to be embedded.

Section 403.06 (d) Driving is amended to replace the fourth sentence of the first paragraph with the following:

Where it is determined necessary by the Engineer in order to obtain the required tip elevation, design bearing capacity, or minimum penetration, driving shall be supplemented by jetting or preboring.

Section 403.03(d)4 is replaced with the following:

- 4. **Protection by painting:** When steel piles or steel pile shells extend above the ground or water surface, they shall be protected by one coat of No. 14 primer and one coat of epoxy mastic as specified in Section 231.02(d) and 231.02(e) of the Specifications. The coating thickness shall be as specified in Section 411 Table IV-6 of the Specifications. Protection shall extend from an elevation 0.6 m below the lowest ground or water surface up to a level 50 mm into the concrete in which their tops are to be embedded.

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



Section 403.08—Measurement and Payment is amended to replace the second sentence of the first paragraph with the following:

This price shall include furnishing piles; driving piles; splices; obtaining safe bearing capacity, tip elevation, or minimum penetration; jetting; performing wave equation analysis; disposing of piling cutoffs; concrete and reinforcing steel required for steel shell piles, including reinforcing steel that extends into the structure footing; painting; and waterproofing.

Section 403.08—Measurement and Payment is amended to delete the ninth paragraph.

Section 403.08—Measurement and Payment is amended to add the following:

Jetting not shown on the plans and specified by the Engineer in accordance with the requirements of Section 403.06(d) of the Specifications will be measured in meters and will be paid for per meter at 30 percent of the contract unit price per meter for the particular size and type of pile for which the jetting was ordered. This price shall include disposing of surplus material and erosion, siltation, and water quality controls required as a result of the jetting operations.

Preboring not shown on the plans and specified by the Engineer in accordance with the requirements of Section 403.06(d) of the Specifications will be measured in meter for the particular size and type of pile for which the preboring was ordered in accordance with the requirements of Section 104.03 and Section 109.05 of the Specifications. This price shall include disposing of surplus material, and for erosion and siltation controls when required as a result of the preboring operations.

Preboring shown on the plans, will be measured in meters for the particular size and type of pile for which preboring was specified. This price shall include disposing of surplus material erosion and siltation controls when required as a result of the preboring operations.

Payment will be made under:

Pay Item	Pay Unit
Preboring (Size and Type) pile	Meter

6-14-06 (SPCN)

**GUIDELINES - PROJECTS REQUIRING PRESTRESSED CONCRETE.
EXCEPTIONS: NONE.**

(cm405b0b-0105) **SECTION 405—PRESTRESSED CONCRETE** is amended as follows:

Section 405.04—Concrete Controls is amended to replace the third paragraph with the following:

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



Concrete batches from which cylinders are made shall be tested for slump in accordance with the requirements of ASTM C143 and for air content in accordance with the requirements of ASTM C231.

Section 405.05(a) Forms of the Specifications is amended to include the following:

All fully or partially embedded attachments to the prestressed concrete members required for supporting forms or stay-in-place deck panels shall be galvanized in accordance with Section 233 of the Specifications.

8-17-04 (SPCN)

GUIDELINES- PROJECTS REQUIRING REINFORCING STEEL.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

(cm406a0b-0408) **SECTION 406—REINFORCING STEEL** of the Specifications is amended as follows:

Section 406.01—Description is replaced with the following:

This work shall consist of furnishing; coating, if required; and placing reinforcing steel or wire mesh used in concrete operations, except prestressed strands and wires, in accordance with these specifications and in conformity to the lines and details shown on the plans.

Section 406.03—Procedures (e) Splicing and Lapping is replaced with the following:

(e) **Splicing and Lapping:** Reinforcement shall be furnished in full lengths as indicated on the plans. Except where shown on the plans, splicing bars will not be permitted without the written approval of the Engineer. Splices shall be as far apart as possible.

Bars shall be lapped at least 30 bar diameters to make the splice. In lapped splices, bars shall be placed in contact and wired together. Mechanical butt splicing will be permitted at longitudinal joints in deck slabs and other locations shown on the plans provided the mechanical connection develops in tension or compression, as required, at least 125 percent of the specified yield strength of the bar. Reinforcing steel shall be welded only if specified on the plans. Welding shall be in accordance with the requirements of Section 407.04(a).

Laps for sheets of welded wire fabric or bar mat reinforcement shall be at least one mesh in width.

6-14-06 (SPCN)

GUIDELINES— WHEN DESIGNATED ON THE PLANS.
EXCEPTIONS: NONE.

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

(cm406b0b-0708) **SECTION 406.04 MEASUREMENT AND PAYMENT** of the Specifications is amended add the following:

Corrosion resistant reinforcing steel will be measured and paid for in kilograms of steel placed in the structure as shown on the plans. This price shall include fabricating, shipping, furnishing and placing corrosion resistant reinforcing steel in the structure as indicated on the plans.

Payment will be made under:

Pay Item	Pay Unit
Corrosion resistant reinforcing steel	Kilogram
12-28-07 (SPCN)	

GUIDELINES - PROJECTS HAVING BEARING DEVICES OR ANCHORS
EXCEPTIONS: NONE.

(cm408b0b-1103) **SECTION 408.03—PROCEDURES** of the Specifications is amended as follows:

SECTION 408.03(g) PLACEMENT of the is amended to replace the second paragraph with the following:

Elastomeric pads and other flexible bearing materials shall be placed directly on masonry surfaces that have been finished to a roughness equivalent of a No. 36 to No. 46 grit. Pads, bearing areas, or bridge seats and metal bearing plates shall be thoroughly cleaned and free from oil, grease, and other foreign materials. Metal bearing plates or bottoms of prefabricated beams that are to bear on elastomeric pads shall be coated with epoxy Type EP-4 or EP-5, conforming to the requirements of Section 243 and then surfaced with a No. 36 to No. 46 silicon carbide or aluminum oxide grit. Bearing areas shall be finished to an equivalent roughness.

ROTATIONAL ELEMENTS-DISC BEARINGS is added prior to **Section 408.03(a)3. Non-Rotational Bearing Elements** as follows:

Rotational Elements-Disc Bearings: Thickness of the disc, t, shall be equal to or greater than: $(\Delta c + [(Rs+Rc) \times Dd \times 0.5] / \epsilon \text{ max}$ where:

Δc = deflection due to total compressive load, and
 $\epsilon \text{ max}$ = strain due to all effects except for long-term creep.

The instantaneous deflection of the disc under total load shall not exceed 10 percent of the thickness of the unstressed disc, and the additional deflection due to creep does not exceed 8 percent of the thickness of the unstressed disc. Deflection caused by rotation shall not exceed the lesser of the instantaneous deflection under total load or 10 percent of the thickness of the unstressed disc.

The disc shall be designed for an average stress of:

- (a) 25.5 megapascals for Polyether Urethane Compound A
- (b) 35.5 megapascals for Polyether Urethane Compound B

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



The section thickness of the plate beneath the disc shall be a minimum of 19 millimeters or $D_p \times 0.06$ for bearings on concrete and 19 millimeters or $D_p \times 0.045$ for bearings directly on steel masonry plates.

Vertical clearance between rotating and non-rotating bearing parts shall be no less than 3.2 millimeters at maximum rotation.

The urethane disc shall be held in place by a shear restriction mechanism which is designed to allow free rotation of the bearing. The mechanism shall be designed to withstand the design forces on the bearing without exceeding the allowable shear stress of $0.4F_y$, bending stress of $0.55F_y$, and bearing stress of $0.8F_y$, not including shear resistance of the disc. The mechanism shall be connected to the bearing plates by welding, bolting, or machining out of the solid.

7-28-03 (SPCN)

**GUIDELINES— PROJECTS REQUIRING PREFORMED ELASTOMERIC JOINT SEALER.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

(cm420b0b-0408) **SECTION 420—PREFORMED ELASTOMERIC JOINT SEALER** of the Specifications is amended as follows:

Section 420.01—Description is replaced with the following:

This work shall consist of furnishing and installing preformed elastomeric joint sealer in accordance with these specifications and in conformity with the lines shown on the plans or as established by the Engineer.

Section 420.02—Materials is replaced with the following:

Material for preformed elastomeric joint sealer and lubricant adhesive shall conform to the requirements of Section 212.02(i) of the Specifications. The joint sealer (to serve both as a filler and a sealer) shall be furnished in the form of an extruded compartmented tube.

Section 420.03—Procedures is amended to replace the fifth sentence of the first paragraph with the following:

If a joint opening is larger than specified, the Contractor may furnish a larger size sealer up to 100 millimeters in its uncompressed width as determined by the Engineer.

6-14-06 (SPCN)

**GUIDELINES— PROJECTS REQUIRING ELASTOMERIC EXPANSION DAMS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

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



(cm421a0b-0408) **SECTION 421—ELASTOMERIC EXPANSION DAMS** of the Specifications is amended as follows:

Section 421.01—Description is replaced with the following:

This work shall consist of furnishing and installing elastomeric expansion dams in accordance with these specifications and in conformity with the lines, elevations, and locations shown on the plans or as established by the Engineer.

Section 421.02—Materials is replaced with the following:

Materials shall conform to the requirements of Section 212.02(j) of the Specifications.

6-14-06

—400 SERIES SPs (SPECIAL PROVISIONS)—

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



**GUIDELINES - PROJECTS HAVING DYNAMIC PILE TEST (ONLY WITH PAY ITEM).
EXCEPTIONS: NONE**

SM400A1B-0304

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
WAVE EQUATION ANALYSIS**

May 25, 1999c

SECTION 403.06(d) 1. and 2. of the Specifications is replaced by the following:

Pile driving equipment furnishing by the Contractor shall be subject to the approval of the Engineer.

Prior to driving test piles, the Contractor shall furnish the Engineer the following information pertaining to the proposed pile driving equipment:

1. Completed Pile and Driving Equipment Data Form for each proposed pile hammer and pile type combination (Attachment 1).
2. At each driving test location, where different subsurface conditions exist, the Contractor shall furnish a Wave Equation Analysis of pile driveability performed by a Professional Engineer experienced in such work, demonstrating that the piles can be driven with reasonable effort to the ordered lengths without damage. This analysis shall include the following:

Copies of computer input and output sheets and graphs showing soil resistance versus blow count as well as maximum tensile and compressive stresses versus blow count. Analyses shall be run at the estimated tip elevation as well as other required elevations to define maximum stress levels in the pile during driving.

The Contractor shall use the optimum type and size of hammer for the indicated pile and subsurface conditions at the structure site. Unless documentation supporting other values can be provided, the following hammer efficiencies shall be used in a wave equation analysis:

<u>Hammer Type</u>	<u>Efficiency in Percent</u>
Single acting air/steam	67
Double acting air/steam	50
Diesel	80
Hydraulic	90

The criterion that the Engineer will use to evaluate the driving equipment consists of both the required number of hammer blows per 25 millimeters (1 inch) and the pile stresses at the required ultimate pile capacity. The required number of hammer blows indicated by calculations at the required bearing capacity shall be a maximum of 6 per 25 millimeters (1 inch) for the driving equipment to be acceptable and shall be on the rising (or linear) portion of the resistance versus blow count curve.

Should the Wave Equation Analysis indicate the possibility of excessive driving stresses, the Contractor shall submit to the Engineer proposed corrective measures (modification of hammer stroke or other appropriate action) for approval.

The following criteria will be used in evaluating calculated results to determine acceptability of the Contractor's proposed driving system.

The calculated ultimate soil resistance as determined from wave equation analysis alone shall be no less than 275% of the required design capacity for the driven pile. When the calculated ultimate soil resistance determined from wave equation analysis has been calibrated to the

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



results of a dynamic pile test, the ultimate soil resistance shall be no less than 225% of the required design bearing capacity for the driven pile.

Soil setup (pile freeze effect) may be considered when establishing initial driving criteria. If soil setup is considered, two additional wave equation analyses, one modeling the end of initial drive conditions and the second modeling the beginning of restrike conditions shall be performed. In lieu of performing the two additional wave equation analyses, a pile driveability analysis may be performed when considering soil setup. However, hammers requiring the consideration of soil setup for approval may require restrikes of the driving test piles, at the Contractor's expense, for verification purposes.

Contractor notification of acceptance or rejection of pile driving equipment will be made within 20 days of receipt of the data form and Wave Equation Analysis.

When initial parameters selected are judged to be inappropriate, the Contractor shall submit a refined wave equation analysis along with the pile order list. The refined analysis shall include any modifications or changes deemed appropriate from the results of the Driving Test (Loading Test and/or Dynamic Pile Testing) Program(s).

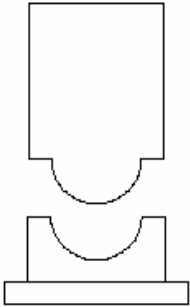
The Engineer will determine driving resistance, tip elevations and safe bearing capacity criteria to be used for production piles from the above information.

During production pile driving operations, the Contractor shall use the approved system. Any change in the driving system will only be considered after the Contractor has submitted revised pile driving equipment data and calculations.

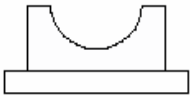
Approval of pile driving equipment shall not relieve the Contractor of the responsibility to drive piles, free of damage, to the bearing and tip elevation shown on the plans, specified in the special provisions, or mandated by the Engineer. In addition, approval of pile driving equipment relative to driving stress damage shall not relieve the Contractor of responsibility for piles damaged because of misalignment of the leads, failure of capblock or cushion material, failure of splices, malfunctioning of the pile hammer, or other improper construction methods or practices.

**VIRGINIA DEPARTMENT OF TRANSPORTATION
PILE AND DRIVING EQUIPMENT DATA FORM**

Project: _____
Pile Driving Contractor Or Subcontractor (Driven by): _____



HAMMER Manufacture: _____ Model: _____
Type: _____
Rated Energy: _____ @ _____ Length of Stroke
Modifications: _____



RAM Ram Mass: _____

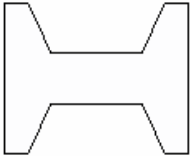
ANVIL OR BASE Mass: _____



STRIKER PLATE Material: _____
Thickness: _____ Area: _____
Modulus of Elasticity - E: _____ (kpa)
Coefficient of Restitution: _____



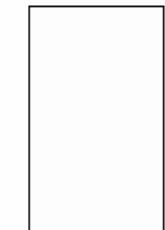
CAP BLOCK Material: _____
Thickness: _____ Area: _____
Modulus of Elasticity - E: _____ (kpa)
Coefficient of Restitution: _____



PILE CAP Helmet _____ Mass: _____
Bonnet _____ Materials: _____
Anvil Block _____
Remarks: _____
Drive head _____
Accessories _____



CUSHION Cushion Material: _____
Thickness: _____ Area: _____
Modulus of Elasticity - E: _____ (kpa)
Coefficient of Restitution: _____



PILE Type: _____
Pile Size: _____ Length: _____ Diameter: _____
Cross Sectional Area: _____
Material: _____ Mass/m: _____
Design Pile Capacity: _____ (metric tons)
Description of Splice: _____

Tip Treatment Description: _____

Remarks: _____

Submitted By: _____ Date: _____
Company: _____ Phone: _____

Cc: District Bridge Engineer
State Bridge Engineer
Construction Manager

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



**GUIDELINES - PROJECTS HAVING DYNAMIC PILE TESTING FOR FRICTION PILES.
EXCEPTIONS: NONE**

SM403B0B-0304

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
DYNAMIC PILE TESTING FOR FRICTION PILES**

May 25, 1999c

I. DESCRIPTION

This work shall consist of dynamic testing of driving test piles by the use of electronic monitoring equipment, reprocessing the data and furnishing a written report of the results.

II. EQUIPMENT

The Contractor shall furnish a Pile Driving Analyzer and all required associated equipment including transducers and accelerometers.

III. TESTING

The Contractor shall employ a firm experienced in the use of the pile driving analyzer and related equipment to install or supervise the installation of the necessary equipment and to perform the dynamic monitoring. Names of previously approved firms are on a Department approved list and will be made available upon request. If the Contractor wants to use a firm that is not on the approved list, documentation of such experience shall be submitted to the Engineer for approval prior to beginning the work.

Dynamic testing shall be conducted in the presence of the Engineer and during the entire time piles are initially driven or redriven and during pile restrike testing.

Where possible, splices shall be made prior to the start of driving so that dynamic testing can be performed without interruption.

The Contractor shall fasten a pair of transducers and a pair of accelerometers in place prior to testing. Piles shall be driven until the pile driving analyzer indicates that the soil resistance measured is 175 percent of the pile design capacity and the required minimum tip elevation and penetration have been obtained or as directed by the Engineer. The Contractor shall remove the transducers and accelerometers after the dynamic testing is completed.

Pile restrike testing shall be conducted no sooner than 120 hours after the pile, or any pile within a 7.62 meter (25 foot) radius has been driven. Restrike testing shall include dynamic testing of the pile when it is redriven. The pile shall be redriven with the same pile hammer used for initial driving. A cold hammer shall not be used for restrike. The amount of penetration required during restrike testing shall be 150 millimeter (6 inches) or a total number of 100 hammer blows, whichever occurs first, unless the analyzer indicates the soil resistance measured on restrike is less than 225 percent of the design capacity. If the soil resistance measured on restrike is less than required, the Engineer may direct the Contractor to drive all or a portion of the remaining test pile length and repeat the restrike testing. The Contractor will be notified of the necessity to perform a second restrike test within 3 days of receipt of the CAPWAP results from the initial restrike.

The Contractor shall notify the Engineer of the date and time for dynamic testing at least 48 hours prior to testing. Such notice shall be given during the normal work hours of the Department. If additional dynamic testing is ordered by the Engineer, the Contractor shall schedule the tests in cooperation with the Engineer.

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



The results of the dynamic testing shall be printed by the pile driving analyzer and shall include for each blow selected by the Engineer, a combination of the following quantities:

- Soil resistance from the Case Goble Method,
- Input and reflection values of force and velocity,
- Maximum transferred energy,
- Maximum compression force,
- Velocity and displacement,
- Blows per minute,
- Value of upward and downward traveling force wave,
- Ram stroke and corresponding blow sequence
- Maximum tensile and compressive stresses in the pile

A preliminary report with this information shall be provided to the Engineer within 24 hours after completion of the testing if so requested by the Engineer.

All signals shall be recorded and made available upon the request of the Engineer.

Accompanying the production pile order list, the Contractor shall furnish the Engineer a Pile Loading (if applicable) and Dynamic Testing Report that shall include the following information for each pile tested:

- Location of test,
- Date of test,
- Driving log, all data obtained during the test,
- Any unusual or otherwise noteworthy behavior observed during or after driving or testing,
- A resistance distribution plot and related information by the CAPWAP program for the end of initial drive conditions and the beginning of restrike conditions,
- Plot of applied load versus average butt settlement with determination of safe bearing capacity, as required by the specifications,
- A summary of soil resistance from both Loading and Dynamic Testing, including an evaluation of the correlation between the two approaches and discussion of any discrepancies,
- Recommendations for a refined wave equation analysis based on the above findings and recommended driving criteria for production piles

IV. MEASUREMENT AND PAYMENT

Dynamic pile testing (Friction Piles) will be measured and paid for at the contract unit price per each, which price shall be full compensation for furnishing, installing, and removing dynamic testing equipment, tools, labor, and incidental work necessary to monitor the dynamic testing, to provide the data and written report specified, drilling holes to mount transducers and accelerometers, all work and equipment necessary to drive the pile during restrike testing, and any additional driving required should the required soil resistance not be obtained. A second restrike test will be paid for at 2/3 of the contract unit price of a dynamic pile test.

Payment will be made under:

Pay Item	Pay Unit
Dynamic Pile Test (Friction Piles)	Each

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



**GUIDELINES - PROJECTS HAVING DYNAMIC PILE TESTING FOR END BEARING PILES.
EXCEPTIONS: NONE**

SM403C0B-0304

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
DYNAMIC PILE TESTING FOR END BEARING PILES

May 25, 1999c

I. DESCRIPTION

This work shall consist of dynamic testing of driving test piles by the use of electronic monitoring equipment, reprocessing the data and furnishing a written report of the results.

II. EQUIPMENT

The Contractor shall furnish a Pile Driving Analyzer and all required associated equipment including transducers and accelerometers.

III. TESTING

The Contractor shall employ a firm experienced in the use of the pile driving analyzer and related equipment to install or supervise the installation of the necessary equipment and to perform the dynamic monitoring. Names of previously approved firms are on a Department approved list and will be made available upon request. If the Contractor wants to use a firm that is not on the approved list, documentation of such experience shall be submitted to the Engineer for approval prior to beginning work.

Dynamic testing shall be conducted in the presence of the Engineer and during the entire time piles are initially driven or redriven.

Where possible, splices shall be made prior to the start of driving so that dynamic testing can be performed without interruption.

The Contractor shall fasten a pair of transducers and a pair of accelerometers in place prior to testing. Piles shall be driven until the pile driving analyzer indicates that the soil resistance measured is 225 percent of the pile design capacity and the required minimum tip elevation and penetration has been obtained or as directed by the Engineer. The Contractor shall remove the transducers and accelerometers after the dynamic testing is completed.

The Contractor shall notify the Engineer of the date and time for dynamic testing at least 48 hours prior to testing. Such notice shall be given during the normal work hours of the Department. If additional dynamic testing is ordered by the Engineer, the Contractor shall schedule the additional tests in cooperation with the Engineer.

The results of the dynamic testing shall be printed by the pile driving analyzer and shall include for each blow selected by the Engineer, a combination of the following quantities:

- Soil resistance from the Case Goble Method,
- Input and reflection values of force and velocity,
- Maximum transferred energy,
- Maximum compression force,
- Velocity and displacement,
- Blows per minute,
- Value of upward and downward traveling force wave,

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

Ram stroke and corresponding blow sequence
Maximum tensile and compressive stresses in the pile

A preliminary report with this information shall be provided to the Engineer within 24 hours of the testing if so requested by the Engineer.

All signals shall be recorded and made available upon the request of the Engineer.

Accompanying the production pile order list, the Contractor shall furnish the Engineer a Pile Loading (if applicable) and Dynamic Testing Report that shall include the following information for each pile tested:

- Location of test,
- Date of test,
- Driving log, all data obtained during the test,
- Any unusual or otherwise noteworthy behavior observed during or after driving or testing,
- A resistance distribution plot and related information by the CAPWAP program,
- Plot of applied load versus average butt settlement with determination of safe bearing capacity, as required by the specifications,
- A summary of soil resistance from both Loading and Dynamic Testing, including an evaluation of the correlation between the two approaches and discussion of any discrepancies,
- Recommendations for a refined wave equation analysis based on the above findings and recommended driving criteria for production piles

IV. MEASUREMENT AND PAYMENT

Dynamic pile testing (End Bearing) will be measured and paid for at the contract unit price per each, which price shall be full compensation for furnishing, installing, and removing the dynamic testing equipment, tools, labor, and incidental work necessary to monitor the dynamic testing, to provide the data and written report specified, and drilling holes to mount transducers and accelerometers.

Payment will be made under:

Pay Item	Pay Unit
Dynamic Pile Test (End bearing Piles)	Each

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



**GUIDELINES - PROJECTS HAVING CONCRETE SURFACE PENETRANT SEALER
EXCEPTIONS: NONE**

SM404A0B-0197

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
CONCRETE SURFACE PENETRANT SEALER**

August 1, 1991
Reissued January 1, 1997

I. DESCRIPTION

This work shall consist of furnishing and applying a water repellent concrete surface penetrant in accordance with this provision and in reasonably close conformity with the details and locations indicated on the plans. The color of the penetrant sealer shall be clear.

II. MATERIALS

The penetrant sealer used in the performance of this work shall be a product as listed on the Department's current list of approved penetrating sealers.

III. CONSTRUCTION METHODS

The penetrant sealer shall be applied in accordance with the manufacturer's recommendations, except as otherwise specified herein. The penetrant sealer shall not be applied until all adjacent or superimposed concrete placements have been completed. All surfaces to receive the penetrant sealer shall be sandblasted to provide a clean uniform texture free of foreign substances such as oils, release agents, curing agents or efflorescence. All sandblasting residue shall be completely removed prior to application of the penetrant sealer.

Each container of penetrant sealer material shall be thoroughly mixed in strict compliance with the manufacturer's recommendations. The penetrant sealer material shall be applied by experienced persons using spray, brush or roller and shall not be thinned or reduced, except as may be specifically required by the manufacturer.

The rates of application and number of coats shall be in accordance with the manufacturer's recommendations.

IV. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Concrete surface penetrant sealer will be measured in square meters and will be paid for at the contract unit price per square meter, which price shall be full compensation for surface preparation and for applying sealer.

Payment will be made under:

Pay Item	Pay Unit
Concrete Surface Penetrant Sealer	Square Meter

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



**GUIDELINES - PROJECTS HAVING CONCRETE SURFACE COLOR COATING.
EXCEPTIONS: NONE**

SM404B0B-0197

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
CONCRETE SURFACE COLOR COATING

August 1, 1991
Reissued January 1, 1997

I. DESCRIPTION

This work shall consist of furnishing and applying concrete surface color coating in accordance with this provision and in reasonably close conformity with the details and locations indicated on the plans. The color of the coating shall be similar to the Federal Standard Color Number specified on the plans or as approved by the Engineer.

II. MATERIALS

Concrete surface color coating shall be from the Department's current list of approved concrete surface color coatings.

III. DETAILED REQUIREMENTS

Except as otherwise specified on the plans, the concrete surface color coating shall be applied to the following surfaces of the bridge structure:

- a. Pier stems and caps from 150 millimeters below finished grade to the upper limits of the pier caps but excluding the top of the cap.
- b. Exposed surfaces of abutment walls from finished grade of adjacent concrete slab slope protection or 150 millimeters below finished grade of embankment to and including the top of the wingwall, excluding bridge seats and portion of back wall between limits of exterior structural members.
- c. All surfaces of parapet walls, the edge of deck slab and the underside of the bridge deck overhangs from the deck edge to the structural member.

Concrete surface color coating shall be applied to exposed surfaces of other concrete structures as specified on the plans.

The concrete surface color coating shall be applied in accordance with the manufacturer's recommendations, except as otherwise specified. The concrete surface color coating shall not be applied until all concrete placement operations for the particular structure have been completed. The concrete surface shall be clean, free of any curing agents, form release agents, foreign substances or signs of efflorescence at the time of application.

All work shall be performed by experienced workmen familiar with concrete finishing work and with the materials specified. Surfaces not to be treated shall be protected from splatter.

Materials shall be delivered to the job site in sealed containers bearing the manufacturer's labels. Materials shall be mixed and applied in accordance with the manufacturer's printed instructions of which two copies shall be furnished the Engineer.

IV. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

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

Concrete Surface Color Coating will be paid for on a lump sum basis per structure wherein no other measurement will be made and will be paid for at the contract lump sum price per structure which price shall be full compensation for preparation of surfaces and for applying coating.

Payment will be made under:

Pay Item	Pay Unit
Concrete Surface Color Coating (Br. or Str. No.)	Lump Sum

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



**GUIDELINES - WHEN REQUESTED BY THE DESIGNER:
EXCEPTIONS: NONE.**

SM404C0B-0197

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
GRAVITY FILLED POLYMER CRACK SEALING

August 8, 1995
Reissued January 1, 1997

I. DESCRIPTION

This work shall consist of filling concrete cracks with a polymer crack sealer, in accordance with the plan details and as directed by the Engineer.

II. MATERIALS

Gravity fill polymer crack sealers shall be a high molecular weight methacrylate, epoxy or urethane conforming to the following:

PROPERTY	TEST METHOD	REQUIREMENT
Gel Time 50 ml sample 24 ± 5 °C	ASTM C881	6 hrs. max.
Tensile Strength 24 ± 5 °C	ASTM D638	10 MPa min.
Sand Penetration MX-45 sand 24 ± 5 °C	VTM 101	80% min.

III. SURFACE PREPARATION AND APPLICATION

Concrete cracks to be filled shall have reached the 28-day design requirement, shall be dry and free of dust, dirt and other debris prior to filling, and shall be air blasted with oil free compressed air prior to application of the sealer. The concrete surface temperature shall not be less than 13 °C when the sealer is applied. The sealer shall be applied during the lowest temperature period of the day, usually between 1 a.m. and 9 a.m., when the cracks are open to the greatest extent. Cracks wider than 1 millimeter shall be filled with dry 300 millimeter sieve size silica sand prior to placement of the polymer. The polymer shall than be applied directly to the cracks allowing time for the polymer to seep down into the cracks, then making additional applications until cracks are filled. The polymer material may also be spread over designated crack areas and worked into the cracks with a broom or squeegee. Excess polymer shall be brushed off the surface prior to the polymer hardening. Regardless of the application method used, the polymer shall be applied in sufficient quantity and applications to fill cracks level. An application rate of 1 liter per 8 meters or 2.45 square meters is usually adequate. Application of the polymer crack sealer shall be completed prior to grooving of the deck surface and grooving shall not be performed until the polymer has cured a minimum of 48 hours.

The Contractor shall plan and prosecute the work in such a manner to protect persons, vehicles and the bridge structure from injury or damage. Armored joints shall be covered, scuppers plugged and cracks sealed from underneath or other protective measures necessary to protect traffic, waterways and bridge components shall be implemented. In the event polymer materials or solvents harm the

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



appearance of bridge components, removal of such materials will be required as directed by the Engineer. Traffic will not be permitted on the treated surface until tacking will not occur as determined by the Engineer.

IV. MEASUREMENT AND PAYMENT

Gravity fill polymer crack sealing will be measured and paid for at the contract unit price per meter or square meter as specified. The price bid for such work shall be full compensation for furnishing and applying the silica sand and polymer crack sealer, for vehicular and pedestrian protection, for crack preparation, for protection of waterways and bridge surfaces and for all labor, tools and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Gravity fill polymer crack sealing	Meter or Square meter

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



**GUIDELINES— ALL PROJECTS REQUIRING HYDRAULIC CEMENT CONCRETE OPERATIONS
(CONCRETE BRIDGES AND BOX CULVERTS).
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM404D3B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
SECTION 404—HYDRAULIC CEMENT CONCRETE OPERATIONS

June 14, 2006

SECTION 404—HYDRAULIC CEMENT CONCRETE OPERATIONS of the Specifications is amended as follows:

Section 404.01—Description is replaced with the following:

This work shall consist of furnishing and placing hydraulic cement concrete in accordance with these specifications and in conformity with the dimensions, lines, and grades shown on the plans or as established by the Engineer.

Section 404.02 (d) Corrugated Metal Bridge Deck Forms is replaced with the following:

(d) **Corrugated metal bridge deck forms** shall be galvanized steel conforming to the requirements of ASTM A653, Grade SS40, SS50, or SS80 and shall be coating designation G165. Supports, closures and other fabricated parts shall conform to the requirements of ASTM A653, Grade SS33, SS40, SS50, or SS80 and shall be coating designation G165.

Section 404.03 (g) Construction Joints amended to replace the third paragraph with the following:

Construction joints against which earth fill is placed shall be protected by a heavy coat of asphalt conforming to the requirements of Section 213, applied for a distance of 75 millimeters on each side of the joint and continuous throughout its length.

Table IV-2 Requirements for Removing Formwork and Constructing Superimposed Elements is deleted.

Section 404.03 (j) Removing Formwork and Constructing Superimposed Elements is replaced with the following:

(j) **Removing Formwork, Forming for and Placing Superimposed Elements:** In the determination for removing formwork and constructing superimposed elements consideration shall be given to the location and character of the structure, the weather, other conditions influencing the setting of the concrete, and materials used in the mixture. Formwork shall include forms, braces, ties, guy wires, and other instruments of stabilization.

1. Formwork may be removed as follows:

- a. Side forms or elements not immediately subjected to loading (for example: footings and walls or columns with height to width ratios less than 10:1 [$h/w < 10:1$]): 48 hours or 30 percent concrete strength (f'_c). For the purposes herein width will be considered the narrowest portion of the element measured horizontally across its surface.

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

The time period noted for form removal shall begin at the completion of the concrete placement and is exclusive of hours when any portion of the concrete element's surface is below 4 degrees C.

- b. All other elements: 60 percent concrete strength (f'_c).
2. Forming for superimposed elements may be as follows:
 - a. Elements not immediately subjected to loading (for example: footings and walls or columns with height to width ratios less than 10:1 [$h/w < 10:1$]): 48 hours or 30 percent concrete strength (f'_c). For the purposes herein width will be considered the narrowest portion of the element measured horizontally across its surface.

The time period noted for forming for superimposed elements shall begin at the completion of the concrete placement and is exclusive of hours when any portion of the concrete element's surface is below 4 degrees C.

- b. All other elements: 60 percent concrete strength (f'_c).
3. Placing concrete in forms for superimposed elements shall not be done until concrete has attained 60% concrete strength (f'_c), except for footings, where concrete may be placed when the footing has attained 40 percent concrete strength (f'_c).

The Contractor may submit calculations to show that lower strength requirements may be used, but may not proceed to use these requirements before receiving written permission to do so.

Concrete strength (f'_c) is the design minimum laboratory compressive strength at 28 days as specified in Table II-17, Requirements for Hydraulic Cement Concrete, for the class of concrete designated. If the time for removing formwork and forming for or placing concrete in superimposed elements is determined by control cylinder strengths, the Contractor will be permitted to perform these operations when the control cylinder strengths reach the values previously noted. Control cylinders shall be cured under conditions that are not more favorable than the most unfavorable conditions for the portion of the concrete the cylinders represent. The Contractor shall furnish molds, labor, and materials, make sufficient test specimens, and transport specimens to the testing facility. Single-use wax paper, paper, plastic or light-gage metal molds conforming to the requirements of ASTM C470 may be used for making control cylinders. Control cylinders shall be molded under the observation of the Engineer. Tests for compressive strengths shall be performed by or under the supervision of the Engineer.

The concrete strengths and time periods noted herein for removing formwork or forming for or placing concrete in superimposed elements shall not apply to the use of equipment or other live loads on the structure. Stockpiling materials or using unauthorized equipment on the structure will not be permitted until conformance to the requirements of Section 404.03 (m) has been attained.

Methods of form removal that will overstress the concrete shall not be used. Formwork and its supports shall not be removed without the approval of the Engineer. The Contractor shall ensure that proper curing as required by the Specifications is provided immediately after form removal.

For falsework requirements see Section 404.03 (b).

Section 404.03 (k) Curing Concrete is amended to replace the last sentence of the fourth paragraph with the following:

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

Curing shall be immediately resumed using insulated blankets or other approved methods that will retain or supply moisture and maintain the temperature at the outermost surfaces of the concrete mass above 10 degrees C for at least 72 hours immediately following concrete placement and above 5 degrees C for at least 48 additional hours.

And amended to replace the fifth paragraph with the following:

In the event the Contractor begins masonry concrete operations when the atmospheric temperature is below 5 degrees C in the shade, the method of cure and protection shall retain or supply moisture and maintain the temperature at the outermost surfaces of the concrete mass above 10 degrees C for at least 72 hours immediately following concrete placement and above 5 degrees C for at least 48 additional hours.

And to add the following:

Section 404.03 (k) 1. Bridge Deck Curing: Bridge deck concrete shall be moist cured with white polyethylene sheeting with or without the use of wet burlap. The concrete shall be maintained in a moist condition by fogging after screeding and until covered with the white polyethylene sheeting. The concrete surface shall stay wet under the white polyethylene sheeting until the end of the moist-curing period. The moist-curing period shall be for at least 7 days and until 70 percent concrete strength (f'_c) is achieved. The initial temperature of the outermost surfaces of the concrete mass shall be above 10 degrees C for at least 72 hours and above 5 degrees C until the completion of the moist-curing period. When the white polyethylene sheeting is removed, burlap (if used) shall be removed also. White pigmented curing compound shall be applied at the rate of 2.45 to 3.68 square meters per liter while the surface of the concrete deck is damp and free of standing water. Bridge deck overlay concrete shall be cured in accordance with the requirements of Section 412 of the Specifications.

Section 404.03 (l) 1. Weather is amended to replace the fourth paragraph with the following:

Protection shall be provided to prevent rapid drying of concrete as a result of low humidity, high wind, higher concrete temperatures than atmospheric temperatures, or combinations thereof. The Contractor shall perform evaporation rate testing for bridge deck placements and concrete overlays. Immediately after screeding and until the application of wet burlap and/or plastic sheeting, no surface of the freshly mixed concrete shall be allowed to dry. Fogging, with pressure sprayers acceptable to the Engineer and sufficient to maintain a moist surface, shall be required. The protective measures taken shall be sufficient to maintain an evaporation rate at or below 0.488 kg/m²/hr for normal concrete bridge deck placements or 0.244 kg/m²/hr for concrete overlays over the exposed surface of the concrete. Other preventative measures described in ACI 308 can also be used in addition to fogging. Evaporation retardant films may be applied in a fine mist immediately after screeding to ensure that the surface remains wet until covered. If such materials are used, there shall be no disturbance of the concrete surface after placement of the retardant film and such film shall not be intermixed with the surface mortar. If plastic shrinkage cracking occurs due to the Contractor's negligence or failure to follow specification requirements, the Engineer may direct the Contractor to make repairs by epoxy injections, concrete removal and replacement or other methods approved by the Engineer at no additional cost to the Department.

Section 404.05(b)—Filled Joints is amended to replace the first sentence of the first paragraph with the following:

Materials for filled joints shall conform to the requirements of Section 212 of the Specifications and shall be installed in accordance with the requirements of Section 316.04(m) of the Specifications.

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

Section 404.08—Measurement and Payment is amended to replace the second paragraph with the following:

The volume of bridge deck slab concrete allowed for payment will be computed using the actual thickness of the slab, not to exceed the plan thickness plus 13mm, for the area between faces of sidewalks, curb lines, railings or parapets. The area beneath sidewalks, curbs, railings, or parapets will be based on plan thickness. If prestressed concrete deck panel forms are used, the volume they displace will be computed using plan dimensions and the volume of the cast-in-place portion will be measured as provided herein.

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

**GUIDELINES - PROJECTS HAVING EXPANSION JOINTS CLEANED AND RESEALED.
EXCEPTIONS: NONE.**

SM404E0B-0801

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SEALING EXPANSION JOINTS

June 14, 2000

I. DESCRIPTION

This work shall consist of cleaning and sealing expansion joints in accordance with the contract documents and as directed by the Engineer.

II. MATERIALS

Expansion joint filler and sealer materials shall conform to the requirements of Section 212 of the Specifications.

III. PROCEDURES

Expansion joints shall be cleaned and shall be free of oil, grease, existing joint material or any other foreign material. Loose material shall be removed from the joint with oil-free compressed air delivered with not less than 3.5 cubic meters of air per minute and a nozzle pressure of not less than 620 kilopascals and not more than 1380 kilopascals.

The Contractor shall protect the edges of pavement adjacent to the joints to be cleaned.

The Contractor shall install joint filler and sealer materials in strict accordance with the manufacturer's written instructions.

Expansion joints shall be filled and sealed in accordance with the requirements of Section 404.05 of the Specifications. Joints to be filled shall be completely dry and the ambient air temperature shall be at least 7° C. The applied sealer and finished joint shall be free of entrapped air. Finished sealer shall conform to the lines and grades of existing pavement surfaces.

IV. MEASUREMENT AND PAYMENT

Clean and seal expansion joints will be measured in linear feet and will be paid for at the contract unit price per meter. This price shall be full compensation for cleaning joints, furnishing and installing joint filler, joint sealer, removal and disposal of debris, and for all material, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Clean and seal expansion joint	Meter

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



**GUIDELINES - WHEN REQUESTED BY THE DESIGNER:
EXCEPTIONS: NONE.**

SM407A0B-0299

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
METALLIZATION OF FERROUS METAL SURFACES

January 5, 1998

SECTION 407 STEEL STRUCTURES of the Specifications is amended as follows:

Section 407.01 Description is amended to include the following:

All non-stainless ferrous metal, unless galvanized or protected with other specified coatings, shall be metallized as specified herein.

Section 407.02 Materials is amended to include the following:

Wire material for metallizing shall be zinc, or 85/15 zinc/aluminum alloy as certified by the manufacturer. The materials shall conform to the following quantitative requirements:

Zinc:

Element	Content (%)
Iron (Fe)	0.0015% max.
Cadmium (Cd)	0.0015% max.
Lead (Pb)	0.003% max.
Copper (Cu)	0.004% max.
Zinc (Zn)	Balance

85/15 zinc/aluminum:

Element	Content (%)
Iron (Fe)	0.020% max.
Copper (Cu)	0.004% max.
Cadmium (Cd)	0.004% max.
Lead (Pb)	0.004% max.
Titanium (Ti)	0.002% max.
Aluminum (Al)	14.0%-16.0%
Zinc (Zn)	Remainder

The manufacturer shall furnish a Certificate of Analysis for each batch of material supplied. Each container or coil wrapping shall be properly labeled to identify component type, supplier, size, batch number and wire lot number.

The size of wire material shall be in accordance with the manufacturer's recommendations for the Flame or Arc Sprayed method. Powder material shall not be used.

All bolts, nuts, and washers shall be hot dipped galvanized, in accordance with ASTM A153.

Sealers and topcoats, if specified on the plans, shall be selected from one of the following systems:

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



Manufacturer	DFT, mils
Carboline:	
Rustbond Penetrating Sealer	1.0-2.0
or Rustbond LT	1.0-2.0
Carboline 133 HB topcoat	2.0-3.0
ICI Devco Coatings:	
Pre-Prime 167	0.5-1.5
Devthane 378 topcoat	2.0-3.0
Xymax:	
Monolock PP	1.5-2.5
Bridge Finish topcoat	1.0-2.0

Material as applied shall not exceed .42 kilograms per liter VOC.

Section 407.04 Fabrication Procedures is amended to include the following:

Surface preparation for, and application of, metallizing shall be performed in accordance with ANSI/AWS C2.18-93. Flame cut edges shall be ground to remove the carburized surface prior to blasting. Blasting or metallizing shall not be performed when the surface temperature of or metallizing shall not be performed when the surface temperature of the steel is less than -15 degrees C above the dew point as determined by a surface thermometer. Surfaces to be metallized shall be blast cleaned with a grit abrasive to provide a surface profile of 2.0-4.0 mils with an anchor tooth profile that is sharp, clean and free of embedded friable material with minimal peening effect. Steel shot and silica sand shall not be used. Surfaces shall be metallized within 8 hours after blasting. If flash rusting should occur prior to metallizing, the metal surface shall be reblasted. Surfaces shall be metallized to a thickness of at least 5 mils in accordance with the wire manufacturer's recommendation.

Before starting work, the Applicator shall apply the recommended thickness of the coating to a 50 millimeter X 1.423 meter X 1 millimeter steel coupon and bend it 180 degrees around a 13 millimeter mandrel to demonstrate the quality and adherence of the coating. Any disbonding or delamination of the coating which exposes the substrate shall require corrective action and additional testing before the metallizing process may continue.

If a sealer is specified, after metallization, bolted surfaces shall be masked off and all other surfaces shall be sealed within 8 hours of metallizing. Sealer and topcoat shall be applied in accordance with the manufacturer's recommendations with regard to application temperature and humidity.

All fully coated and cured assemblies shall be protected from handling and shipping damage with the prudent use of padded slings, dunnage, separators and tie downs. Loading procedures and sequences shall be designed to protect all coated surfaces. Any damaged areas shall be repaired in accordance with the manufacturer's recommendations. Where sealer and/or topcoating is specified, all bolts and areas that were not sealed or topcoated in the shop shall be prepared and sealed or topcoated after erection in accordance with the manufacturer's recommendations.

The Contractor shall provide the Engineer with documentation, which indicates that the applicator has performed successful metallizing work for the last three years.

Section 407.07 Measurement and Payment is amended to include the following:

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



No separate measurement and payment will be made for metallization of surfaces; therefore, the cost for all labor, materials, transportation, blasting, cleaning, metallizing, sealing and topcoating to the proper completion of the work shall be included in the lump sum price bid for structural steel.

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



**GUIDELINES— PROJECTS REQUIRING STEEL STRUCTURES.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM407B1B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
SECTION 407—STEEL STRUCTURES

September 20, 2006

SECTION 407—STEEL STRUCTURES of the Specifications is replaced with the following:

407.01—Description

This work shall consist of furnishing, fabricating, and erecting steel materials in accordance with these specifications and in conformity with the lines, grades, and dimensions shown on the plans or as established by the Engineer.

407.02—Materials

Materials shall conform to the requirements of Section 226 of the Specifications.

407.03—Working Drawings

The Contractor shall submit for review by the Engineer working drawings of all structural steel, bearing assemblies, and anchorage devices. Details shown on the drawings shall conform to these specifications and the requirements of the Structural Steel Design Section of AASHTO's *Standard Specifications for Highway Bridges*. In addition, primary stress units shall be detailed and identified by an individual piece mark. The review of working drawings shall not relieve the Contractor of responsibility for errors on the drawings or deviations from the plans unless such changes are approved in writing by the Engineer. Shop work shall not be performed until after the working drawings have been reviewed.

The Contractor may, in writing, authorize the fabricator to act for him in matters relating to working drawings in accordance with the requirements of Section 105.02 of the Specifications.

Working drawings shall specifically identify each piece other than steel conforming to the requirements of ASTM A 709, Grade 36. Pieces fabricated of different grades of steel shall not be given the same piece mark, even if they have identical dimensions and details.

407.04—Fabrication Procedures

Workmanship, finish, and fabrication tolerances shall conform to AISC standards except where the standards are in conflict with these specifications. Where AISC standards allow alternate methods of fabrication, the method used shall be that which produces the higher quality of workmanship and finish.

Structural steel shall be fabricated in a shop certified by AISC, Category SBR or CBR, with endorsements for fracture critical and/or painting as appropriate.

Fabrication and welding of structural steel bridge units shall conform to the requirements of these specifications and AASHTO/AWS Bridge Welding Code D1.5. Structural components designated in the contract documents as fracture-critical shall conform to the provisions of the AASHTO/AWS Bridge Welding Code D1.5, Section 12, Fracture Control Plan (FCP) for Non-redundant Members.

Fabrication and welding of other structural and miscellaneous steel shall conform to the requirements of these specifications and AWS Structural Welding Code D1.1.

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

The Contractor shall give the Engineer ample notice of the beginning of work in the shop so that an inspection can be made. Work shall not be performed in the shop before the Engineer has been notified.

Steels shall be identified during fabrication as follows: The Contractor shall furnish a complete mill analysis showing chemical and physical results from each heat of steel for all units prior to fabrication. Each piece of steel shall be properly identified.

Before cutting, pieces of steel other than steel conforming to the requirements of ASTM A709, Grade 36, that are to be cut to smaller-sized pieces shall be legibly marked with the ASTM A6 specification identification color code or the material specification designation. The identification color code of the latest system adopted under ASTM A6 shall be used to identify material.

Upon request, the Contractor shall furnish an affidavit certifying that he has maintained the identification of steel in accordance with these specifications throughout the fabrication operation.

- (a) **Welds:** Only welding or tack welding noted on the plans shall be performed on structural steel, reinforcing steel, or aluminum units.

Structural units shall not be used as a worktable. Welding on other work shall be completed before parts are installed on units and shall conform to the following:

1. Groove welds in flange plates, cover plates, and longitudinal stiffeners shall be ground flush. Groove welds in legs of rigid frames, webs of exterior girders, and beams shall be ground flush on the exposed side. Cope holes shall not be filled. The perimeter of cope holes shall be ground smooth. Temporary erection bolt holes shall be filled with high-strength bolts and tightened in accordance with the specifications herein.
2. Electroslag and electrogas welding processes will be permitted only when pre-approved in writing by the Engineer.
3. Welds that do not conform to the requirements of the specifications, as determined by visual inspection or nondestructive testing, shall be repaired or removed and replaced by the methods permitted in the specifications or the entire piece will be rejected. Repaired or replaced welds will be reinspected in accordance with the applicable nondestructive testing method.
4. For each welder, welding operator, or tacker, the Contractor shall submit or shall have the fabricator submit to the Engineer a copy of the certificate of qualification and a certificate stating that the welder, welding operator, or tacker has not exceeded any period of 3 months since the date of qualification without performing satisfactory welding in the required process. The qualification certification shall state the name of the welder, operator, or tacker; name and title of the person who conducted the examination; type of specimens; position of welds; results of tests; and date of the examination. The qualification certification shall be made by an approved agency.

Welds for reinforcing steel, including tack welds, shall conform to the requirements of AWS D1.4.

Welding of aluminum shall conform to the requirements of AWS D1.2.

Welds for tubular structures shall conform to the requirements of AWS D1.1.

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

(b) Straightening and Curving Rolled Beams and Plate Girders:

1. **Straightening material:** Rolled material shall be straight before being laid off or worked. When straightening is required, it shall be done by methods that will not damage the metal. If straightening is performed by heating, heating shall be performed in accordance with 2. herein.

Sharp kinks or bends shall be cause for rejection of the material.

2. **Curving rolled beams and plate girders:** The Contractor shall submit a detailed procedure for the method of heat curving beams or girders.

Heat shall be applied so as to bring the steel to the temperature required for heat curving as rapidly as possible but not to more than 650 degrees C. When any portion of a unit is heated to a temperature in excess of 650 degrees C, the unit will be rejected.

- a. **Sequence of operations:** Units shall be cambered before heat curving and shall be heat curved in the fabrication shop before painting.

Longitudinal stiffeners shall be heat curved or cut separately and then welded to the curved units. When cover plates are to be attached to the rolled beams, they may be attached before heat curving if the total thickness of one flange and cover plate is less than 65 millimeters and the radius of curvature is more than 300 meters. For other rolled beams with cover plates, beams shall be heat curved before cover plates are attached. Cover plates may be either heat curved or cut separately and then welded to the curved beam.

- b. **Camber compensation:** To compensate for the loss of camber of heat-curved units in service having a radius of 250 meters or less, additional camber shall be provided in the units. The amount of additional camber at the midlength of the unit shall be C_h for units having a radius less than 150 meters and $1/2 C_h$ for units having a radius from 150 meters to 250 meters. C_h shall be computed as follows:

$$C_h = \frac{0.02L^2F_y}{EY_o}$$

where:

L = the length, in millimeters, of the unit specified to be cambered

F_y = the specified minimum yield point of the flange in megapascals

E = the modulus of elasticity in megapascals

Y_o = the distance from the neutral axis to the extreme outer fiber in millimeters (maximum distance for nonsymmetrical sections).

The additional camber, C'_h , at any other point in the unit shall be computed as follows:

$$C'_h = \frac{C' \times C_h}{C}$$

where:

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



C = the camber specified at midlength in the design plans
 C' = the camber specified at any other point in the design plans.

The additional camber provided shall be shown on the working drawings.

- c. **Type of heating:** Where heat curving is permitted by the plans, plate girders and rolled beams may be curved by either continuous or V-type heating. Heat curving shall not be performed until camber conforms to the requirements of the specifications.
 - (1) **Continuous method:** A strip along the edge of the top and bottom flange shall be heated simultaneously. The strip shall be of sufficient width and temperature to obtain the required uniform curvature.
 - (2) **V-type method:** The top and bottom flanges shall be heated in truncated triangular or wedge-shaped areas having their base along the flange edge and spaced at regular intervals along each flange. Spacing and temperature shall be as required to obtain the required uniform curvature. Heating shall progress simultaneously along the outside surface of the top and bottom flange. When the flange thickness is 32 millimeter or greater, heat shall be applied simultaneously to the inside flange surface (surface that intersects with the web) and outside flange surface.
- d. **Position for heating:** The unit may be heat curved with the web in the vertical or horizontal position. When curved in the vertical position, the unit shall be braced or supported so that the tendency of the unit to deflect laterally during the heat-curving process will not cause the unit to overturn.

When curved in the horizontal position, the unit shall be properly supported to obtain a uniform curvature. The bending stress in the flanges attributable to the dead mass of the girder shall not exceed the allowable design stress. When the unit is positioned horizontally for heating, safety catch blocks shall be maintained at the midlength of the unit within 50 millimeters of the flanges at all times during the heating process.

Any method of handling, supporting, or loading that causes the unit to distort permanently (yield without the application of heat) will result in rejection of the unit.

- e. **Artificial cooling:** Quenching will not be permitted. Cooling with dry compressed air will be permitted after the steel has naturally cooled to 315 degrees C.
 - f. **Measurement of curvature:** Prior to final acceptance of horizontal curvature, welding and heating operations shall have been completed and the unit cooled to a uniform temperature.
- (c) **Camber:** Rolled beams and plate girders shall be cambered in the amount indicated on the plans. Camber shall approximate a parabolic curve. Camber for rolled beams shall be obtained by heat-cambering methods. For plate girders, the web shall be cut to the prescribed camber with a suitable allowance for shrinkage attributable to cutting, welding, and heat curving.

Tolerance for the specified camber of welded beams or girders before erection shall not exceed the greater of (A) or (B).

$$(A) +6\text{mm} \times \frac{\text{Meters of test length}}{3} \quad (\text{Not to exceed } 19\text{mm})$$

$$(B) +3\text{mm} \times \frac{\text{Meters from nearest end}}{3}$$

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



Tolerance for the specified camber of rolled beams as measured at midlength shall be:

$$+3\text{mm} \times \frac{\text{Meters of Length}}{3}$$

Camber shall be measured with the beam or girder laying on its side on a flat horizontal surface.

- (d) **Bolt Holes:** Bolt holes shall be punched, drilled, or reamed as specified herein. Holes shall not be flame cut or electrode cut.

Finished holes shall be 1.5 millimeters larger than the nominal bolt size. Oversized holes will be permitted only with the permission of the Engineer or in accordance with the requirements of Section 407.06(a) of the Specifications. Finished holes shall be within 1.5 millimeters of the plan gage and match-mating holes, with no offset greater than 1.5 millimeters. Holes varying more than 1.5 millimeters from the plan gage will be rejected.

Burrs shall be removed from holes.

1. **Punched holes:** The diameter of the die shall not exceed the diameter of the punch by more than 1.5 millimeters.

Holes shall not be punched in structural carbon steel conforming to the requirements of ASTM A 709, Grade 36, thicker than 19 millimeters, or in high-strength structural steel conforming to the requirements of ASTM A 709, Grade 50W, or higher, thicker than 16 millimeters. When these thicknesses are exceeded, holes shall be subdrilled and reamed or drilled full size.

Holes may be punched full size (1.5 millimeters larger than bolts) in secondary units or members and their connecting plates or angles. Holes shall be clean cut, without torn or ragged edges. Structural members identified in Section 407.04(k)1 of the Specifications or in the plans, special provisions, or other contract documents as main (primary) members or units shall not be punched full size.

Subpunched holes that are to be reamed shall be 5 millimeters smaller in diameter than the nominal bolt size. The location offset between subpunched holes assembled for reaming shall be not more than 3 millimeters.

2. **Reamed and drilled holes:** Holes shall be subdrilled and reamed to 1.5 millimeters larger than bolts. If numerically controlled drilling equipment is used, the Contractor may be required by means of check assemblies to demonstrate that this procedure consistently produces holes that conform to the dimensions shown on the plans. Connections shall conform to the requirements of this section. Shop assembly for numerically controlled drilled connections shall conform to the requirements of AASHTO's *Standard Specifications for Highway Bridges*.

- (e) **Cut Edges of Plates and Shapes:** Cut edges shall have their corners rounded to a radius of 1.5 millimeter.

Sheared edges of plates more than 16 millimeter in thickness shall be planed to a depth of 6 millimeter.

Structural steel may be flame cut provided a smooth surface free from cracks and notches is achieved and that an accurate profile is achieved by the use of a mechanical guide. Free-hand cutting shall be done only where approved by the Engineer.

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

Flame cutting in the field is prohibited.

- (f) **Facing of Bearing Surfaces:** The surface finish of bearing and base plates and other bearing surfaces that are to come in contact with each other or with concrete shall conform to the following surface roughness requirements as defined in ANSI B46.1:

	Roughness Height (millimeters)
Steel slabs	.0508
Heavy plates in contact in shoes to be welded	.0254
Milled ends of compression units, stiffeners, and fillers	.0127
Bridge rollers and rockers	.0064
Pins and pin holes	.0032
Sliding bearings	.0032

- (g) **Bent Plates:** The radius of bends shall be such that the plate does not crack. The minimum bend radii, measured to the concave face of the metal, shall be as follows:

Thickness (t) (millimeters)				
Up to 13mm	Over 13mm to 25mm	Over 25mm to 40mm	Over 40mm to 65mm	Over 65mm to 100mm
<i>2t</i>	<i>2 1/2t</i>	<i>3t</i>	<i>3 1/2t</i>	<i>4t</i>

Low-alloy steel more than 13 millimeters in thickness may require hot bending for small radii. If a shorter radius is essential, the plates shall be bent hot at a temperature of not more than 650 degrees C.

Before bending, the corners of the plate shall be rounded to a radius of 1.5 millimeters throughout the portion of the plate at which the bending is to occur.

- (h) **Annealing and Stress Relieving:** Structural units that are indicated on the plans, the specifications, or other contract documents to be annealed or normalized shall have finished machining, boring, and straightening done after heat treatment. Temperatures shall be maintained uniformly throughout the furnace during heating and cooling cycles so that the temperature of any two points on the unit will not differ at any time by more than 38 degrees C.

A record of each furnace charge shall identify the pieces in the charge and show the temperatures and schedule actually used. Proper instruments, including recording pyrometers, shall be provided for determining the temperature of units in the furnace at any time. The records of the treatment operation shall be available for inspection by the Engineer.

- (i) **Pins and Rollers:** Pins and rollers shall be forged or fabricated of cold-finished carbon steel shafting. In pins larger than 230 millimeters in diameter, a hole at least 50 millimeters in diameter shall be bored full length along the axis. Threads for pins shall conform to the American National Coarse Thread Series, Class 2, free fit, except that pin ends having a diameter of 35 millimeters or more shall be threaded six threads to the millimeter.

Pinholes shall be bored at right angles with the axis of the unit. Boring holes in fabricated units shall be performed after welding is completed. The diameter of the pinhole shall not exceed that of the pin by more than 0.5 millimeters for pins 125 millimeter or less in diameter or by 1 millimeter for larger pins.

- (j) **Stud Shear Connectors:** The diameter of the connectors shall be 22 millimeters, and the length shall be at least 100 millimeters. Heads shall project at least 50 millimeters above the plane of the bottom of the deck slab and shall be 75 millimeters below the plane of the top of the deck slab. In determining the required length, the computed dead-load deflection, vertical curve

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



correction, and actual (measured) camber of the fabricated beam shall be taken into consideration. Studs 19 millimeters in diameter may be substituted for 22-millimeter studs, or vice versa, by making an adjustment in the pitch proportionally to the cross-sectional area of the studs with a spacing of not more than 600 millimeters. Studs shall be adjusted as necessary to provide clearance for bolts in bolted splices. When prestressed deck panels for cast-in-place concrete deck slabs are to be used, the edge distance of studs shall be adjusted to provide the necessary support areas for ends of the deck panels. Studs shall be end welded automatically or semi-automatically to the steel beams. The method and equipment used shall be as recommended by the manufacturer of the studs and shall be approved by the Engineer. Studs shall be field welded after structural steel is erected and metal decking or other walking or working surface is in place; however, structural steel with shop-applied studs may be erected provided erection is performed in accordance with the requirements of Section 110.05 of the Specifications.

(k) **Shop Assembly:** Assembly shall be in accordance with the following:

1. **Holes for field connections and field splices** in the following main units shall be drilled with units assembled or numerically controlled drilled. Holes shall not be punched full size in the following main units or their connecting plates and angles:
 - a. Girders and rolled beams.
 - b. Trusses, arches, and towers.
 - c. Bent and rigid frames.
 - d. Diaphragms, crossframes, or bracing attached to straight steel box girders or attached to curved rolled beams, curved I girders, or curved steel box girders.
 - e. Any member designated on the plans or in other contract documents as "fracture critical."
 - f. Any other main (primary) member(s) or unit(s) identified as such in the plans, special provisions, or other contract documents.
2. **Holes for floor-beam and stringer-end connections** shall be subpunched or subdrilled and reamed to a template or reamed while assembled. Templates used for connections on like parts shall be located so that the parts are identical and require no match marking.
3. **Surfaces of metal in contact** shall be cleaned before assembly. Parts shall be drawn together and securely clamped before drilling or reaming. Units shall be free from twists, bends, or other deformation.
4. **Drift pins** may be used only to bring parts into position. If any holes must be enlarged to admit bolts, the hole shall be reamed as permitted in these specifications.
5. **Connecting parts assembled in the shop** for the purpose of reaming holes shall be match marked. Miscellaneous parts that are not completely bolted in the shop shall be secured by partial bolting to prevent loss or damage in shipment and handling.

(l) **Inspection:** The Contractor shall perform quality control inspection, including, but not limited to, visual inspection and nondestructive testing. Visual inspection shall be performed in accordance with the requirements of VTM-33 by inspectors qualified in accordance with the requirements of ANSI/AASHTO/AWS Bridge Welding Code D1.5 or AWS Structural Welding Code D1.1, as applicable. Radiographic and magnetic particle testing shall be performed in accordance with the requirements of VTM-29 and VTM-31, respectively. Ultrasonic testing, when specified, shall be

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

performed in accordance with the requirements of VTM-30. Railroad structures and fracture-critical units shall be given radiographic and ultrasonic inspections in accordance with the requirements of VTM-44.

The Engineer reserves the right to perform quality assurance inspection. The Contractor shall provide and furnish a Type III field office in accordance with the requirements of Section 514 of the Specifications for use in the Engineer's inspection of material and workmanship within the shop. In addition to the requirements specified therein, the Contractor shall provide telephone service by a direct access line, a telephone, and maintenance thereof. Costs for installation of the direct access line, the telephone, maintenance, and local service shall be borne by the Contractor. The cost for long-distance will be borne by the Department. The Engineer shall be allowed free access to the necessary parts of the work. One reinspection of corrective action taken on defective material or fabrication will be performed by the Department without cost to the Contractor; the cost of further reinspections shall be borne by the Contractor. The cost of any retests made necessary by the replacement of rejected welds shall be borne by the Contractor. When requested, the Contractor shall provide working space for radiographic examination of welds and shall make such space available for at least 6 hours per inspection visit.

407.05—Handling, Storing, and Shipping Materials

Materials and units shall be placed at least 100 millimeters above the ground on platforms, skids, or other supports. They shall be supported in such a manner that they will not be overstressed or become deformed or otherwise damaged. High-strength bolts, nuts, and washers shall be stored in identifiable original containers in protective storage subject to the approval of the Engineer. Materials shall be kept free from dirt, grease, and other foreign materials; protected from corrosion; and properly drained.

- (a) **Material Furnished by Others:** If the Contract is for erection only, the Contractor shall check the material delivered against the shipping lists and report promptly in writing any shortage or damage. The Contractor shall be responsible for the loss of any material in his care or for any damage incurred after the shipment is received.
- (b) **Marking and Shipping:** Each unit shall be identified with an erection mark, and an erection diagram shall be furnished.

The Contractor shall furnish as many copies of shipping statements and erection diagrams as the Engineer may require. The mass of each unit shall be shown on the statements. Units having a mass more than 3 metric tons shall have the mass marked thereon. Structural units shall be loaded on trucks or cars in such a manner that they may be transported and unloaded at their destination without being excessively stressed, deformed, or damaged. Main structural units shall be supported at their bearings or at such other supports as may be approved or directed by the Engineer.

Bolts of one length and diameter and loose nuts or washers of each size shall be packed separately. Pins; small parts; and packages of bolts, washers, and nuts shall be shipped in boxes, crates, kegs, or barrels. A list and description of the contained material shall be plainly marked on the outside of each shipping container.

407.06—Erection Procedures

If the Contract is for erection only, the Contractor will receive the materials entering into the finished structure, free of charges, at the place designated and loaded or unloaded as specified. The Contractor shall promptly unload material he is required to unload and shall be responsible for demurrage charges.

Before starting the work of erection, the Contractor shall fully inform the Engineer as to the method proposed to be followed and the amount and character of equipment to be used, which shall be subject

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

to approval. No work shall be done until such approval has been obtained. The approval of the Engineer shall not relieve the Contractor of the responsibility for ensuring the safety of his methods or equipment or performing the work in accordance with the plans and these specifications.

When new steel beams are connected to existing steel beams, the Contractor shall temporarily connect the diaphragms to the beams, in a manner to allow for the deflection of the new beams after placement of the deck slab concrete. After the deck slab concrete has cured, the Contractor shall connect the diaphragms as shown on the plans.

The Contractor shall erect steel, remove temporary construction, and perform all work required to complete the structure(s) or specified in the Contract, including removing the old structure(s), if specified, in accordance with the requirements of the plans and the specifications.

- (a) **Field Welding:** When erection includes field welding, field welding and inspection shall be performed in accordance with the requirements of Section 407.04 of the Specifications.
- (b) **Misfits Field Assembly:** Correction of misfits will be considered a legitimate part of erection provided corrective work is necessary on not more than 10 percent of the holes in a continuous group of 10 or more holes or 10-percent of the number of individual pieces with fewer than 10 holes.

Drift pins may be used only to bring parts into position. Misaligned holes shall be corrected, where allowed by the Engineer, by reaming. However, no hole shall be elongated in any separate part to more than 3 millimeters larger than the nominal bolt size when a reamer not more than 1.5 millimeters larger than the nominal bolt size is used. The misalignment of holes before reaming shall not be more than 3 millimeters.

Necessary work exceeding these figures will be considered caused by shop errors and will be reported to the responsible party. Damage resulting from handling or transportation shall be reported to the Engineer.

When the Contract provides for complete fabrication and erection, the Contractor shall be responsible for misfits and errors and shall make the necessary corrections or replacements. When the Contract is for erection only, the Engineer, with the cooperation of the Contractor, will keep a record of labor and material used and the Contractor shall render within 30 days an itemized bill approved by the Engineer.

- (c) **Assembly of Structural Connections Using High-Strength Bolts:** Field connections shall be made with high-strength bolts 22 millimeters in diameter fabricated in accordance with ASTM A 325 unless otherwise specified. Consideration will be given to the substitution of adequately designed welded connections if requested in writing by the Contractor.
 - 1. **Bolts, nuts, and washers:** Bolts, nuts, and washers shall conform to the requirements of Section 226 of the Specifications and shall each be from one manufacturer on any one structure unless otherwise approved by the Engineer. In addition, each bolt, nut, and washer combination, when installed, shall be from the same rotational-capacity lot. Prior to installation, the Contractor shall perform a field rotational-capacity test on two nut, bolt, and washer assemblies for each diameter and length in accordance with the requirements of Section 226.02(h)3 of the Specifications. Bolts fabricated in accordance with ASTM A 490 and galvanized bolts fabricated in accordance with ASTM A 325 shall not be reused. Retightening previously tightened bolts, which may have been loosened by the tightening of adjacent bolts, shall not be considered a reuse. Other bolts may be reused only if approved by the Engineer. Threads of plain (uncoated) bolts shall be oily to the touch when installed. Galvanized nuts shall be lubricated containing a visible dye. Threads of weathered or rusted bolts shall be cleaned of loose rust and debris and relubricated. Lubricant shall be as recommended by the fastener manufacturer.

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

- 2. **Bolted parts:** Bolted parts shall fit solidly together when assembled and shall not be separated by gaskets or any other interposed compressible material.

Before assembly, connecting surfaces, including areas adjacent to the washers, shall be free from scale except tight mill scale and shall be free of burrs, dirt, and other foreign material that would prevent solid seating of the parts. Surfaces for bolted splices in main units fabricated from weathering steel and joint surfaces for other connections, when required on the plans, shall be blast cleaned in accordance with the requirements of Section 411.04(a)5 of the Specifications. The minimum area to be blast cleaned shall be 300 millimeters beyond the outermost row of bolts in the flanges and web and shall include the entire contact surfaces of the splice plates and filler plates. Contact surfaces shall be free from dirt, loose scale, burrs, oil, lacquer, and rust inhibitor.

- 3. **Installation:** Only as many fasteners as are anticipated to be installed and tightened during a work shift shall be taken from protected storage. Fasteners not used shall be returned to protected storage at the end of the shift. Bolts shall be installed with a hardened washer under the nut or bolt head, whichever is the element turned in tightening.

When bolts fabricated in accordance with ASTM A 490 are used with steel having yield points less than 275 megapascals, hardened washers shall be installed under the nut and bolt head.

An approved tension-indicating device shall be at all job sites where high-strength fasteners are being installed and tightened. Bolt tensioning devices and complete bolt assemblies shall be tested with this device at the start of construction and as required for the installation procedure. The calibrating device shall be capable of indicating actual bolt tension within a tolerance of 2 percent. The manufacturer or an approved testing agency shall have checked the device for the accuracy specified herein within the previous 12 months. When turn-of-nut or direct tension indicators are used, a representative sample of at least three complete bolt assemblies of each diameter, length, and grade shall be tested. For short grip bolts, direct tension indicators with solid plates may be used to perform the required testing. However, the direct tension indicator shall be checked with a longer grip bolt in the approved tension-indicating device prior to testing with short grip bolts.

A flat washer may be used when the surface adjacent to the bolt head or nut does not have a slope of more than 1:20 with respect to a plane normal to the bolt axis. Where an outer face of the bolted parts has a slope of more than 1:20 with respect to a plane normal to the bolt axis, a smooth beveled washer shall be used to compensate for the lack of parallelism. The threaded ends of bolts shall be placed on the inside, where practicable, for protection from weather.

The length of bolts shall be such that the point of the bolt will be flush with or outside the face of the nut when completely installed without overtensioning the bolt.

Fasteners shall be tightened to provide, when all fasteners in the connection are tight, at least the minimum bolt tensions shown in Table IV-3 for the size of the fastener used. Tightening shall be performed by the turn-of-nut method or by the use of a direct tension indicator using a load indicator washer. Power wrenches, if used, shall be of adequate capacity and sufficiently supplied with air to perform the required tightening of each bolt in approximately 10 seconds.

**TABLE IV-3
Bolt Tension**

Required Min. Bolt Tension (kN)

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



Bolt Size	ASTM A 325 Bolts	ASTM A 490 Bolts
13mm	53	67
16mm	85	107
19mm	125	156
22mm	173	218
25mm	227	285
28mm	249	356
32mm	316	454
35mm	378	538
40mm	458	658

If required because of bolt-entering and wrench-operation clearances, tightening by either procedure may be done by turning the bolt while the nut is prevented from rotating provided both the head and nut bear against surfaces having slopes not greater than 1:20.

The required minimum bolt tension is equal to 70 percent of specified minimum tensile strengths of bolts rounded to the nearest kip as specified in ASTM A 325 and ASTM A 490.

Snug tight is defined as the tightness attained when a power wrench begins to impact solidly or when the bolts are firmly hand tightened with a spud wrench such that the complete area of the connecting surfaces are brought into firm contact with each other. Snug tightening shall progress systematically from the most rigid part of the connection to the free edges, and then the bolts of the connection shall be retightened in a similar systematic manner as necessary until all bolts are simultaneously snug tight and the connection is fully compacted.

- a. **Turn-of-nut tightening:** When the turn-of-nut method for tightening high-strength bolts is used, bolts shall be installed in all holes and tightened to a snug tight condition to ensure that all parts of the joint are brought into contact with each other. Bolts shall be given a suitable match-mark and tightened additionally by the applicable amount of nut rotation specified in Table IV-4, progressing systematically from the most rigid part of the joint to its free edges. During this operation, there shall be no rotation of the part not turned by the wrench. Nut rotation is relative to bolt, regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn and less, the tolerance is minus 0 plus 30 degrees; for bolts installed by 2/3 turn and more, the tolerance is minus 0 plus 45 degrees.

**TABLE IV-4
Nut Rotation From Snug Tight Condition**

Bolt Length Measured From Underside of Head to Extreme End of Point	Disposition of Outer Faces of Bolted Parts		
	Both Faces Normal to Bolt axis	One Face Normal to Bolt Axis and Other Face Sloped to More Than 1:20 (Bevel Washer Not Used)	Both Faces Sloped Not More Than 1:20 From Normal to Bolt Axis (Bevel Washers Not Used)
Up to and including 4 diameters	1/3 turn	1/2 turn	2/3 turn
More than 4 but not more than 8 diameters	1/2 turn	2/3 turn	5/6 turn
More than 8 but not more than 12 diameters	2/3 turn	5/6 turn	1 turn

- b. **Direct tension indicators:** When direct tension indicators are used, installation shall be in accordance with the requirements of Section 407.06(b)3 of the Specifications. However, the indicator washer shall not be considered a substitute for the required hardened washer under the turned element but may be considered a substitute for the

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



hardened washer required under the unturned element when bolts conforming to the requirements of ASTM A 490 are used with steel conforming to the requirements of ASTM A 709, Grade 36. Direct tension-indicator washers shall not be painted or coated with any epoxy or similar material prior to installation. The normal installation shall consist of the load indicator being placed under the unturned bolt head or unturned nut. However, if conditions required installation under the turned bolt portion, a hardened flat washer or nut face washer shall be fitted against the tension-indicating protrusions. Tension-indicating washers shall not be substituted for the hardened washers required with short-slotted or oversized holes but may be used in conjunction with them.

The initial installation shall be to a snug tight condition, after which final tightening shall be performed by progressing systematically from the most rigid part of the connection to its free edges until the tension indicators on all bolts are closed to at least the required gap.

The required gap shall be 0.4 millimeters or less between the indicator and the underside of the bolt head or nut when no washer is used with the indicator. If a hardened flat washer is incorporated, the required gap shall be 0.25 millimeters or less between the indicator and the hardened flat washer. If the indication gap is closed completely, additional tightening shall not be continued.

4. **Inspection:** The Engineer will observe the installation and tightening of bolts to determine that the selected tightening procedure is properly used and will determine that all bolts are tightened.

The Contractor in the presence of the Engineer shall use an inspection wrench to inspect the tightening of bolts. No fewer than three typical bolts from the lot to be installed having a length representative of bolts used in the structure shall be placed individually in a calibration device capable of indicating bolt tension at least once each working day. There shall be a washer under the part turned in tightening each bolt if washers are so used on the structure. If no washer is used, the material abutting the part turned shall be of the same specification as that used on the structure.

When the inspection wrench is a torque wrench, each calibration test bolt shall be tightened in the calibration device to the minimum tension specified for its size in Table IV-3. The inspection wrench shall then be applied to the tightened bolt, and the torque necessary to turn the nut or bolt head 5 degrees (approximately 25 millimeters at 300-millimeter radius) in the tightening direction shall be determined. The average torque measured in the tests of three bolts shall be taken as the job-inspection torque. The torque wrench shall be a dial torque wrench and checked for accuracy within 1 year by the manufacturer or an approved testing agency.

When the inspection wrench is a power wrench, it shall be adjusted so that it will tighten each calibration test bolt to a tension of at least 5 but not more than 10 percent greater than the minimum tension specified for its size in Table IV-3. This setting of the wrench shall be taken as the job-inspection torque.

Bolts that have been tightened in the structure shall be inspected in the presence of the Engineer by applying, in the tightening direction, the inspection wrench and its job-inspection torque to 10 percent of the bolts but not fewer than two bolts selected at random in each connection. If no nut or bolt head is turned by this application of the job-inspection torque, the connection will be accepted as properly tightened. If any nut or bolt head is turned by the application of the job-inspection torque, this torque shall be applied to all bolts in the connection. Bolts whose nut or head is turned by the job-inspection torque shall be tightened and reinspected or all the bolts in the connection may be retightened and the connection resubmitted for the specified inspection.

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

Inspection of installations using tension-indicating washers will normally be accomplished by checking the residual gap with a metal feeler gage. Installations will be considered satisfactory if the average gap per bolt installation does not exceed 0.4-millimeter for a tension-indicating washer installed under the bolt head or 0.25-millimeter for a tension-indicating washer installed in conjunction with a hardened, flat washer or if the gap has been reduced to zero at any point around the indicator.

The Engineer may verify by calibrated torque wrench that the work conforms to the requirements of Table IV-3 regardless of the method of installation.

- (d) **Abutting Joints:** Abutting joints in compression units and in tension units where so shown on the plans shall be faced and brought to an even bearing. Where joints are not faced, the opening shall be not more than 10 millimeters.
- (e) **Alignment at Bearings and Transverse Connections:** Beam ends, bearing stiffeners, and webs of girders and rolled structural shapes and other beam sections shall be vertical.

Diaphragms or cross struts composed of channel sections not attached to bearing stiffeners may be fitted with the planes of their webs perpendicular to the planes of the flanges of longitudinal beams on gradients provided the channel flanges are turned to the downgrade side where practicable.

Rolled beams and plate girders and their bearing assemblies shall be fabricated so that their bottom bearing surfaces lie in horizontal planes when in their erected positions. Steel plates for use with flexible bearing pads shall be beveled to conform to this requirement.

- (f) **Falsework:** Falsework shall be designed, constructed, and maintained for the loads that will rest upon it. The Contractor shall prepare and submit to the Engineer, for review, plans for falsework or for changes in an existing structure necessary for maintaining traffic. The Department's review of the Contractor's plans shall not relieve him of any responsibility.

The Contractor shall have a Professional Engineer holding a valid license to practice engineering in the Commonwealth of Virginia inspect the completed falsework assembly supporting a bridge superstructure prior to placing loads. The Professional Engineer shall provide a certification based upon visual inspection of the completed falsework assembly that the falsework assembly conforms to the approved working drawings. However, such certification shall not require an exhaustive inspection or testing or make the Professional Engineer liable for any deficiencies in workmanship or materials by the Contractor or for such conditions that cannot be ascertained from a visual inspection.

- (g) **Straightening Material in the Field:** Straightening plates and angles or other shapes shall be done by methods that will not produce fracture or damage. Metal shall not be heated unless permitted by the Engineer, in which case the heating shall not exceed 650 degrees C as measured by temperature-indicating crayons or other approved means. After heating, the metal shall be cooled naturally.

Following straightening of the shape, the surface of the metal shall be carefully inspected for evidence of fracture. If the damage was caused by the Contractor, the cost of inspection shall be borne by the Contractor.

- (h) **Assembling Steel:** Bearing surfaces that will be a permanent contact shall be cleaned before units are assembled.

Permanent bolts in splices of butt joints of compression units and permanent bolts in railings shall not be tightened until blocking and falsework have been removed. Immediately after

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

erection, splices and field connections shall have at least one-half of the holes filled with bolts or cylindrical erection pins, of which one-half shall be bolts. Splices and connections carrying traffic during erection shall have holes filled with high-strength bolts that have been torqued prior to opening to traffic.

Erection bolts shall be of the same nominal diameter as the high-strength bolts, and cylindrical erection pins shall be 0.8 millimeter larger.

- (i) **Finishing:** Unpainted weathering steel units shall be abrasive blast cleaned in the shop after fabrication. Abrasive blast cleaning shall conform to the requirements of SSPC-SP6/NACE No. 3, Commercial Blast Cleaning. Upon completion of erection and concrete work, the fascia of exterior beams and girders of unpainted weathering steel shall be cleaned in accordance with the requirements of Section 411.04(a)3 of the Specifications.

Wherever a depressed area is formed whereby water can be trapped or held, such as the juncture between a beam or girder web and splice plate on a bottom flange, the area shall be completely sealed with polyurethane, or other approved sealant, conforming to the requirements of FS TT-S-00230C, Type II, Class A, prior to painting. When the sealant is used in conjunction with weathering steel, the sealant shall be integrally pigmented to a dark bronze color.

Weathering steel shall be cleaned and painted in accordance with the requirements of Section 411 of the Specifications.

- (j) **Protective Coatings:** Non-stainless ferrous metal surfaces shall be cleaned and painted in accordance with the requirements of Section 411 of the Specifications. Galvanizing shall conform to the requirements of Section 233 of the Specifications.

When new steel beams are connected to existing steel beams, the Contractor shall temporarily connect the diaphragms to the beams in a manner to allow for the deflection of the new beams after placement of the deck slab concrete. After the deck slab concrete has cured, the Contractor shall connect the diaphragms as shown on the plans

407.07—Measurement and Payment

Structural steel, including beams, girders, and miscellaneous steel, will be paid for at the contract lump sum price or, when specified, in pounds of metal in the fabricated structure, including bolts shipped, as mass determined on a shop scale. However, any mass more than 1.5 percent above the computed mass for the entire structure will not be included for payment. The mass of erection bolts, field paint, boxes, crates, and other containers used for packing and materials used for supporting units during transport will not be included.

In contracts having a pay item for structural steel, structural steel components, including shear connectors, bearing plates, bearing assemblies and pads, anchorages, expansion joints, bolts, and pedestals, whether embedded in concrete or not, and other metals or materials shall be included in the price for structural steel unless paid for as a separate pay item(s). Prices for structural steel shall include furnishing, fabricating, galvanizing, transporting, erecting, and field painting.

If specified in the Contract or permitted by the Engineer, mass may be computed, in which case the computations shall be on the following basis:

- (a) The unit mass of metal shall be as follows:

	Kg/m³
Aluminum, cast or wrought	2771.0
Brass	8586.0
Bronze, cast	8586.0

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



Copper alloy	8586.0
Copper, sheet	8938.0
Iron, cast	7128.0
Iron, malleable	7529.0
Iron, wrought	7801.0
Lead, sheet	11325.0
Steel, cast, copper-bearing, carbon, silicon, nickel, and stainless	7849.0
Zinc	7208.0

- (b) The mass of rolled shapes and plates up to and including 1 meter in width shall be computed on the basis of their nominal mass and dimensions as shown on the approved working drawings, deducting for copes, cuts, and open holes except bolt holes.

The allowed percentage of overrun in mass specified in AASHTO M 160 shall be added to the nominal mass of plates more than 1 meter in width.

- (c) The mass of high-strength bolt heads, nuts, and washers shall be included on the basis of the following:

Diameter (mm)	Mass Per 100 (kg)
13	8
16	14
19	24
22	35
25	50
28	69
32	93

The mass of high-strength bolts includes the head, the nut, the projection of the bolt through the nut, and one flat washer per bolt.

- (d) The mass of castings shall be computed from the dimensions shown on the approved working drawings, deducting for open holes. To this mass shall be added 10 percent for fillets and overrun.
- (e) As an allowance for shop paint, 0.4 percent shall be added to the total computed mass of metal.
- (f) The mass of metal railing shall be included unless it is a pay item.
- (g) Steel grid flooring will be measured and paid for in accordance with the requirements of Section 409 of the Specifications.
- (h) The mass of steel or brass shims required shall be included.

Fabrication of structural steel, when a pay item, shall include fabricating; cleaning and shop painting structural units; bolts; nuts; washers; and transporting and storing units at the designated location.

Erection of structural steel, when a pay item, shall include equipment and incidentals required to transport units from their designated storage location to the erection site, unloading and storing, erecting, cleaning, and field painting.

The cost of testing unit(s) required by the specifications shall be included in the price for the structural unit(s).

Payment will be made under:

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



Pay Item

Pay Unit

Structural steel (Type)
Fabrication of structural steel (Type)
Erection of structural steel (Type)

Lump sum or kilogram
Lump sum
Lump sum

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



**GUIDELINES - PROJECTS HAVING TOOTH EXPANSION JOINTS:
EXCEPTIONS: NONE**

SM407C0B-0197

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
TOOTH EXPANSION JOINT**

August 1, 1991
Reissued January 1, 1997

I. DESCRIPTION

This work shall consist of furnishing and installing tooth expansion joints in accordance with these specifications and in reasonably close conformity with the lines, grades and locations shown on the plans or established by the Engineer.

II. MATERIALS

Materials shall conform to the requirements of Sections 212 and 226 of the Specifications.

III. PROCEDURES

Working drawings showing complete details and dimensions of the tooth expansion joint and other pertinent information, shall be submitted to the Engineer for review in accordance with Section 105.02 of the Specifications.

Fabrication shall conform to the requirements of Section 407.

Tooth expansion joints shall seal the deck surface, gutters, curbs, and parapets to prevent water and other contaminants from seeping onto the substructure.

Final sealing of the finished joint shall be completed as soon as practicable after installation.

Surfaces exposed to roadway traffic shall have antiskid provisions.

IV. MEASUREMENT AND PAYMENT

Tooth expansion joint will be paid for in meters measured along the pavement surface from out to out of the deck slab, complete-in-place for the tooth thickness specified.

Payment shall be full compensation for furnishing and installing tooth expansion joint and all necessary components and anchoring devices and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Tooth Expansion Joint (Tooth thickness)	Meter

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



**GUIDELINES— PROJECTS REQUIRING BRIDGE RAILING,
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM410A0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
SECTION 410—RAILINGS AND PARAPETS

June 14, 2006

SECTION 410—RAILINGS AND PARAPETS of the Specifications is amended as follows:

Section 410.01—Description is replaced with the following:

This work shall consist of furnishing and installing railings, bridge median barriers, and concrete parapets true to the line, grade, and dimensions shown on the plans or as established by the Engineer.

Section 410.02—Materials is amended to add following:

- (f) **Anchor bolts** shall conform to the requirements of Section 226.02(c) of the Specifications.
- (g) **Grounding materials** shall conform to the requirements of Section 238 of the Specifications.

Section 410.03(b)—Metal Railings is amended to replace the fourth paragraph with the following:

Abutment ends of metal railings and metal parapets shall be grounded. Grounding conductor shall be bare or insulated (green) copper. Grounding electrode(s) shall be installed in accordance with the requirements of Section 700 of the Specifications and shall conform to the requirements of the NEC. All sections of metal railings, movable joints of metal railings, metal parapets, and the gaps in the metal railings created by the concrete pole supports or other design modifications shall be bonded internally to maintain continuity. Grounding conductors shall pass through bridge parapets and backwalls in 25-millimeter conduit or raceway to a point 100 millimeters to 200 millimeters below the finished grade and attached to a grounding electrode(s) with a minimum of 2.45 meters contact with soil. Each run of grounding conductor shall be provided with a 100 millimeter exposed loop at expansion joints and at termination points. Each metal rail section adjacent to the next metal railing shall be tested for continuity to ensure system grounding. The Contractor shall test the grounding electrode(s) after installation using the Fall of Potential (three point measurement) method. All testing shall be documented and submitted to the Engineer.

Section 410.04—Measurement and Payment is amended as follows:

The first paragraph is amended to replace the last sentence with the following:

This price shall include furnishing rails, rail posts, post bearing pads, anchor assemblies, and sleeves; furnishing and installing grounding materials; painting; galvanizing; reinforcing steel necessary; and concrete where applicable.

The second paragraph is amended to replace the last sentence with the following:

This price shall include furnishing and installing materials designated above the bridge deck surface, including anchorage material, reinforcing steel, and junction boxes, conduits and or raceways used for rail grounding.

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



**GUIDELINES— PROJECTS HAVING STEEL TO BE PAINTED,
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM411A6B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
SECTION 411—PROTECTIVE COATING OF METAL IN STRUCTURES

August 8, 2006

SECTION 411—PROTECTIVE COATING OF METAL IN STRUCTURES is replaced with the following:

411.01—Description

This work shall consist of preparing and coating ferrous metal surfaces on new and existing structures, including, but not limited to, main units, diaphragms, bearing assemblies, shop and field contact surfaces, surfaces in contact with concrete, parts designed to be embedded in concrete, rails, expansion joints, drainage systems, utility lines, and attachments in accordance with these specifications.

Classification of Structures: Existing structures will be classified on the plans by the Department as follows:

Type A: Structures that have no coatings or that have coatings that do not contain hazardous materials.

Type B: Structures that have coatings that may generate hazardous wastes.

Should the structure require application of a coating and no classification is specified in the contract documents, the Contractor shall bid Type B.

Galvanized surfaces and surfaces protected with other coatings shall not be coated unless otherwise specified. Cast, ductile, and nodular iron castings need not be coated. Application procedures not specified herein shall be as specified by the manufacturer and approved by the Engineer.

411.02—Materials

- (a) **Coating** shall conform to the requirements of Section 231 of the Specifications.
- (b) **Water used in cleaning operations** shall be potable. Recycled water shall be filtered prior to reuse. Recycled water shall be used only on the bridge from which it was generated and shall be subsequently tested in accordance with the requirements of Section 411.04(a) of the Specifications and disposed of.
- (c) **Abrasives used in cleaning operations** shall be one of the following categories:
 1. **Expendable** abrasives shall conform to the requirements of SSPC-AB 1, Type I or Type II, Class A, except that silica and quartz sands will not be allowed. The abrasive shall not contain total levels of any of the heavy metals listed in 40 CFR 261.24, Table 1, in excess of 20 times the specified regulatory leachable limits. The abrasive shall be selected from the Department's approved products list.
 2. **Recyclable** abrasives, newly manufactured or re-manufactured steel, shall conform to the requirements of SSPC-AB 3. Recycled abrasive shall be examined by the Contractor

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

for oil contamination prior to start up and at least once per 8-hour shift in accordance with the requirements of VTM-82. Recycled abrasive shall not contain non-abrasive residue in excess of the requirements of SSPC-AB 2.

411.03—Certifications

- (a) **SSPC QP-1 Certification:** the Contractor shall be certified to perform coating operations on all new and existing steel structures, Types A and B. Prior to performing coating applications, the Contractor shall submit proof of certification complying with the criteria of SSPC QP-1, Standard Procedure for Evaluating Qualifications of Painting Contractors, Field Applications in Complex Structures. This certification requirement will be waived for structural steel repairs and the replacement of structural components including, but not limited to, diaphragms, bearing assemblies, cross frames, stiffeners, connector plates, and beam repairs provided such work is performed in accordance with all applicable OSHA and environmental requirements for the type and scope of work specified.
- (b) **Certified Industrial Hygienist (CIH) or SSPC QP-** If the project work involves the removal of greater than 9 square meters of coating from a Type B structure, the Contractor shall maintain an SSPC QP-2 certification and assign an SSPC QP-2 Supervisor/Competent Person to oversee activities to protect the environment throughout the project. Alternatively, the Contractor may employ a Certified Industrial Hygienist currently certified by the American Board of Industrial Hygiene to perform the aforementioned oversight activities. The environmental plan described in Section 411.08 of the Specifications shall be prepared by the SSPC QP-2-certified organization or approved by a CIH. The SSPC QP-2 Supervisor/Competent Person or CIH shall be present during startup, surface preparations, removal operations, and waste removal/disposal activities to ensure environmental protection. The SSPC QP-2 Supervisor/Competent Person or CIH shall submit written certification at the completion of the project that the plan fully complied with all applicable regulations and was fully implemented.
- (c) **Professional Engineer:** If the project involves the erection of any containment structure with the bridge serving as the primary means of support, the Contractor shall describe such system as specified in Section 411.08(a) of the Specifications and provide certification by a Professional Engineer, licensed in the Commonwealth of Virginia. This requirement will be waived for any containment structure with a total mass-bearing capacity of less than 454 kilograms.

411.04—General Surface Preparation and Application Standards

Prior to being coated, surfaces shall be free from rust, loose or brittle paint, chalking, oil, grease, salt contaminants, dirt, and other substances that would prevent coating from adhering tightly. Surfaces shall be prepared in accordance with SSPC specifications. Surface conditions and finished surface profiles shall conform to SSPC-Vis Standards or National Association of Corrosion Engineers (NACE) Comparators.

Should an area of steel that has previously been cleaned become soiled, contaminated, or rusted, the Contractor shall reclean the area to the satisfaction of the Engineer prior to application of coating at no additional cost to the Department.

Regardless of the method of cleaning, surface imperfections described in the "*Procedures Following Blast Cleaning and Immediately Prior to Painting Section*" of SSPC-SP 10 and any other matter that will prohibit a smooth unobstructed surface for the application of the specified coating, shall be removed.

- (a) **Application Conditions:**

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

Preparing Surfaces To Be Coated: The Contractor shall keep contaminants from coming in contact with surfaces during surface preparation and coating operations. Unsealed connections, small cracks, cavities, and depressed areas on flanges shall be filled in accordance with the requirements of Section 407 of the Specifications.

Prior to application of coating, the surface shall be prepared in accordance with one or more of the following methods. Except as provided herein, surfaces to be coated shall be cleaned in accordance with the requirements of Method 1 prior to the use of other surface preparation methods.

1. **Method 1:** Solvent, emulsion, or steam shall remove oil, dust, dirt, grease, concrete, chalking, and salt in accordance with the requirements of SSPC-SP-1. Contaminated solvent shall be removed before it evaporates by wiping or rinsing with clean solvents to prevent a film of contaminants from remaining on the surface. Solvent wiping may be required between coats. Solvents used in the work shall be those recommended by the paint manufacturer.
2. **Method 2:** Hand-tool cleaning shall remove loose coating, loose rust, and loose mill scale in accordance with the requirements of SSPC-SP-2.
3. **Method 3:** Power-tool cleaning shall remove loose coating, loose rust, and loose mill scale in accordance with the requirements of SSPC-SP-3.
4. **Method 4:** Power-tool cleaning shall remove coating, rust, and mill scale to bare metal in accordance with the requirements of SSPC-SP-11.
5. **Method 5:** Abrasive blast cleaning shall remove visible coating, rust, and mill scale in accordance with the requirements of SSPC-SP-10/NACE No. 2. Abrasives shall be recycled unless otherwise specified or approved by the Engineer. If an expendable abrasive is used on a Type B structure, it shall be used in conjunction with a process that will allow beneficial reuse of the expended product. Recyclable abrasive containing rust that adversely affects the cleanliness of the blasted surface will not be permitted.

After blast cleaning, the surface profile shall be from 1 to 3 mils in a dense uniform pattern of depressions and ridges as determined by a spring micrometer with surface profile replica tape in accordance with ASTM D4417, Method C. Both shop-blasted and field-blasted surfaces shall be coated within 24 hours. If rust bloom develops, blast cleaning shall be repeated at no additional cost to the Department.

6. **Method 6:** Brush-off blasting shall remove loose or brittle coating, loose rust, and loose mill scale in accordance with the requirements of SSPC-SP-7/NACE No. 4.
7. **Method 7:** Low-pressure water cleaning shall remove dust, debris, and salt contaminants. The pressure washer shall be capable of achieving 13.79 megapascals at the nozzle when used prior to blast cleaning and 34.47 megapascals at the nozzle when used to remove loose or brittle coatings. When the power washing equipment is used, the nozzle shall be maintained no more than 250 millimeters from the surface. Any detergents or cleaners used in conjunction with this method shall be those recommended by the coating manufacturer and as approved by the Engineer. Method 7 can be used exclusively (i.e., in lieu of Method 1) for the cleaning of new shop-primed or new field-primed steel provided that no oil or grease is present or that oil and grease are removed separately by Method 1.

Regardless of which method of surface preparation is used, the Contractor shall collect and contain solid and liquid waste, except for new steel cleaned by Method 7. Any water

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

generated from cleaning new shop-primed or new field-primed steel by Method 7, provided that no detergents or cleaners were used, shall be directed to the bridge approaches or stream bank but shall not be directly discharged into any waterway. This exception does not apply to waste generated from surface preparation of galvanized steel, which shall be captured and disposed in accordance with the requirements of Section 411.07(b) of the Specifications. The waste material(s) generated from work performed on Type B structures shall be tested in accordance with EPA Method 1311, Toxicity Characteristic Leaching Procedure (TCLP), and corresponding EPA 6000 or 7000 series metals analytical method for, but not limited to, the following metals to determine if the waste material(s) requires management as hazardous waste: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver; the exception to this testing protocol is that waste generated from abrasive blasting with recycled steel abrasives for Method 5 shall be tested for total concentrations of the aforementioned heavy metals in lieu of the TCLP analysis. Waste material(s) shall be disposed of in accordance with all federal, state, and local regulations.

(b) **Physical Application:** Coatings shall be applied in accordance with SSPC-PA 1. Coatings shall not be applied under any of the following conditions unless recommended by the manufacturer and approved by the Engineer:

1. Air, coating, or metal temperature is below 4 degrees C.
2. Air, coating, or metal temperature is expected to fall below 4 degrees C before the coating has cured.
3. Snow, sleet, or rain is falling.
4. Moisture is visible on metal.
5. Humidity is above 85 percent.
6. The temperature of the steel or metal surface to be coated may cause blistering as indicated in the manufacturer's product data sheet.
7. The steel surface temperature is less than -15 degrees C above the dew point or is expected to fall to that point before the coating has dried or cured.

In no case shall System W as shown in Table IV-6 be applied unless the air, steel surface, and material temperature is above and maintained above 10 degrees C and rising.

Prior to application of coatings, the surface shall be dry. Coatings shall be applied in a neat and orderly manner by brushing, rolling, or spraying as recommended by the manufacturer. However, rollers, daubers, or sheepskins shall not be used to apply zinc-rich coatings.

Zinc-rich coatings may be applied by brush, limited to isolated areas of 0.30 square meter or less.

Coatings shall be applied in a manner to provide a tight film of specified uniform thickness well bonded to metal or underlying coating, including crevices and corners, and shall be free from laps, streaks, sags, runs, overspray, dryspray, shadow-through, skips, excessive film build-up, mud cracking, misses, and other defects.

Beam edges, bolts, washers, and nuts shall receive a stripe coat prior to the full coat application. If a multicoat system is being applied, beam edges, bolts, and nuts shall be striped prior to each coat except that a stripe coat will not be required for a zinc-rich primer. Stripe coatings shall dry or cure to touch before overcoating.

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

Deficient, impaired, or damaged areas of each coat shall be repaired using material from the Department's approved products list. Two-component, solvent-based, inorganic zinc shall be considered cured when only trace amounts are removed in accordance with the requirements of ASTM D4752.

Successive coatings shall not be applied until each preceding coat has dried and cured in accordance with the manufacturer's recommendations and has been approved by the Engineer. Coatings shall be applied in accordance with the requirements of Table IV-6.

**TABLE IV-6
COATING SYSTEMS**

System	Coat	Coating	Min. Dry Film Thickness (DFT) (mm)
B	Primer Intermediate Finish	Zinc-rich (from approved systems list)	
F	Primer Finish	No. 14 No. 14 or as specified in Section 231.02(c) or 231.02 (d)	0.125 0.125
W	Primer Intermediate Finish	No. 101 Federal No.595-30045 No. 102, White No. 103*	.005-0.10 0.05-0.10 0.05-0.10**

* Color as specified. If not specified, color shall be Federal No. 595-26307.

** DFT shall be no less than the specified thickness; however, it shall completely cover the intermediate coat.

Mixing: Coatings shall be mixed in accordance with the manufacturer's instructions. Zinc-rich coatings shall be applied from containers equipped with a mechanical agitator, which shall be in motion throughout the application period unless otherwise specified by the manufacturer. Coatings shall not be thinned beyond the volatile organic compound (VOC) limit or the manufacturer's recommendation, whichever is the most restrictive. Individual components of multicomponent coatings shall be mixed separately prior to mixing with other components of the kit. Mixing shall be by use of a power mixer. Multicomponent material shall not be mixed in proportions less than the packaged quantities.

(c) **Quality Control: Measuring Film Thickness:** The dry-film thickness of coating will be determined by the Engineer with a Tooke gage when the thicknesses of previous coatings are not known and with a magnetic dry-film thickness gage when the previous thickness is known. The magnetic gage will be used and calibrated in accordance with the requirements of SSPC-PA-2. The Contractor shall repair test areas at no additional cost to the Department. The method of repair shall conform to methods as outlined in this section or as approved by the Engineer.

(d) **Record Keeping and Protective Coating Identification:** The Contractor shall maintain a record that establishes and describes the location and limits of the work area where

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



protective coating removal or application has been accomplished. Such records shall be maintained and completed on a daily basis and shall provide at a minimum the following information: Contractor's name, date, time work began, time work completed, ambient air and structure temperature and relative humidity ranges during coating operation, surface cleanliness and profile measurements, and dry-film thickness and name of coating system applied. The record shall include a map indicating areas where the protective coating has been applied as accurately located on the actual bridge structure except for structures as described in Section 411.05(b)3 of the Specifications. The daily record and map format shall meet the approval of the Engineer and shall be established prior to commencement of work. The daily records and maps shall be maintained in a three-ring binder throughout the duration of the project. Prior to final acceptance, the Contractor shall submit to the Engineer the three-ring binder complete and shall certify that all information contained therein is factual and correct.

For new steel and after recoating an existing structure, after the final coat has cured, the Contractor shall stencil on the structure a legend indicating the type of coating system(s) and the month and year in which it was applied. The legend shall be placed inside a fascia stringer near an abutment at a location approved by the Engineer and shall be black in color.

411.05—Existing Structures

Coated steel structures built before 1978 and weathering steel structures may contain mill scale.

- (a) **Bare Steel:** Uncoated weathering steel shall be cleaned in accordance with the requirements of Method 5 and shall be coated with System B. The following areas of weathering steel shall be coated as indicated:
1. Areas within 1.5 meters of a deck joint, including, but not limited to, cross frames, diaphragms, stiffeners, connector plates, girders, and beams.
 2. The entire outside surface of fascia girders and beams, including the underside of the bottom flange.

These areas shall be thoroughly cleaned to no less than 150 millimeters outside the area to be coated and shall be coated with System B.

- (b) **Coating Remaining:** Coating application will be performed as follows:
1. **Prepare and spot coat existing structure:** Surfaces being coated shall be prepared in accordance with Method 1 followed by Method 7 using a pressure of 34.5 megapascals at the nozzle. Rust shall be removed in accordance with Method 4 or Method 5. Prepared areas shall be spot-primed with primer from the system specified. Intermediate and finish coat shall be applied to spot-primed areas only and shall be feathered into the existing finish coat to produce a uniform homogeneous appearance with the existing structure. The coating system shall be as specified on the plans. If no system is specified, System W shall be used.
 2. **Prepare and overcoat existing structure:** Prepared areas shall be spot-primed with primer from the system specified. Intermediate and finish coat shall be applied to the entire structure. The coating system shall be as specified on the plans. If no system is specified, System W shall be used.

The entire structure shall be cleaned in accordance with the requirements of Method 1 followed by Method 7 using a pressure of 34.5 megapascals at the nozzle. Areas to be primed and coated shall be prepared in accordance with Method 5 or Method 4.

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

3. **Recoat existing structure:** The entire structure shall be cleaned in accordance with the requirements of Method 1 followed by Method 7 using a pressure of 13.7 megapascals at the nozzle. The entire structure shall be cleaned to bare metal in accordance with Method 5. The structure shall be recoated using System B.
4. **Coating new steel members used to repair existing structure:** Unless otherwise directed or approved by the Engineer, the newly installed steel members shall be cleaned to bare metal in accordance with Method 5. Prepared areas shall extend 150 millimeters beyond new steel member into the existing structure at the point of repair and shall be spot-primed with primer from the system specified. Intermediate and finish coat shall be applied to spot-primed areas only and shall be feathered into the existing finish coat to produce a uniform homogeneous appearance with the existing structure. The coating system shall be as specified on the plans. If no system is specified, System W shall be used.
5. **Zone coating:** Surfaces shown on the plans or in the Contract as being zone coated shall be cleaned in accordance with the requirements of Method 1 followed by Method 7 using a pressure of 13.79 megapascals at the nozzle. The entire area designated for zone coating shall be prepared in accordance with Method 5.

Areas designated for zone coating shall be primed and coated using a coating system selected from the Department's approved zinc rich paint systems list.

If a winter season elapses between applications of coats, the structure shall be prepared again in accordance with the requirements of Method 1 prior to resuming application of additional coatings and at no additional cost to the Department.

Existing steel on structures to be widened shall not be prepared and coated unless otherwise specified. When specified on the plans for coating, the entire coating on the existing structure shall be removed in accordance with the requirements of Method 5 and the existing structure shall be coated with the same system as required on the new steel.

411.06—New Structures

Non-stainless ferrous metal shall be coated using System B as specified in Table IV-6.

- (a) **Shop Coating:** Metal surfaces to be coated shall be abrasive blast cleaned in accordance with the requirements of Method 5 prior to application of primer. Material shall not be shipped until the primer has cured.

Machine-finished surfaces and/or areas that are to bear on other surfaces in a sliding movement shall not receive an applied protective coating as specified in Table IV-6 but shall be coated with a multipurpose grease or other specified coating prior to shipment.

Erection and mass marks shall be stenciled or painted on structural steel subsequent to application of shop primer. No other lettering shall be allowed.

The following areas of weathering steel shall be coated:

1. Areas within 1.52 meters of a deck joint, including, but not limited to, cross frames, diaphragms, stiffeners, connector plates, girders, and beams.
2. The entire outside surface of fascia girders and beams, including the underside of the bottom flange.

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

These areas shall be thoroughly cleaned to no less than 150 millimeters outside the area to be coated and shall be coated with System B.

Deficiencies and nonconformities shall be satisfactorily corrected prior to shipment.

- (b) **Field Coating:** Field application of coatings shall not be performed until concrete work is completed and forms are removed. Concrete deposited on coated steel surfaces shall be removed. Prior to coating, surfaces shall be cleaned in accordance with the requirements of Method 7 as described in Section 411.04(a) of the Specifications using a pressure of 13.79 megapascals at the nozzle. Uncoated surfaces and deficient or damaged areas shall be cleaned in accordance with the requirements of the coating manufacturer and touch-up primed with a primer from System B.

If a winter season elapses between applications of coats, the structure shall be prepared again in accordance with the requirements of Method 7 at no additional cost to the Department.

After installation and approval by the Engineer, galvanized bolts or bolts protected with approved coatings shall be cleaned with water-based biodegradable cleaner followed by a potable water rinse. Other erection bolts that will be coated shall be degreased and abrasive blasted in accordance with the requirements of Section 411.04 of the Specifications. Suitable precautions shall be taken to mask off the surrounding primed area to prevent overblasting. Cleaning agents and rinse water shall be collected and disposed of in accordance with applicable state and federal regulations. After cleaning, bolts shall be coated with the identical intermediate and topcoats being applied to the rest of the structure. If additional surface preparation of galvanized bolts is required, preparation shall be as recommended by the coating manufacturer.

Surfaces that will be inaccessible after assembly and erection shall be coated prior to assembly.

When the superstructure is concrete, the color of bearing assemblies shall be Gray, Federal No. 595-26307.

When the superstructure is weathering steel the topcoat shall be Brown, Federal No. 595-20059. The topcoat color for other structures shall be Gray, Federal No. 595-26307 unless otherwise specified on the plans. When only portions of a structure are designated for coating, the edges of coated areas shall be masked to a straight line.

411.07—Galvanized Surfaces

- (a) **Existing Uncoated:** The surface shall be prepared in accordance with Method 1 or Method 7. Rust shall be removed using Method 2 or Method 3. The surface shall be coated with a coating system from the Department's approved products list.
- (b) **New Surface:** New galvanized surfaces that are to be coated shall not be quenched or chromate treated by the galvanizer. Prior to coating, galvanized surfaces shall be prepared in accordance with Method 1.

In the event new galvanized material is supplied to the project that has been quenched or chromate treated and the Engineer directs that such material is to be coated, the Contractor shall prepare the surface in accordance with ASTM D 2092, Method A or Method G. If surface preparation is performed in the field, the Contractor shall collect and contain solid and liquid waste. Waste shall be characterized and disposed of in accordance with the requirements of Section 411.08(c) of the Specifications for a Type B structure. Any additional cost for surface preparation, waste collection, waste characterization, and disposal associated with the coating of quenched or chromate-treated galvanized material as directed by

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

the Engineer will be in accordance with the provisions of Section 109.05 of the Specifications. The surface shall be coated with a coating system from the Department's approved products list.

411.08—Environmental Protection

In accordance with the requirements of Section 107 of the Specifications, the Contractor shall protect the public and the environment from leaded paint or hazardous material resulting from coating preparation, cleaning, removal operations, blast abrasives, rust, and overspray.

Depositing or dropping waste materials into water, onto the ground, onto roadways, or outside the containment system will not be permitted. Waterways and travel-ways shall be protected against coating drift and overspray. Equipment and containment devices shall arrive at the site in a decontaminated condition and shall be decontaminated prior to relocating or moving unless otherwise properly disposed. Residues from decontamination and any disposable items shall be properly disposed of in accordance with all applicable federal, state, and local regulations.

The Contractor shall at all times be in compliance with these specifications and the regulations of, but not exclusive to, the following agencies: U.S. Environmental Protection Agency, U.S. Department of Transportation, Virginia Department of Environmental Quality, Virginia Department of Labor and Industry, and the U.S. Coast Guard.

- (a) **Environmental Plan:** Where surface preparation operations are required, the Contractor shall submit a detailed site-specific Environmental Plan to the Engineer for Department records and review for completeness only, not approval. The Contractor shall provide one comprehensive plan that covers all facets of operation. No work shall proceed until the Engineer has notified the Contractor that the plan contains all the necessary elements. The Environmental Plan shall include controls for capture, containment, collection, storage, and transportation of waste material generated by the work. The Contractor shall use the most effective method possible for capture, collection, containment, and transportation operations. Plans shall include measures for accidental spill cleanup.

The Environmental Plan shall be certified by an SSPC QP-2 Supervisor/Competent Person or a CIH currently certified by the American Board of Industrial Hygiene. If the project design involves the erection of a supported containment system with a total mass-bearing capacity of greater than 454 kilograms, the plan shall also be reviewed and certified by a Professional Engineer registered in the Commonwealth of Virginia as to the design acceptability for the structural load of the containment system on the bridge.

After project award but not less than 3 weeks prior to commencing operations covered by this plan, the environmental plan shall be submitted to the Engineer. Within 2 weeks of receipt, the Engineer will review the submitted plan for completeness. Should deficiencies in the plan exist, the plan will be returned to the Contractor for incorporation of revisions as noted by the Engineer. The Contractor shall make such revisions and submit completed plans for the Engineer's record prior to commencing operations. In no case shall the Contractor begin work prior to the Engineer's receipt and review of a satisfactorily complete plan.

- (b) **Monitoring:** Visual inspections of the containment structures and the dust collector and abrasive recycling equipment shall be continuously performed to detect and control any emissions into the unconfined air space. Emissions will not be permitted outside the containment system. Visual emissions outside the containment system shall immediately be corrected to comply with emission standards. Minimal visible air emissions will be allowed for properly operating vacuum-assisted power tools provided that a secondary means for collecting large particles is employed and the technology is applied using usual and customary industry practices. Excessive emissions caused by improperly operated or functioning equipment shall be immediately corrected. Adequate lighting shall be provided as necessary to aid visual inspections.

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

Perimeter air monitoring shall be performed, as directed by the Engineer through review comments on the environmental plan submission, using high-volume air samplers equipped for the collection of total suspended particulate (TSP) samples. The filters shall be analyzed for lead in accordance with EPA 40 CFR Part 50, Appendix G, for a minimum of 8 hours per day of operation. Samples shall be collected within 152 meters downwind of paint abatement, dust collection, and abrasive recycling equipment. Perimeter monitoring results shall be maintained below the National Ambient Air Quality Standard for lead (40 CFR Part 50) using the Adjusted Daily Allowance (ADA) procedure outlined in SSPC-Guide 6, Method D. The results of all sample analyses shall be submitted to the Engineer as soon as they are available. Should emissions exceed the limits set herein or material begins to reach the ground or enter State waters, the Contractor shall notify the Engineer and operations shall be halted until such time that corrective actions are implemented.

- (c) **Waste Characterization and Disposal:** Material removed from a Type A structure shall be disposed of as a non-hazardous waste in accordance with the requirements of (d)1 herein.

Material removed from a Type B structure shall be contained, collected, and stored in closed 208-liter USDOT approved steel drums or portable metal roll-off containment refuse disposal bins. For small quantities of waste, approved 19-liter containers may be used.

The Contractor shall, with the oversight of the Engineer; collect and provide to the Department samples for analysis at the following frequency:

Containers	Samples
1	1
2-6	2
Over 6	1 for every 3 containers

Samples shall be randomly collected and shall be representative of the contained waste. Waste shall not accumulate for more than 30 days before samples are collected. A laboratory certified by the American Industrial Hygiene Association to perform lead analysis and approved by the Department shall perform the testing. Testing will be performed in accordance with the requirements of Section 411.04(a) of the Specifications. The Department shall pay the cost of all tests performed by the laboratory. Waste generated from abrasive blasting with recycled steel abrasive shall be classified as hazardous if the total lead level exceeds 0.01 percent. If the material is declared to be a hazardous waste by the Department, the Contractor shall dispose of the material in accordance with the requirements of Section 411.08(d)3 of the Specifications. The Contractor is not relieved from performing waste testing in accordance with the aforementioned procedures by using test results from samples of coatings collected while adhered to the structural steel.

Each structure shall have a separate lockable storage area for waste material located immediately adjacent to the structure. The Contractor shall collect the material at the end of each workday and shall transport the waste material to the storage area in a closed container that will not permit leakage. Each container shall be marked indicating the origin of the material; the date the material was placed in the storage area; and a 24-hour telephone number of the Contractor and Department representative. Prominent warning signs shall be displayed around the perimeter of the storage. The signs shall be located at a distance from the storage area that will allow personnel to read the sign and take the necessary protective actions required before entering the storage area. Warning signs and notices shall be posted in accordance with CFR 29 Part 1926, Section 62.

One centralized storage site may be used to store waste materials from structures at adjacent projects provided that transport of waste over roads open to the public is not required and that the materials shall be labeled and stored separately. If a centralized storage

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



location is used, suitable security fencing shall be installed around the perimeter of the centralized storage area to prevent unauthorized access. The Contractor shall establish this site, with Department approval, prior to beginning any coating removal.

The site for the temporary storage of the waste material shall be approved by the Engineer and shall not be located within a flood plain or drainage area or where water will pond. Containers of waste material shall have tops secured and be covered with waterproof coverings, and the site shall be secured. If such a site is not available immediately adjacent to the structure, an alternate location on state property shall be used as approved by the Engineer and shall be submitted as a requested amendment to the Environmental Protection Plan. The Contractor shall be responsible to ensure that any over-the-road transport of hazardous waste complies with all local, state, or federal permitting, licensing, manifesting, and/or fee requirements.

(d) **Disposal:**

1. Solid waste material from a Type A structure or waste from a Type B structure that is determined by the Department not to be a hazardous waste shall be disposed of in a sanitary landfill Resource Conservation and Recovery Act (RCRA) Subtitle D or licensed industrial landfill that has a permit from the Virginia Department of Environmental Quality or an equivalent state or federal agency for out-of-state disposal facilities. The Contractor shall identify the landfill used by name, address, and permit number and shall certify that the waste material was properly disposed.
2. Liquid waste from Type A and Type B structures that is determined by the Department not to be a hazardous waste shall be legally disposed of in a publicly owned treatment works facility (POTW). The Contractor shall identify the POTW used by name, address, and permit number and shall certify that the waste material was properly disposed.
3. If waste material from a Type B structure is classified as hazardous, the Contractor shall obtain a provisional hazardous waste generator number from the Virginia Department of Environmental Quality in accordance with applicable federal and state regulations and shall legally store, pack, label, and ship such material by a transporter with an RCRA Hazardous Waste Transporter permit to a RCRA, Subtitle C, Treatment Storage and Disposal Facility (TSDF) for treatment and disposal. The Contractor shall prepare a hazardous waste shipping manifest(s) and provide it to the Engineer for signature. The Engineer's signature on the waste shipping manifest does not relieve the Contractor of his obligations as co-generator of the waste.

- (e) **Certifications:** The Environmental Plan shall be implemented in accordance with the provisions contained therein; any deviations from the plan shall be separately approved by the Engineer. The individual providing the plan certification shall at a minimum be present during startup and removal operations to ensure that the plan is fully implemented. Within 1 week following completion of the lead-based paint activities, the Contractor shall submit for the Engineer's record a written certification by the SSPC QP-2 Supervisor/Competent Person or CIH, including notations of any areas of non-compliance and corrective actions taken, that all work has been completed in full compliance with all applicable regulations and requirements as set forth in these specifications and that the plans on record were fully implemented. The Contractor shall forward for the Engineer's record one copy of the Environmental Plan complete with all revisions and results from the air monitoring activities, including notations of any areas of non-compliance and corrective actions taken.

411.09—Health and Safety

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

In accordance with the requirements of Section 107 of the Specifications, the Contractor shall protect the health and safety of the workers, the public, and the environment from leaded paint or hazardous material resulting from coating preparation (cleaning) removal operations, blast abrasive, rust, and overspray.

- (a) **Plan:** The worker health and safety plan shall be in accordance with the requirements of the Virginia Occupational Safety and Health Administration, 29 CFR 1926.62 requirements and the applicable requirements of 29 CFR 1910.1025, and other applicable toxic metal standards, whichever is more restrictive.

The worker health and safety plan shall be approved by a CIH currently certified by the American Board of Industrial Hygiene or by an SSPC QP-2 Supervisor/Competent Person.

These plans shall not be submitted to the Engineer for approval but shall be submitted for the Engineer's review and record. After project award but not less than 3 weeks prior to commencing operations, the worker health and safety plan shall be submitted to the Engineer.

Within 2 weeks of receipt, the Engineer will review the submitted plan for completeness. Should deficiencies in the plan exist, the plan will be returned to the Contractor for incorporation of revisions as noted by the Engineer. The Contractor shall make such revisions and submit completed plans for the Engineer's record prior to commencing operations. In no case shall the Contractor begin work prior to the Engineer's receipt and review of a satisfactorily completed plan.

- (b) **Monitoring:** The CIH or SSPC QP-2 Supervisor/Competent Person providing plan approval or a qualified designated representative shall be present during startup, during surface preparation periods, and as needed during removal operations throughout the duration of the project to ensure the provisions of the worker safety and health plans are properly implemented.
- (c) **Certification:** At completion of the project, the CIH or SSPC QP-2 Supervisor/Competent Person shall submit a written statement of certification for the Engineer's record, complete with all revisions including notations of any areas of non-compliance and corrective actions taken, that the worker health plans fully complied with all regulations and that the plans were fully implemented.

411.10—Measurement and Payment

Coating of new metal on structures will not be measured for separate payment but shall be included in the price for structural steel or metal items. When a pay item, coating of new metal in or on structures will be paid for at the contract lump sum price per structure.

Prepare and spot coat existing structure, when a pay item, will be measured in square meters of surface area and will be paid for at the contract unit price per square meter.

Prepare and overcoat existing structure, when a pay item, will be paid for at the contract lump sum price per structure.

Recoat existing structure, when a pay item, will be paid for at the contract lump sum price per structure.

Zone coating of existing structure, when a pay item, will be paid for at the contract lump sum price per structure.

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

These prices shall include washing, surface preparation, and applying protective coating.

Environmental protection and health and safety will be paid for at the contract lump sum price per structure. This price shall include containment operation, regulation compliance, environmental protection plan preparation and approval, worker health and safety plan preparation and approval, providing CIH and SSPC QP-2 Supervisor/Competent Person monitoring services, worker protection, and all other related costs.

Disposal of material will be paid for at the contract lump sum price per structure. This price shall include transporting, storing, and disposal. No payment will be made for this item until the Contractor provides the signed return manifests from the disposal facility(s).

Payment will be made under:

Pay Item

Pay Unit

Coating of new metal on structures (B or Str. No.)	Lump sum
Prepare and spot coat existing structure (B or Str. No. and type)	Square meter
Zone coating of existing structure (B or Str. No. and type)	Lump sum
Prepare and overcoat existing structure (B or Str. No. and type)	Lump sum
Recoat existing structure (B or Str. No. and type)	Lump sum
Environmental protection and health and safety (B or Str. No.)	Lump sum
Disposal of material (B or Str. No. and type)	Lump sum

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



**GUIDELINES—PROJECTS HAVING WIDENING, REPAIRING OR RECONSTRUCTION OF SUPERSTRUCTURES ONLY (MILLING AND OVERLAYING).
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM412A2B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 412 WIDENING, REPAIRING, AND RECONSTRUCTING EXISTING STRUCTURES

April 17, 2007

SECTION 412 WIDENING, REPAIRING, AND RECONSTRUCTING EXISTING STRUCTURES of the Specifications is amended as follows:

Section 412.01 Description is amended to add the following:

The Department will specify whether latex hydraulic cement concrete or silica fume hydraulic cement concrete will be used on bridge deck in the widening, repairing, or reconstruction of existing structures. The specific overlay deck material and the depth of the overlay will be shown in the contract documents.

Section 412.02 (b) Hydraulic cement concrete and latex hydraulic cement concrete is replaced with the following:

Hydraulic cement concrete and latex hydraulic cement concrete shall conform to the requirements of Section 217 of the Specifications, except that the course aggregate shall be Size Number 7, Number 8, or Number 78 for depths and steel clearances less than 50 millimeters and shall be Size Number 57, Number 7, Number 8, or Number 78 for depths more than 50 millimeters. The inclusion of fly ash or slag will not be permitted in concrete mixes used in bridge deck overlays or deck patching operations. An approved accelerator may be permitted when justified by traffic conditions.

Section 412.03 (a) Bridge Superstructure Repairs is amended to replace 1. with the following:

1. **Type A milling** shall consist of milling the surface of the bridge deck and concrete approaches to a depth of 13 millimeters.

Equipment shall be capable of removing material to the required depth while maintaining a reasonably uniform surface without damaging adjacent areas or the remaining material. Milling equipment shall be capable of removing at least 13 millimeters of existing material per pass. Power driven hand tools for removing unsound concrete around reinforcing steel and in confined areas will be required.

Section 412.03 (a) is amended to include the following:

9. **Joint Reseal:** Existing joints shall be resealed in accordance with Section 316 of the Specifications, unless otherwise specified on the plans.

Section 412.03(f)3.a. Surface Preparation is amended to replace the first paragraph with the following:

The perimeter of all areas where concrete is removed shall be tapered at approximately a 45-degree angle, except that the outer edges of all areas removed by chipping shall be sawcut perpendicular to the surface to a minimum depth of 13 millimeters to prevent featheredging unless otherwise approved by the Engineer.

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

Section 412.04 Measurement and Payment is amended as follows:

The ninth and tenth paragraph is replaced with the following:

Latex Hydraulic Cement Concrete will be measured and paid for at the contract unit price per square meter on a plan quantity basis. The price bid will be full compensation for producing, delivering, and placing the latex hydraulic cement concrete mix to the job site. This price shall also include handling, finishing, and curing the latex hydraulic cement concrete, and for all material, labor, tools, equipment, and incidentals necessary to complete the work. Latex hydraulic cement concrete shall be placed within the range of depth specified and verified by the Engineer prior to and during placement operations. The Engineer may direct additional depth of latex hydraulic cement concrete to address cross slope and other surface irregularities and rideability issues. Additional latex hydraulic cement concrete beyond the depth range of the pay item that is requested to address such issues at the direction of the Engineer will be compensated for in accordance with Sections 104.02 and 109.05 of the Specifications. Only those volumes of additional latex hydraulic cement concrete that are approved by the Engineer prior to or during the placement of the overlay will be considered for payment. Payment will be made for the actual cost only for furnishing the mixture to the jobsite.

Silica fume hydraulic cement concrete will be measured and paid for at the contract unit price per square meter on a plan quantity basis. The price bid will be full compensation for furnishing silica fume hydraulic cement concrete, placing, handling, finishing and curing the silica fume hydraulic cement concrete and for all material, labor, tools, equipment and incidentals necessary to complete the work. Silica fume hydraulic cement concrete shall be placed within the range of depth specified and verified by the Engineer prior to and during placement operations. The Engineer may direct additional depth of silica fume hydraulic cement concrete to address cross slope and other surface irregularities and rideability issues. Additional silica fume hydraulic cement concrete beyond the depth range of the pay item that is requested to address such issues at the direction of the Engineer will be compensated for in accordance with Sections 104.02 and 109.05 of the Specifications. Only those volumes of additional silica fume hydraulic cement concrete that are approved by the Engineer prior to or during the placement of the overlay will be considered for payment. Payment will be made for the actual cost only for furnishing the mixture to the jobsite.

Section 412.04 Measurement and Payment is amended to delete the following Pay Items and Pay Units:

Pay Item	Pay Unit
Furnishing (latex or silica fume) hydraulic cement concrete	Cubic meter
Placing (latex or silica fume) hydraulic cement concrete	Cubic meter

and to add the following Pay Items and Pay Units:

Pay Item	Pay Unit
Latex hydraulic cement concrete (32mm – 44mm)	Square meter
Silica fume hydraulic cement concrete (32mm – 44mm)	Square meter

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



**GUIDELINES—PROJECTS REQUIRING DISMANTLING AND REMOVING EXISTING STRUCTURES OR REMOVING PORTIONS OF EXISTING STRUCTURE.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM413A2B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 413—DISMANTLING AND REMOVING EXISTING STRUCTURES OR REMOVING PORTIONS OF EXISTING STRUCTURES

August 8, 2006

SECTION 413—DISMANTLING AND REMOVING EXISTING STRUCTURES OR REMOVING PORTIONS OF EXISTING STRUCTURES of the Specifications is replaced with the following:

413.01—Description

This work shall consist of dismantling and removing all or portions of existing structures in accordance with these specifications and in conformity with the lines, grades, and details shown on the plans or as established by the Engineer. The Contractor shall make all necessary notifications, including, but not limited to, the National Emission Standards for Hazardous Air Pollutants (NESHAPs) demolition/renovation notification to the Virginia Department of Labor and Industry, amended notifications, and obtain any necessary permits in accordance with all applicable local, state, and federal laws and regulations. The Contractor shall protect the public and the environment from leaded paint or other hazardous material encountered in the work.

413.02—Procedures

- (a) **Dismantling and Removing Existing Structure:** Dismantling and removing existing structures shall include removing the entire superstructure, substructure, and slope protection. The substructure shall be removed down to the streambed or to an elevation of at least 0.6 meters below the natural ground or finished grade of embankment that is to remain in place. Removal shall include any part of the substructure or foundation piling that will interfere with the new construction. For bridges crossing streams under the jurisdiction of the U.S. Coast Guard, the substructure shall be removed to or below the bed of the stream as required by the U.S. Coast Guard.

1. **Dismantling structures for retention by the Contractor:** Removed materials shall become the property of the Contractor and shall be removed from the project. The Contractor shall assume all personal and property liability associated with such materials and shall protect and save harmless the Department from any and all damages and claims associated with the handling, transportation, storage, or use of such materials. The Department does not warrant the condition or the physical or chemical characteristics of the materials.
2. **Dismantling structures for retention by the Department:** Dismantling shall be in accordance with a method approved by the Engineer and shall be such as to preserve the existing condition of materials.

Units shall be match marked for re-erection according to an approved diagram provided by the Department.

Material shall be stored as directed within 0.8 kilometer of the site of the existing structure.

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

- (b) **Removing Portion of Existing Structure:** The portions to be removed shall be the areas designated on the plans. No portion of the structure shall be removed by blasting or other methods that may damage any portion of the structure that will remain in place. When pneumatic hammers are used to remove concrete, their mass shall be not more than 40 kilograms for widening work or 14 kilograms for deck repair work. The use of tractor-mounted demolition hammers with a maximum manufacturer's rated striking energy of 1357 newtonmeters will be permitted for the removal of concrete parapets down to the top of deck and for that portion of the deck where the reinforcing steel will be removed. The use of tractor-mounted demolition hammers or pneumatic hammers weighing more than 14 kilograms shall not be allowed for the removal of that portion of the deck that is within 150 millimeters of the top flange of the beams/girders to remain in the structure. With the written approval of the Engineer, hydraulically actuated, jaw type, concrete crushers may be used for the removal of concrete parapets down to the top of the deck. The approval of hydraulically actuated, jaw type, concrete crushers shall be contingent upon continuous satisfactory results with no damage to any portion of the structure that is to remain in place. The removal of concrete parapet on prestressed concrete slab spans or prestressed concrete box beam spans shall be limited to 14 kilograms pneumatic hammers within 50 millimeters of the deck and not more than 40 kilograms pneumatic hammers for the remainder of the parapet unless otherwise approved by the Engineer.

Disturbed areas shall be uniformly graded to natural ground contours in a manner that will facilitate drainage and prevent impoundment of water.

Materials or portions of existing structures removed shall be handled in accordance with the requirements of (a)1. herein.

- (c) **Environmental and Worker Protection:** Heating, welding, flame cutting, grinding, chipping, needle gun cleaning, manual scraping, heat gun cleaning, drilling, straightening, and other construction operations, or demolition of Type B structures, as defined in Section 411.01(b) of the Specifications, that disturbs areas coated with a hazardous material shall require environmental and worker protection.
1. **Environmental protection** shall be in accordance with the requirements of Section 411.08 of the Specifications except that work involving the removal of 9.29 square meters or less of protective coating from a Type B structure will not require the Contractor to submit and implement an environmental plan as specified in Sections 411.08(a) and 411.08(b) of the Specifications. However, the Contractor shall comply with appropriate local, state, and federal codes and regulations and shall employ appropriate measures to prevent the release of hazardous materials in the environment. Determination of the total square meters of removal area shall not include the cumulative area of coating disturbance from removal of bolts. Hazardous materials generated from the Contractor's operation shall be disposed of in accordance with the requirements of Sections 411.08(c) and 411.08(d) of the Specifications.
 2. **Worker health and safety protection** shall be in accordance with the requirements of Section 411.09 of the Specifications except that work involving the removal of 9.29 square meters or less of protective coating from a Type B structure will not require the Contractor to submit and implement a worker health and safety plan as specified in Sections 411.09(a) and 411.09(b) of the Specifications. However, the Contractor shall comply with applicable codes and regulations regarding public and worker health and safety.

Upon completion of the project, the Contractor shall submit a written statement of certification for the Engineer's record, complete with all revisions including notations of any areas of non-compliance and corrective actions taken, that certifies both the

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

Environmental Protection Plan and the Worker Health and Safety Plan were fully implemented during the performance of the work covered by this specification.

413.03—Measurement and Payment

Dismantling and removing an existing structure will be paid for at the contract lump sum price.

Removing a portion of an existing structure will be paid for at the contract lump sum price.

Environmental and worker protection, when a pay item, will be paid for at the contract lump sum price per structure. This price shall include containment operations, regulation compliance, plan approval services, worker protection, and other related costs.

Material disposal, when a pay item, will be paid for at the contract lump sum price per structure. This price shall include transporting, storing, and legal disposal of material.

If not shown as a pay item, the cost for worker and environmental protection and material disposal shall be included in other appropriate bid items.

Payment will be made under:

Pay Item	Pay Unit
Dismantle and remove existing structure (B or Str. No.)	Lump sum
Remove portion of existing structure (B or Str. No.)	Lump sum
Environmental and worker protection (B or Str. No.)	Lump sum
Material Disposal (B or Str. No. and type)	Lump sum

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



**GUIDELINES - PROJECTS REQUIRING RIPRAP.
EXCEPTIONS: NONE.**

SM414A0B-0807

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 414—RIPRAP

December 20, 2006

SECTION 414—RIPRAP of the Specifications is amended as follows:

Section 414.03(e)—Erosion Control Stone is replaced by the following:

(e) Culvert Outlet Protection:

1. **Class 1** material shall be soil stabilization mats conforming to the requirements of sections 244 and 606.
2. **Class 2,3, & 4** material shall be stone conforming to the requirements of (a) herein for weight and shall be placed in a manner to present an irregular or rough surface.

Section 414.04—Measurement and Payment is amended to include the following:

These prices shall include Geotextile bedding material when not a separate pay item, The price bid shall include preparing the surface, furnishing and installing geotextile bedding material, overlaps, repair work and excavating and backfilling toe-ins.

And to replace **Erosion Control Stone** with the following:

Culvert outlet protection will be measured in square meters of surface area for the class specified and will be paid for at the contract unit price per square meter. This price shall include excavating, backfilling, preparing the surface, furnishing and installing geotextile bedding material when required, overlaps, repair work, excavating and backfilling toe-ins, and placing the required material.

These prices shall include geotextile bedding material when required and when not a separate pay item, The price bid shall include preparing the surface, furnishing and installing geotextile bedding material, overlaps, repair work, and excavating and backfilling toe-ins.

Payment will be made under:

Pay Item	Pay Unit
Culvert outlet protection (Class, st'd)	Square meter

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



**GUIDELINES - PROJECTS HAVING BRIDGES:
EXCEPTIONS: NONE**

SM416A0B-0197

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 416—WATERPROOFING**

December 12, 1993cc
Reissued January 1, 1997

SECTION 416—WATERPROOFING of the Specifications is replaced with the following:

416.01—Description

This work shall consist of furnishing and applying waterproofing material on concrete bridge decks or other surfaces as shown on the plans.

416.02—Materials

Epoxy-resin compounds and aggregates for surface application shall conform to the requirements of Section 243. Epoxy resin shall be Type EP-5, low viscosity.

Membrane and primer shall conform to the requirements Section 213.

416.03—Procedures

(a) **Epoxy-resin**

Containers, tools, and mechanical equipment shall be free from solvents, loose material, and deposits of hardened material.

Epoxy resin shall not be applied when the concrete surface or the ambient air temperature is below 10 °C unless otherwise permitted by the manufacturer's instructions.

1. **Surface preparation:** Surfaces on which epoxy compounds are to be applied shall be free from grease, dirt, dust, paint, mill scale, curing compound, laitance, and other foreign material.

Concrete surfaces on which epoxy compounds are to be used shall be ground or sandblasted sufficiently to expose the sound concrete. Surfaces that are not to receive epoxy compounds shall be protected from sandblasting. Immediately following sandblasting, the surface shall be thoroughly cleaned.

Before epoxy compounds are applied to metal surfaces, surfaces shall be sandblasted to a bright metallic luster.

Wood surfaces shall be sanded to the texture of new wood.

2. **Mixing:** Epoxy mortar shall be made by blending sand, epoxy resin, and hardener in accordance with the manufacturer's instructions.

Batch sizes shall be limited to the maximum batch size recommended by the manufacturer. Mixed epoxy compounds shall be used within the manufacturer's specified pot life. Solvents or other materials shall not be added to the mixture.

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



3. **Application:** Masking shall be used to form straight edges. Epoxy resin shall not be allowed to flow into or over expansion joints. The first coat of epoxy resin shall be applied at the rate of 1 liter per 1.84 square meters. Sand shall be broadcast into the wet epoxy in sufficient quantity, approximately 5.97 kilograms per square meter, to cover the epoxy completely. Sand shall be firmly embedded so that at least 95 percent of the deck area displays a sand surface after brooming. Brooming shall not be performed until the epoxy resin has cured sufficiently to prevent tearing. After curing, unbonded sand shall be broomed from the surface and may be reused if uncontaminated. The second coat of epoxy resin shall be applied at the rate of 1 liter of epoxy per 1.23 square meter. Requirements pertaining to masking, epoxy, flow, sand broadcasting, percentage of embedment, curing, and brooming shall also apply to the second coat of epoxy resin.

At edges of the waterproofing system and at any point where it is punctured by appurtenances such as drains or pipes, suitable provisions shall be made to prevent water from getting between the waterproofing and the waterproofed surface.

The waterproofing system shall be extended as follows: 25 millimeters up faces of curbs, continuously across abutment back walls and at least 150 millimeters down the back of back walls; at least 300 millimeters onto approach slabs, and continuously across joints except expansion joints.

When applied to prestressed concrete slab and box beam units for new construction, application shall be made at the prestressing plant. Joints and damaged areas shall be waterproofed after erection.

4. **Curing:** Curing time shall conform to the manufacturer's recommendations. During this time, both pedestrian and vehicular traffic shall be barred from freshly placed surfaces.

(b) **Membrane**

1. The waterproofing membrane sealant shall consist of a prefabricated membrane or liquid membrane conforming to one of the following systems:

System A-A primer and prefabricated membrane consisting of a laminate formed with suitably plasticized coal tar and reinforced with nonwoven synthetic fibers or glass fibers.

System B-A primer, mastic, and prefabricated membrane consisting of a laminate formed and rubberized asphalt and reinforced with synthetic fibers or mesh.

System C-A primer and prefabricated membrane consisting of a laminate formed with suitably plasticized asphalt, reinforced with open weave fiber glass mesh, and having a thin polyester top surface film.

System D-A hot poured liquid elastomeric membrane with protective covering.

System E-A surface conditioner and a hot applied rubberized asphalt membrane with protective covering.

2. **Construction:** On new decks, the waterproofing membrane system shall not be placed until at least 28 days after deck concrete placement, unless otherwise directed by the Engineer.

Each phase of the bridge deck construction shall be completed, including the placing of the surface course overlay, before roadway traffic may be placed on that portion of the bridge structure. In order to minimize possible damage to the membrane, placing of the membrane sealant system will not be permitted until the adjacent roadway binder course

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

has been completed and is ready for traffic. Only vehicles necessary for construction will be permitted on the structure during and after the placing of the membrane system, including the paver, and such vehicles shall be rubber tired or have rubber covered treads. The Contractor shall be responsible for maintaining the condition of the membrane system until covered with the bituminous concrete surface course overlay.

All methods employed in performing the work and all equipment, tools and machinery used for handling materials and executing any part of the work shall be subject to approval of the Engineer before the work is started; and, whenever found unsatisfactory, shall be changed and improved as required. All equipment, tools, machinery, and containers used must be kept clean and maintained in satisfactory working condition.

Work shall not be performed during wet weather conditions. Also, work shall not be performed when the deck and ambient air temperatures are below 10 °C, except for System E the minimum temperature shall be -7 °C. The deck surface shall be thoroughly dry at the time of the application of the primer or liquid membrane.

Concrete parapet surfaces and railing, including armor plates for the elastomeric joint seals, shall be protected to prevent their being defaced by primer or membrane material. Should defacement occur, the Contractor shall clean surfaces on the structure to the satisfaction of the Engineer.

Between the time the bridge deck is cleaned and prepared for primer and the time the membrane system is placed, no vehicles, including mechanical spreaders, shall be operated on the area being treated. Only the necessary men and equipment to perform the required work will be allowed on the treated surface, and only at such time and in such manner as approved by the Engineer. Care shall be taken to prevent sudden starts, stops or turns by equipment. All other traffic shall be maintained on portions of the structure that are not being given the membrane protection.

3. **Preparation of concrete deck:** All surfaces which are to be covered shall be thoroughly cleaned by the use of sandblasting, air jets, mechanical sweeper, hand brooms, or other approved methods, or as required by the Engineer, until the surface is free of all sand, clay dust and all loose or foreign matter. Water shall not be used to clean the deck unless authorized by the Engineer.

Any accumulations of oil or grease shall be scraped off the roadway surface and cleaned with a strong caustic solution. The resulting residue shall be thoroughly flushed away with clean water. All cleaned areas shall be primed without delay as soon as they are dry. All dust and dirt shall be blown off with air jets immediately preceding application of primer or liquid membrane.

Any sharp concrete protrusions on the deck surface which would puncture the membrane shall be removed prior to application of the membrane.

4. **Construction Procedures**

- a. **Application of primer:** The primer shall be applied to the cleaned concrete surfaces at the rate and according to the procedure recommended by the membrane manufacturer. All surfaces to be covered by prefabricated membrane shall be uniformly coated with primer. Drying time prior to applying the membrane shall be as recommended by the manufacturer.
- b. **Application of membrane:** Before applying the membrane, the direction of operation of the paving equipment shall be ascertained. Unless otherwise approved, each phase of preformed waterproofing membrane construction shall begin at the low

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

point of the surface to be waterproofed and shingled so that water will run over and not against any laps. At all deck joints, the membrane shall extend to the edge of the joint opening as shown on the plans.

- (1) Prefabricated membrane shall be applied to the primed curb and bridge deck surfaces by either hand methods or mechanical applicators. Prefabricated membranes shall be placed in such a manner that a shingling effect will be achieved, and any water which accumulates will drain toward the curb and the drain pipes. Each strip shall be overlapped a minimum of 100 millimeters. The membrane sections shall be placed so that end laps will be in the direction of the paving operation.

An adhesive or a wide tipped torch shall be used, if necessary, to assure a good seal of the prefabricated membrane joints. Hand rollers or other satisfactory pressure apparatus shall be used on the applied membrane to assure firm and uniform contact with the primed concrete surfaces. Special care shall be used at the curb face to see that the membrane is uniformly and positively adhering to the concrete.

Prefabricated membranes shall be free of wrinkles, air bubbles, and other placement defects. Any torn or cut areas, or narrow overlaps shall be patched, using a satisfactory adhesive and by placing sections of the membrane over the defective area in such a manner that the patch extends at least 150 millimeters beyond the defect. The patch shall be rolled or firmly pressed onto the surface.

- (2) Liquid elastomeric membrane shall be heated in a manner as recommended by the membrane manufacturer to 191 °C, and applied to the cleaned concrete surface by spraying with a special type nozzle as recommended by the membrane manufacturer, or poured onto the concrete surface and worked into the surface with a silicone rubber squeegee to a uniform 2.25 millimeters thickness for System D and 3.13 millimeters thickness for System E.

- c. **Application of protective covering:** For System A, B and C, protective covering shall be used when or as recommended by the membrane manufacturer. For System D and E, the protective covering shall be applied immediately following application of the liquid elastomeric membrane and prior to cooling, before loss of adhesion between materials. Protective covering shall be laid parallel to the centerline of the bridge, unless otherwise approved by the Engineer, and with the talc coated side up.

In the event protective covering is recommended by the prefabricated membrane manufacturer, a suitable compatible mastic or adhesive cement, as recommended by the membrane manufacturer, shall be used to securely adhere any protective covering material to membrane surfaces. Protective covering strips shall be butted tightly together at both longitudinal and transverse joints. Protective covering material shall be securely bonded to the membrane material and shall be essentially free of wrinkles, bubbles and other placement defects. Wrinkles and "fish mouths" rising over 13 millimeters above the bridge deck shall be split and either removed or lapped and securely bonded together.

- d. **Application of surface course overlay:** Unless otherwise approved by the Engineer; an asphalt concrete surface course mixture shall be placed within 24 hours after the placement of the waterproofing membrane system in accordance with Section 315, except as modified herein.

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

The asphalt concrete surface course shall be of the type and amount specified on the plans, with a minimum compacted depth of 38 millimeters. The paving operation shall be in the same direction as the end laps of the membrane. When a protective covering is used, a tack coat shall be applied prior to the paving operation.

The mixing discharge temperature of the mixture shall not exceed 154 °C. The temperature of the mixture at the time of placement shall be not less than 135 °C. The mixture shall be dumped directly into the paver hopper. After filling the hopper, the truck shall pull forward and shall not be in contact with the paver while it is moving. Dumping the mixture onto the deck ahead of the paver will not be permitted. The mixture shall be spread and rolled in such a manner that the protective coating, when used, will not be damaged. The temperature of the mixture at the time of rolling and compacting shall be not less than 113 °C. When using vibratory roller equipment, the vibrator shall not be activated.

- e. **Performance:** After completion of the surface course, the waterproofing effectiveness of the membrane pavement system will be determined. The minimum electrical resistance shall be 500,000 ohms when tested in accordance with VTM-39. Areas designated by the Engineer as having a lower resistance reading than 500,000 ohms will be evaluated by the Department, and those areas determined by the Engineer to be detrimental to the effectiveness of the system shall be repaired at the Contractor's expense by removing the pavement and then replacing or repairing the defective membrane. Asphalt pavement shall then be placed in a manner that will yield a neat appearing, smooth riding pavement. In the event more than 30 percent of the bridge deck area is shown defective by tests and is determined by the Engineer to be detrimental to the effectiveness of the system, the entire asphalt pavement and membrane system shall be removed and the deck cleaned in a satisfactory manner. The entire membrane-pavement system shall then be replaced in accordance with the requirements herein at the Contractors expense.

416.04—Measurement and Payment

Waterproofing will be measured and paid for in square meters of completed deck surface covered between the beginning and end stations of the bridge. For applications other than bridge decks, waterproofing will be measured and paid for in square meters of completed surface as shown on the plans.

The cost of waterproofing applied to prestressed concrete members before erection, and the cost of waterproofing joints and damaged areas, shall be included in the price bid per member.

Payment will be made under:

Pay Item	Pay Unit
Waterproofing	Square Meter

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



5-

— DIVISION V—INCIDENTAL CONSTRUCTION —

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

500 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)

**GUIDELINES - WHEN THE DESIGNER REQUESTS FULL-DEPTH SAW CUTTING OF HYDRAULIC CEMENT CONCRETE CURBS, SIDEWALKS OR ENTRANCES.
EXCEPTIONS: NONE.**

(cm502b0b-0702) **SAWCUT HYDRAULIC CEMENT CONCRETE ITEMS(FULL DEPTH)** – This work shall consist of the Contractor saw cutting to the full depth hydraulic cement concrete curb, sidewalk and entrances as shown on the plans and as directed by the Engineer.

Saw cut hydraulic cement concrete items will be measured in meters and paid for at the contract unit price per meter. This price will be considered full compensation for saw cutting the hydraulic cement concrete items to the depth specified.

Payment will be made under:

Pay Item	Pay Unit
Saw cut hydraulic cement concrete items (Depth)	Meter
12-27-00 (SPCN)	

**GUIDELINES - PROJECTS WITH MEDIAN BARRIERS.
EXCEPTIONS: NONE.**

(cm502c0b-0200) **SECTION 502.04 - MEASUREMENT AND PAYMENT** of the Specifications is amended to replace the eighth paragraph with the following:

Median barriers will be measured in meters along the centerline of barriers complete in place and will be paid for at the contract unit price per meter. Unless otherwise specified, this price shall include furnishing and placing delineators, aggregate, excavation, backfill, weep hole covering, concrete cap, dowels and joint sealer.

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



5-11-99 (SPCN)

GUIDELINES—USE ONLY ON PROJECTS THAT INCLUDE SPECIAL PROVISION SM105F0B FOR STATE FORCE CONSTRUCTION SURVEYING AND REQUIRE LOCATION AND/OR FINAL RIGHT OF WAY MONUMENTATION. [USE BY THE APRIL 2008 ADVERTISEMENT] EXCEPTIONS: NONE.

(cm503a0b-0408) **SECTION 503—RIGHT-OF-WAY MONUMENTS** of the Specifications is deleted.

4-18-07 (SPCN)

GUIDELINES - PROJECTS HAVING EXPOSED AGGREGATE FINISH FOR SOUNDWALLS, SIDEWALKS, CURB CUT RAMPS, CURBS AND/OR PARAPETS. EXCEPTIONS: NONE.

(cm504a0b-0197) **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 300 millimeters by 300 millimeters and approximately 50 millimeters 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 meters, complete-in-place.

Payment will be made under:

Pay Item	Pay Unit
Exposed aggregate sidewalk	Square meter

3-26-92, Reissued 1-1-97 (SPCN)

GUIDELINES - PROJECTS REQUIRING SIDEWALKS, STEPS, AND HANDRAILS EXCEPTIONS: NONE.

(cm504b0b-0705) **SECTION 504—SIDEWALKS, STEPS, AND HANDRAILS** of the Specifications is amended as follows:

Section 504.02—Materials is amended to add following:

(h) **Grounding materials** shall conform to the requirements of Section 238.

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



Section 504.03(c)—Handrails is amended to add to the first paragraph the following:

Handrails shall be bonded internally to maintain continuity. Electrical grounding shall conform to the requirements of Section 410.03(b).

Section 504.04—Measurement and Payment is amended as follows:

The sixth paragraph is amended to add the following:

This price shall include grounding.

1-12-05 (SPCN)

**GUIDELINES— PROJECTS REQUIRING RETAINING WALLS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

(cm506a0b-0408) **SECTION 506—RETAINING WALLS** of the Specifications is amended as follows:

Section 506.01—Description is replaced with the following:

This work shall consist of constructing rubble and hydraulic cement concrete retaining walls in accordance with the plans and these specifications and in conformity to the lines and grades shown on the plans or as established by the Engineer.

Section 506.02—Materials is amended to replace (d) **Drain pipe** and (f) **Porous backfill** with the following:

(d) **Drain pipe** shall conform to the requirements of Section 232.02 of the Specifications.

(f) **Porous backfill** shall conform to the requirements of Section 204.02(c) of the Specifications.

6-14-06 (SPCN)

**GUIDELINES - WHEN REQUESTED BY THE DESIGNER.
EXCEPTIONS: NONE.**

(cm507a0b-0702) **TEMPORARY SAFETY FENCE** - The Contractor shall furnish and install a safety fence at required locations or as directed by the Engineer. The fence shall be no less than 1.2 meter high and colored bright orange polyethylene web with the following requirements:

Tensile yield - ASTM D638: Average 907 kg. per 1.2 meter width
Ultimate tensile strength - ASTM S 638: average 1315 kg. per 1.2 meter width
Elongation at break (%) - greater than 1000%

The safety fence shall be installed on metal "T" or "U" post spaced on 1.8 meter centers driven to a minimum depth of 450 mm.

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



The Contractor shall maintain the safety fence and remove it when no longer required.

Temporary Safety Fence will be measured and paid for in units of meters which price bid shall include furnishing and installing the fence, metal post, maintenance and removal when no longer required.

Payment will be made under:

Pay Item	Pay Unit
Temporary Safety Fence, 1.2 meter	Meter
1-10-00c (SPCN)	

**GUIDELINES— PROJECTS REQUIRING FENCES.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

(cm507b2b-0408) **SECTION 507—FENCES** of the Specifications is amended as follows:

Section 507.01—Description is replaced with the following:

This work shall consist of constructing and grounding new fence in accordance with these specifications and in conformity to the lines and grades shown on the plans or as established by the Engineer.

Section 507.02—Materials is amended to add following:

(c) **Grounding materials** shall conform to the requirements of Section 238 of the Specifications.

Section 507.03(b) Standard Fences is amended to replace the fifth paragraph with the following:

Wood fence posts shall be installed so that the tops form a regular grade line. Tops or bottoms of posts that are sawed in the field shall be brush coated with three heavy applications of 2 percent copper naphthenate from the Department's approved list. Each application shall be given sufficient time to penetrate the wood.

Section 507.03(c) Pedestrian Fences for Bridges is replaced with the following:

(c) **Pedestrian Fences for Bridges:** The frame for pedestrian fences for bridges shall be bonded internally to maintain continuity. Electrical grounding shall conform to the requirements of Section 410.03(b) of the Specifications.

6-14-06 (SPCN)

GUIDELINES - ALL PROJECTS WITH DEMOLITION OF PAVEMENT.

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



EXCEPTIONS: NONE.

(cm508c0b-0200) **SECTION 508.03 MEASUREMENT AND PAYMENT** is amended to replace the first paragraph with the following:

Demolition of hydraulic cement concrete pavement and shoulder structure courses or a combination thereof will be measured as demolition of pavement (rigid) and will be paid for in square meters based on the width of the widest course. Such price shall include base, subbase and stabilized subgrade.

Demolition of asphalt concrete pavement and shoulder structure courses or a combination thereof will be measured as demolition of pavement (flexible) and paid for in square meters based on the width of the widest course. Such price shall include base, subbase and stabilized subgrade.

Demolition of a combination of hydraulic cement concrete pavement and asphalt concrete pavement and shoulder structure courses or a combination thereof will be measured as demolition of pavement (combination) and paid for in square meters based on the width of the widest course. Such price shall include base, subbase and stabilized subgrade.

Payment will be made under:

Pay Item	Pay Unit
Demolition of Pavement (Type)	Square meter
5-14-99 (SPCN)	

GUIDELINES – PROJECTS REQUIRING HYDRAULIC CEMENT CONCRETE PAVEMENT PATCHING. EXCEPTIONS: NONE.

(cm509a0b-1106) **SECTION 509—PATCHING HYDRAULIC CEMENT CONCRETE PAVEMENT** of the Specifications is amended as follows:

Section 509.01—Description is replaced with the following:

This work shall consist of removing designated areas of defective hydraulic cement concrete pavement and unstable subbase material, replacing subbase material where required, and replacing pavement with high-early-strength hydraulic cement concrete in accordance with these specifications and shall conform to the original lines and grades or those established by the Engineer.

8-25-05 (SPCN)

GUIDELINES - PROJECTS HAVING POLICE PATROLS AS A STATE FORCE ITEM. EXCEPTIONS: NONE.

(cm512a0b-0197) **POLICE PATROLS** - The Contractor is advised that the Department will use Police patrols in construction work zones when traffic flow problems are anticipated, to

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



enhance the safety of both the public and construction personnel, during the life of this contract.

4-25-88c, Reissued 1-1-97 (SPCN)

GUIDELINES— USE ONLY WHEN REQUESTED BY THE REGIONAL TRAFFIC ENGINEER FOR PROJECTS WITH PROJECT-SPECIFIC COMPLEX CPMs. EXCEPTIONS: NONE.

(cm512h0b-0408) **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 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.

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

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

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.

7-26-07 (SPCN)

**GUIDELINES - PROJECTS WITH PAYMENT FOR MOBILIZATION.
EXCEPTIONS: NONE.**

(cm513a0b-0197) **SECTION 513.02 MEASUREMENT AND PAYMENT** of the Specifications is amended to replace the second paragraph with the following:

Payment for mobilization up to the limitations specified hereinafter will be made in two separate installments. The first installment of 50 percent of the contract lump sum price will be made on the first progress estimate following partial mobilization and initiation of construction work. The second installment will be made on the next progress estimate following completion of substantial mobilization, including erection of the Contractor's offices and buildings. Completion of erection of processing plants, if any will not be required as a condition for the release of the second installment.

2-23-96, Reissued 1-1-97 (SPCN)

**GUIDELINES - PROJECTS WITH PAVEMENT PLANING.
EXCEPTIONS: DO NOT USE WITH ASPHALT MAINTENANCE PROJECTS.**

(cm515a0b-0304) **SECTION 515—PLANING PAVEMENT** of the Specifications is amended as follows:

Section 515.02—Procedures is amended to add the following to the third paragraph after the fourth sentence:

Where the pavement is to be resurfaced, a 25-millimeter shoulder shall be cut along the gutter line to eliminate the necessity of feathering the edge of the new surface. Payment for providing the 25-millimeter shoulder shall be based on the total square meters of removed material regardless of the variable depth of the pass. Pavement cuttings shall be disposed of in accordance with the requirements of Section 106.04 of the Specifications.

Section 515.03—Measurement and Payment is amended to replace the first sentence of the first paragraph with the following:

Where pavement is to be planed to a uniform depth planing will be measured in square meters of removed pavement surface area per 25 millimeters of depth and will be paid for at the contract unit price per square meter per 25 millimeters. Where planing will be variable depth planing will be measured in square meters of removed pavement surface area per pass per 25 millimeters of depth measured at the maximum depth of removed pavement.

5-5-03 (SPCN)

GUIDELINES - PROJECTS HAVING TRAINEES. USE WITH SPECIAL PROVISION SM518A0B.

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



EXCEPTIONS: NONE.

(cm518a0b-1102) **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 will be _____.

6-29-92c (SPCN)

GUIDELINES - PROJECTS WITH WATER AND SANITARY SEWER FACILITIES.

EXCEPTIONS: NONE.

(cm520a0b-0705) **SECTION 520.06—MEASUREMENT AND PAYMENT** of the Specifications is amended to replace the second paragraph with the following:

Water mains, water service lines, sanitary sewer pipe, and sanitary sewer force mains will be measured in meters of pipe through all valves and fittings, complete-in-place, and will be paid for at the contract unit price per meter. This price shall include excavating when not a pay item; testing; disinfecting; backfilling; compacting; dewatering; disposing of surplus and unsuitable material; sheeting and shoring; bedding material; installing pipe; connecting to existing lines or manholes; fittings less than 400 millimeters in diameter, reaction blocking; concrete anchor block; watertight welds; restrained joints; abandoning or removing lines, manholes, and other appurtenances; and restoring property. Pipe of one size, except for cast iron and ductile iron pipe, shall be combined into one contract item for the respective size of water main and sanitary sewer pipe. The salvage value of abandoned materials shall accrue to the Contractor and shall be reflected in the contract unit price for the respective replacement facility.

10-7-04 (SPCN)

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



— **500 SERIES SPs (SPECIAL PROVISIONS)** —

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



GUIDELINES - 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.
EXCEPTIONS: NONE.

SM500A1B-0706

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

November 7, 2005

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. CONSTRUCTION METHODS

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 material in a permitted landfill that provides daily soil cover and only after the Contractor has provided notification to the landfill that the

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

material is non-friable/non-regulated ACM. Within thirty-five (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 mass 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 meter 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	Meter

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



**GUIDELINES - PROJECTS REQUIRING MAILBOX POSTS.
EXCEPTIONS: NONE.**

SM500B0B-1106

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
MAILBOX POST

July 11, 2005

I. DESCRIPTION

This work shall consist of replacing mailbox posts shown on the plans or designated as hazardous objects by the Engineer.

II. MATERIALS

Post and mounting hardware shall conform to Standard Drawing RFD-1.

III. PROCEDURES

The Contractor shall be responsible for damages incurred through negligence to existing mailboxes not designated for replacement during their removal, temporary location and resetting in accordance with Section 104.05 of the Specifications.

The placement and installation of the mailbox to be replaced shall be in accordance with Standard Drawing RFD-1 and the *Asset Management Division Best Practices Manual*.

Mailbox post types shall be single, double or multiple.

The property owner may elect to furnish a new mailbox in lieu of remounting the existing mailbox, in which case the installation shall be at no additional cost to the Department or property owner.

IV. MEASUREMENT AND PAYMENT

Mailbox posts will be measured and paid for at the contract unit price of each, complete-in-place, for the type specified which price bid shall include furnishing and installing mailbox post and hardware, mounting the existing or new mailbox(s), removing the existing mailbox(s) and post(s), temporary relocation, setting new post, disposal of existing post(s), and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Mailbox Post (Type)	Each

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



GUIDELINES— PROJECTS WITH UNDERDRAINS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

SM501C1B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 501—UNDERDRAINS

October 18, 2005

SECTION 501—UNDERDRAINS of the Specifications is replaced with the following:

501.01—Description.

This work shall consist of constructing underdrains, using pipe, aggregate, and geosynthetics, in accordance with these specifications and in reasonably close conformity to the lines and grades shown on the plans or as designated by the Engineer.

501.02—Materials.

- (a) **Pipe** shall conform to the requirements of Section 232 of the Specifications.
- (b) **Aggregate** shall conform to the requirements of Section 202 or 203 of the Specifications.
- (c) **Geosynthetics, to include geotextile fabric and prefabricated geocomposite pavement edgedrains**, shall conform to the requirements of Section 245 of the Specifications.

501.03—Procedures.

- (a) **Excavation:** The trench shall be excavated so that the walls and bottom are free of loose and jagged material. Large depressions shall be filled with sandy material, and sharp contours and rises shall be leveled. Excavated material shall be handled in a way that prevents contamination with the aggregate used to backfill the trench for the underdrain.
- (b) **Placing Geosynthetics:** When geotextile fabric or prefabricated geocomposite pavement edgedrain, PGPE, is required, it shall be placed as shown on the plans. Torn or punctured fabric shall be replaced at the Contractor's expense. Splices, when required for PGPE shall be made using splice kits furnished by the manufacturer and in accordance with the manufacturer's written instructions. Spliced joints shall not damage the panel, shall not impede the open flow area of the panel, and shall maintain the vertical and horizontal alignment of the drain within 5 percent. Splices shall be made in such a manner as to prevent infiltration of the backfill or any fine material into the water flow channel.
- (c) **Installing Pipe:** Perforated pipe shall be placed with the perforations facing downward on a bed of aggregate material. Pipe sections shall be joined with appropriate couplings. Semi-round underdrain pipe shall be placed with the rounded section down.

Wherever the depth of the trench is modified to a lesser depth than shown on the standard drawings, concrete or corrugated pipe shall be used.

Pipe shall be placed with the bell end up grade. Open joints shall be wrapped with the same geotextile used for lining the excavation.

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

Upgrade ends of pipe, except for combination underdrains, shall be closed with suitable plugs. Where an underdrain connects with a manhole or catch basin, a suitable connection shall be made through the wall of the manhole or catch basin.

After the Engineer has approved the pipe installation, aggregate backfill material shall be placed and compacted. Pipe and covering at open joints shall not be displaced during subsequent operations.

Outlet pipes shall be installed at the low points of a sag.

End walls for outlet pipes shall be placed on a prepared surface that has been compacted to meet the requirements of Section 303.04 of the Specifications. If settlement of the end wall occurs, the Contractor shall make necessary repairs at his expense.

Prior to final acceptance of the underdrain system, the Contractor shall conduct a video inspection of the installed system in accordance with the requirements of VTM-108.

- (d) **Combination Underdrain Outlets:** Pipe shall be placed in the trench with sections securely joined. After the Engineer has approved pipe installation, the trench shall be backfilled with aggregate material in layers not more than 150 millimeters in depth and thoroughly compacted.
- (e) **Inspection Ports:** Inspection ports shall be installed on the PGPE at a rate of 2 per 1.6 kilometers of installed PGPE or a minimum of 4 per project. Inspection ports shall meet and be installed in accordance with the manufacturer's specification. The Department will use these ports in conjunction with a borscope camera as part of the basis for acceptance the PGPE. The Department will perform inspection after PGPE installation, but prior to paving the shoulder. Bends, water flow restrictions, J-shaped panels, tears in the geotextile, debris in pipes and sags are unacceptable and shall be removed and replaced at no cost to the Department.

501.04—Measurement and Payment.

Underdrains and combination underdrains will be measured in meters, complete-in-place, and will be paid for at the contract unit price per meter. The contract unit price for underdrains installed at depths greater than that shown in the standard drawings will be increased 20 percent for each 300-millimeter increment of increased depth. No adjustment in the contract unit price will be made for an increment of depth of less than 150 millimeters. When drains are to be placed under pavement that is not constructed under the Contract, the contract unit price shall include removing and replacing pavement.

Geotextile drainage fabric, when a pay item, will be measured and paid for in accordance with the requirements of Section 504.04 of the Specifications.

Outlet pipe for underdrains will be measured in meters, complete-in-place, and will be paid for at the contract unit price per meter.

These prices shall include geotextile drainage fabric when not a pay item, excavating, aggregate, backfilling, compaction, splicing, inspection ports, if any, disposing of surplus and unsuitable materials, and installing outlet markers.

Payment will be made under:

Pay Item	Pay Unit
Underdrain (Standard)	Meter

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



Combination underdrain (Standard)
Outlet pipe

Meter
Meter

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



**GUIDELINES - PROJECTS HAVING INCIDENTAL CONCRETE ITEMS.
EXCEPTIONS: NONE.**

SM502A0B-0200

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 502—INCIDENTAL CONCRETE ITEMS

April 12, 1999ccc

SECTION 502—INCIDENTAL CONCRETE ITEMS of the Specifications is amended as follows:

Section 502.03—Procedures is replaced by the following:

502.03—Procedures.

The foundation shall be constructed to the required elevation. Unsuitable material shall be removed and replaced as directed by the Engineer. The subgrade shall be thoroughly compacted and shaped to provide a uniform, smooth surface. The foundation for hydraulic cement concrete items shall conform to the specified density of the course and shall be moist when concrete is placed.

Immediately following finishing operations, hydraulic cement concrete shall be cured and protected in accordance with the requirements of Section 316.04.

(a) **Fixed Forms Requirements**

Fixed forms shall be straight, free from warp, and of such construction that there will be no interference with the inspection of grade and alignment. Forms shall extend the entire depth of the item and shall be braced and secured so that no deflection from alignment or grade will occur during concrete placement. Radial forms shall be sufficiently flexible or otherwise designed to provide a smooth, uniform, curved surface of the required radius. Face forms shall be removed as soon as concrete has attained sufficient set for the curb to stand without slumping. The exposed surface shall then be smoothed by the use of a suitable finishing tool.

Transverse joints for crack control for fixed forms shall be provided at the following locations:

1. at approximately 6 meter intervals;
2. at the gutter where the curb and gutter tie to the gutter apron of drop inlets;
3. when time elapsing between consecutive concrete placements exceeds 45 minutes.
4. where no section shall be less than 1.8 meter in length.

Crack control joints may be formed by using one of the following methods:

- a. removable 3 mm thick templates
- b. scoring or sawing for a depth of not less than 19 mm when using curb machine
- c. approved "leave-in" type insert or may be formed or created using other approved methods which will successfully induce and control the location and shape of the transverse cracks.

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

The joint at the gutter where the curb and gutter ties to the apron gutter of the drop inlet shall be formed by scoring or sawing.

Expansion joints shall be formed at intervals of approximately 30 meters, at all radii points at concrete entrances and curb returns and at locations no less than 1.8 meters and no more than 3 meters from drop inlets.

Hydraulic cement concrete shall be sufficiently consolidated to produce a uniform, closed surface. Edges shall be rounded to a 6 mm radius.

Exposed surfaces immediately adjacent to the roadway, except concrete median barrier, shall be given a light broom finish. Concrete median barrier shall be given a Class 1 finish in accordance with the requirements of Section 404.07(a). Paved ditches and paved flumes shall be given a coarse or roughened texture. Other exposed surfaces shall be given a rough wood float finish. Mortar used in the removal of surface irregularities shall be in accordance with the requirements of Section 218.

(b) Slipform Requirements

The Contractor will be permitted to slipform incidental concrete items provided the following conditions contained herein are met. Approval by the Department to allow the Contractor the option of slipforming concrete items is permissive only and in no way relieves the Contractor from his responsibility to meet the contract requirements and conditions.

Slipform equipment shall produce a product equal to or better than that produced by fixed form construction. Equipment for slipforming operations shall be designed or engineered to form the type of construction design for which its use is intended. Where equipment has been modified to such an extent that its use is questionable, the Contractor may be required at his expense to demonstrate to the Engineer's satisfaction that the equipment can consistently produce the desired type of construction. The slipform equipment shall be self-propelled and shall be equipped to consolidate, form, extrude, and finish the freshly placed concrete in such a manner that a minimum of hand finishing is required to produce a dense, consolidated, homogenous product. Slipform equipment shall be controlled to line and grade by automatic sensing, guidance and control devices such that the machine automatically senses and follows taut

GUIDELINES or other stable reference, performing any necessary corrective action to ensure the correct grade and alignment is achieved. The Contractor shall ensure the slipform operation is planned to result in the full cross section and grade of the desired design at the beginning and end of the placement. Slipform equipment shall operate with a continuous forward movement. The Contractor shall plan and stage the work to eliminate the need for the slipform machine to be stopped during placement operations. If for any reason it is absolutely necessary to stop the forward progress of the machine; operation of the vibrating and tamping elements shall be stopped immediately. Equipment used for slipforming shall conform to the general requirements of Section 108.07. If the results of the slipform operation are not satisfactory to the Engineer in accordance with the requirements stated herein, the continued use of the equipment will not be permitted.

Concrete for use in slipform operations may be manufactured with a slump as low as zero ("0"). The top of the slump range shall conform to the class of concrete specified on the plans or special provisions in accordance with Section 217. The concrete shall have properties that consistently maintain workability and the cross section, line, and grade of the proposed product. Concrete shall be finished to a light broom finish. If water is held back to maintain the desired slump, it may be added in increments provided the maximum water per cubic yard has not been exceeded and a minimum of 30 revolutions at mixing speed is used for complete mixing.

Where reinforcing steel is incorporated into the proposed design, it shall be uncoated steel conforming to Section 223. Reinforcing steel shall be tied at 100 percent of the bar intersections and shall be sufficiently strengthened with braces, additional reinforcement, or chairs to make the reinforcement cage rigid so as to prevent any movement during concrete placement. If the reinforcing steel exhibits any movement during concrete placement using slipforming methods, the work shall be suspended until the reinforcing steel has been sufficiently tied and stabilized to the satisfaction of the Engineer. The reinforcing steel shall be continuous from fixed object to fixed object. All reinforcing steel shall have the appropriate amount of concrete cover for the particular design with a tolerance of $-0 +12.5$ mm; however, in no case shall the amount of cover be less than 38 mm. Reinforcing steel inserted in the freshly placed concrete shall be inserted with the use of vibration to achieve adequate bond of the reinforcing steel. Where bonding is suspect, the Engineer may require pull out tests be performed by the Contractor at his expense. If such tests confirm the presence of adequate bond, the Department will reimburse the Contractor the cost of such testing.

The maximum height of any extrusion shall be limited such that the alignment and cross sectional shape of the design is maintained within the construction tolerances. If the Contractor elects to use or is required to use multiple placements to achieve a particular design, the Contractor shall submit a plan outlining the details of each placement for approval by the Engineer prior to beginning placement operations. Where multiple placements are permitted for installation of a particular design, the separate placements shall be staged so that any horizontal joints incorporated in the phased construction shall be arranged in such a manner as to prevent water infiltration in the final design and water flowing through any longitudinal joint.

Where weep holes are part of the proposed median barrier design, the Contractor shall use 150 mm diameter underdrain pipe in lieu of weep holes. Underdrain pipe conforming to Section 232 shall be installed at the grade at the bottom of the footing and shall terminate in catch basins or drop inlets.

Where naturally occurring vertical contraction cracking occurs and where there exists a grade separation on each side of the barrier, the Contractor shall install a waterproofing membrane conforming to Section 213, spanning 450 mm on each side of the contraction

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

crack at the back surface of the higher grade side of the barrier to prevent water from passing through the barrier.

Expansion joint material 38 mm thick shall be installed adjacent to each fixed object. Expansion material shall be placed against each fixed object prior to placement of the slipformed concrete. Contraction joints will not be required with slipformed operations provided the reinforcing steel is continuous from fixed object to fixed object.

(c) **Individual Item Requirements**

1. **Hydraulic Cement Concrete Curbs, Gutters, Combination Curbs and Gutters, Paved Ditches, and Paved Flumes:** Where standard mountable curb or combination curb and gutter with mountable curb is specified, adjacent curbs of standard entrance gutter and standard connection for streets shall be modified to provide a mountable shape corresponding to the standard mountable shape.

Where integral curb is specified, the curb shall be placed simultaneously with or immediately after placement of the slab. The time period between slab and curb placement shall be not more than 45 minutes except as hereinafter specified. The surface of the slab on which the curb is to be placed shall be roughened, and the concrete shall be placed so as to secure a bond between the slab and curb.

When authorized by the Engineer, the Contractor may construct the integral curb by providing steel dowels 16 mm in diameter, 175 mm in length, to be embedded in the slab at 300 mm intervals. Dowels shall be placed so as to extend at least 50 mm into the curb. While the slab is still plastic, it shall be roughened to a depth of approximately 12.5 mm below the screeded surface for the full width of the curb.

Local irregularities in the face and top of curbs shall be not more than 9 mm in 3 meters. Vertical alignment shall be sufficiently uniform and regular to ensure complete drainage.

Any curb, gutter or combination curb and gutter, except those on structures, may be placed by the slipform method provided the finished product is true to line, cross section and grade and the concrete is dense and has the required surface texture. The concrete shall be of such consistency that it will maintain the desired shape or cross section of the design without support.

Where concrete curb or curb and gutter is placed over existing pavement, it shall be anchored to the existing pavement either by placing steel dowels and reinforcing steel or by using an approved adhesive. Steel dowels shall be firmly mortared with 1:1 Portland cement and sand mortar in holes drilled in the pavement. If an adhesive is used, the surface of the pavement shall be thoroughly cleaned before the adhesive is applied. Adhesive shall be EP-4 epoxy resin, a two component system conforming to Section 243 of the Specifications. The pavement shall be cleaned either by blast cleaning or by wire brushing so that the prepared surface is free of dust, loose material, oil, or any other material that may prove deleterious to bonding.

The grade for the top of the extruded curb shall be indicated by an offset

GUIDELINE set by the Contractor from survey information supplied by the Department. The forming tube portion of the extrusion machine shall be readily adjustable vertically to accommodate, when necessary, a variable height of curb conforming to the predetermined curb grade line. A grade line gage or pointer shall be attached to the machine to monitor the elevation of the curb being placed against the established grade line so as to make corrective adjustment as necessary. In lieu of a grade line gage or pointer the extrusion machine may be operated on rails or forms set to produce the predetermined finished grade line for the curbing.

Concrete shall be continuously fed to the slipforming machine at a uniform rate. The machine shall be operated under sufficient uniform restraint of forward motion so as to produce a well compacted homogenous mass of concrete free from surface pits larger than 6 mm in diameter and requiring no further finishing other than light brushing with a broom. Finishing with a brush application of grout will not be permitted.

Expansion joints shall be constructed as specified for fixed formed curbing or shall be constructed by sawing through the curb section to its full depth. The width of the cut shall be such to allow the insertion of the joint filler with a snug fit. If sawing is performed before the concrete has hardened, the adjacent portions of the curb shall be supported firmly with close fitting shields. The operations of sawing and inserting the joint filler shall be completed before curing the concrete.

If sawing is performed after the concrete has hardened, the joint filler shall be mortared in place with heavy trowel pressure. After sawing is performed, all exposed portions of the curb in the vicinity of the joint shall be covered with another application of curing compound. At the conclusion of the curing period, the filler in each sawn joint shall be checked for tightness of fit. Any loose filler shall be mortared in place again and cured.

Within 3 to 7 days, the Contractor shall backfill curb; gutter and combination curb and gutter to the required elevation with approved material. Backfill material shall be compacted with curbs and gutters remaining plumb.

2. **Asphalt Concrete Curbs and Paved Ditches:** The curb shall be placed on a clean dry surface. Immediately prior to placement of the asphalt mixture, a tack coat of asphalt shall be applied to the surface at a rate between 0.02 and 0.07 liter per square meter of surface. Asphalt shall be prevented from spreading outside the area to be occupied by the curb.

Asphalt concrete curb shall be placed by a self-propelled automatic curb machine or a paver having curbing attachments to form a satisfactorily compacted curb of a uniform texture, shape, and density. The Engineer may permit construction of curbs by other means when short sections or sections with short radii are required. The resulting curbs shall conform in all respects to curbs produced by a curb machine.

Sealing or painting shall be performed only on curbs that are clean, dry, and cooled to ambient temperature.

Asphalt concrete paved ditches shall be placed and compacted so as to provide a smooth, uniform, and dense texture.

3. **Grouted Rubble Gutter:** Aggregate for the foundation course shall be spread on the subgrade to a depth of at least 100 mm.

Gutter stones shall be bedded in the foundation course perpendicular to the finished surface, flat side up, in straight rows, with the longest dimension perpendicular to the

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

centerline of the gutter. Joints shall be broken in a satisfactory manner, and the width of interstices in the dry gutter shall be not more than 25 mm.

Stones shall be rammed until the surface is firm and conforms to the finished grade and cross section. Joints shall then be filled with dry filler to within 100 mm of the top of stones, and the surface shall be rammed to ensure proper compaction of filler. After irregularities have been corrected, cement grout shall be poured and broomed into joints and over stones. Additional grout shall be applied and brooming shall be continued until grout remains flush with the top of stones.

4. **Concrete Median Barriers:** Concrete median barriers shall be constructed in accordance with the requirements specified herein and in Sections 512, 404, and 410.

Concrete median barriers shall be constructed within an allowable tolerance of 12.5mm for overall depth and overall width, 6 mm for the width of the upper portion of the barrier, and 6 mm per 3 meters for horizontal alignment.

After the specified curing time has elapsed, concrete median barriers for roadways shall be backfilled to the required elevation with approved material. Material shall be thoroughly tamped in layers not more than 6 inches in depth before compaction. Delineators shall be installed on median barriers in accordance with the requirements of Section 702.03.

**GUIDELINES – PROJECTS WITH CG-12 DETECTABLE WARNING SURFACE.
EXCEPTIONS: NONE.**

SM504A0B-0304

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

February 12, 2003c

I. DESCRIPTION

This work shall consist of providing all labor, tools, equipment, and materials required to construct sidewalk with 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:

In lieu of concrete, solid brick pavers, or concrete pavers, other permanent, durable materials suitable for heavy traffic outdoor areas approved by the Department may be used to construct the detectable warning areas where called for in the plans and other contract documents. Solid brick pavers and concrete paver units shall conform to the details and requirements shown in the plans. Other durable materials shall be in accordance with Department approved manufacturer's design and specification requirements.

There shall be a minimum of 70% contrast in light reflectance between the detectable warning area and adjoining surfaces. The detectable warning can optionally be "safety yellow". The material used to provide visual contrast shall be an integral part of the detectable warning surface. Both the truncated domes and the underlying surface must meet the contrast requirement. The contrast in percent shall be determined by:

$$\text{Contrast} = [(B1 - B2) / B1] \times 100$$

where B1=light reflectance value (LRV) of the lighter area and B2=light reflectance value (LRV) of the darker area. Note that in any application both white and black are never absolute; thus, B1 never equals 100 and B2 is always greater than 0.

When visual contrast other than "safety yellow" is used, provide verification of contrast. Verification of visual contrast is required.

III. CONSTRUCTION

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 Special Design Drawing and the Plans.

IV. MEASUREMENT AND PAYMENT

CG-12 Detectable Warning Surface will be measured in square meters and paid for at the contract unit price per square meter, complete-in-place. This price shall be full compensation for furnishing and installing approved truncated dome finished materials including but not limited to concrete, brick or 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.

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

Payment will be made under:

Pay Item

Pay Unit

CG-12 Detectable Warning Surface

Square Meter

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



**GUIDELINES— PROJECTS REQUIRING GUARDRAIL OR STEEL MEDIAN BARRIERS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM505A0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 505—GUARDRAIL AND STEEL MEDIAN BARRIERS

June 14, 2006

SECTION 505—GUARDRAIL AND STEEL MEDIAN BARRIERS of the Specifications is amended as follows:

Section 505.01—Description is replaced with the following:

This work shall consist of furnishing and constructing guardrail and steel median barriers and installing reuse galvanized guardrail in accordance with the plans and these specifications and to the lines, grades and tolerances shown on the plans or as designated by the Engineer.

Section 505.02(e)—Delineators is replaced with the following:

(e) **Delineators** shall conform to the requirements of Section 235.02(d) of the Specifications.

Section 505.03—Procedures is amended to replace the second paragraph with the following:

Rail and elements shall be erected and aligned in a manner that will result in a smooth, continuous, taut installation. Installation shall not result in the cross section of the rail or other elements being kinked or crimped. Damaged rail or other elements will be rejected and replaced by the Contractor at no additional cost to the Department.

Section 505.03—Procedures is amended to add the following:

All posts may be driven providing the equipment used is capable of installing the post without damaging them. Damaged posts will be rejected and shall be replaced by the Contractor at no additional cost to the Department. Posts shall be set plumb. Posts shall not be set with a variation of more than 10 millimeters per meter from vertical.

Posts shall be spaced in accordance with the Standard Drawings. A longitudinal deviation of 19 millimeter will be allowed providing the bolt holes in the guardrail, blockouts and posts can be properly aligned without alteration or force. The height of the guardrail shall be as shown in the Standard Drawings.

On guardrail, nuts on bolts shall be tightened to a snug tight fit as defined in Section 407.06 of the Specifications to ensure full contact between the beam, blockout and post.

The Contractor shall submit to the Engineer a copy of the manufacturers' recommended installation instructions for all guardrail terminal treatments prior to installation of guardrail.

The Contractor shall have a trained guardrail installer on the project during guardrail installation. For the purpose of this specification a trained guardrail installer is a person who has a current certificate of training from a VDOT approved guardrail installing training course.

Section 505.04—Measurement and Payment is amended to replace the first paragraph with the following:

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



Guardrail will be measured in meters and will be paid for at the contract unit price per meter including hardware. Cable guardrail will be measured in meters from the point where cable guardrail attaches to the run-on terminal treatment to the point where cable guardrail attaches to the run-off terminal treatment, complete in place. Guardrail that is mounted flush to a structure will be measured along the length of the guardrail from the center of the bolt group. Shop-curved or field-curved guardrail installed on a radius of 50 meters or less will be measured in meters of radial steel beam guardrail or radial steel median barrier.

Section 505.04—Measurement and Payment is amended to include the following:

Bull nose barrier will be measured and paid for in units of each, complete in place, which price shall include furnishing and placing, foundation soil tubes, concrete, polystyrene sheeting, welded wire fabric, posts, radial guardrail, blockouts, hardware and delineators. This price shall be full compensation for all labor, materials, tools and equipment necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Bull nose barrier	Each

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



**GUIDELINES - PROJECTS HAVING PORTABLE CHANGEABLE MESSAGE SIGNS.
EXCEPTIONS: NONE**

SM512B1B-1202

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
PORTABLE CHANGEABLE MESSAGE SIGNS**

May 3, 2002c

I. DESCRIPTION

This work shall consist of using fully operational portable changeable message signs (PCMS) for detours, emergency conditions, and other traffic control use as specified in the contract or directed by the Engineer. The number of units estimated by the Department to be used for the project will be as shown on the plans. The number of units and hours of use estimated by the Department was based on the suggested Sequencing of Construction shown in the plans and may be different from the Contractor's own construction plan. For the purposes of this provision "fully operational" shall mean that the PCMS unit is immediately capable of fully performing all of the operational functions described in the manufacturer's product or owner's manual.

II. EQUIPMENT

PCMS units shall be self-contained, including message board, power supply, and trailer. The controller head shall have a back-up system to prevent loss of memory. The trailer and sign frame shall be painted federal yellow or Virginia Highway Orange (DuPont Color #LF74279 AT or color equivalent). The sign panel support shall provide for an acceptable roadway viewing height that shall be not less than 2.1 meters from bottom of sign to crown of road.

The message board shall provide for 3 lines of legend and shall be formed of characters no less than 450 millimeters high. Each line shall be composed of at least eight characters and each character module shall at a minimum use a five-wide by seven high pixel matrix. 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 shall be capable of sequentially displaying at least 3 messages of 3 lines each with appropriate controls for selection of messages and variable off-on time.

III. PROCEDURE

The Contractor shall determine from its plan of operations or working schedule the most efficient and effective use of the PCMS units based on its construction sequencing or traffic control operations. PCMS signs shall be periodically checked by the Contractor for compliance with manufacturer's requirements for operation and functions, and shall be ready for immediate use once employed on 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, then 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 may be necessary. In these circumstances, the cost for such additional units that are authorized by the Engineer shall be in accordance with the requirements of Section 109.05 of the Specifications.

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

If 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 as determined by the Engineer, and no units are available, the Contractor shall furnish such additional unit(s) to the project within two 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 shall in no way relieve the Contractor of the responsibility for controlling, maintaining, and completing the work.

IV. MEASUREMENT AND PAYMENT

When used, PCMS will be measured and paid for in hours of use, which 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
Portable Changeable Message Sign	Hour

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



**GUIDELINES - ALL PROJECTS.
EXCEPTIONS: NONE.**

SM512J3B-1106

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

June 29, 2005

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

Section 512.01—Description is replaced with the following:

This work shall consist of maintaining and protecting traffic through areas of construction, maintaining public and private entrances and mailbox turnouts, constructing and obliterating detours, and protecting the traveling public within the limits of the project and over detours that are not a part of the state highway system in accordance with the contract documents.

Section 512.02 (b) Signalization, barricades, channelizing devices, safety devices, and pavement markings is replaced with the following:

- (b) **Signalization, barricades, channelizing devices, safety devices, and pavement markings** shall conform to the requirements of Division VII Traffic Control Devices of these specifications and the *Virginia Work Area Protection Manual* except where otherwise indicated. Retroreflective surfaces shall conform to the requirements of Sections 235, 247 and 702 of the Specifications as applicable.

Section 512.02 (d) Construction pavement markings is replaced with the following:

- (d) **Construction pavement markings** shall conform to the requirements of Section 246 of the Specifications.

Section 512.02—Materials is amended to include the following:

- (e) **Construction signs** shall conform to the requirements of Section 247 of the Specifications. Sign substrates for rigid construction signs mounted on posts shall conform to Section 701 of the Specifications or be a 2-millimeter thick aluminum/plastic laminate.

Sign substrates for signs mounted on drums, type III barricades and portable sign stands shall be of the materials listed 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 III BARRICADES AND PORTABLE SIGN STANDS
Rollup sign
10mm thick corrugated polypropylene or polyethylene plastic
2mm thick aluminum/plastic laminate
SIGN SUBSTRATES FOR DRUMS
10mm thick corrugated polypropylene or polyethylene plastic

Section 512.03—Procedures is amended to replace the first paragraph with the following:

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



Traffic shall be maintained and protected in accordance with the requirements of Sections 104.04 and 107.10 of the Specifications. Work shall be scheduled and performed so as to provide minimum interference with and maximum protection to traffic. The Contractor's personnel, equipment, machinery, tools, and supplies shall be kept outside of the clear zone and clear of active traffic lanes except as necessary for prosecuting active work. Stabilized construction entrances shall be used in construction areas where there is a potential for construction vehicles to track material from the construction site onto a paved surface. Material that is spilled or tracked onto the traveled pavement during prosecution of the work shall be promptly removed.

Section 512.03—Procedures is amended to replace the first two sentences of the second paragraph with the following:

The Contractor shall maintain the traffic control devices which shall include but not be limited to: repositioning of displaced devices including traffic barrier service, replacement due to inadequate structural integrity including traffic barrier service, replacement due to loss of reflectivity, repair of defaced sheeting and legend, replacement of broken supports, repositioning of leaning signs so they are plum and the sign face is perpendicular to the pavement edge, cleaning of dirty devices and replacement of stolen or vandalized devices.

Section 512.03—Procedures is amended to include the following:

Work performed in conjunction with Sections 512.03(i), (j), (k) and (n) of the Specifications shall be in accordance with Section 704 of the Specifications except as noted herein.

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* publication with the following additions and exceptions:

Requirements herein for replacement and correction of construction pavement markings shall be used in lieu of the requirements contained in the section entitled Evaluation Guide Pavement Tape & Raised Pavement Markers.

The categories for Arrow Panel (Flashing Arrow and Double Arrow Mode) are replaced by the following:

Acceptable:

No lamps out in stem and arrow head(s), and dimming properly.

Marginal:

No more than 1 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 lamp out in the stem, or arrow panel not dimming properly.

Arrow Panel (Caution Mode - Bar or Corners) is replaced by the following:

EVALUATION GUIDE - ARROW PANEL (CAUTION MODE - CORNERS)

Acceptable:

No lamps out and dimming properly.

Unacceptable:

Any lamp out or arrow panel not dimming properly.

Note: Any operating lamp that is out of alignment will be considered "not functioning".

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



The unacceptable category for arrow panels shall require immediate corrective action if the device is found in operation on the jobsite.

Section 512.03 (a) Signs is replaced with the following:

- (a) **Signs:** When Construction Signs is included in the contract as a pay item, the Contractor shall furnish and install temporary sign panels necessary for the project which shall include but not be limited to, maintenance of traffic, begin and end of construction, and off-project detour signing. When Construction Signs is not included in the contract as a pay item, the Department will furnish temporary sign panels necessary for maintenance of traffic, including those designating the beginning and end of construction, to the Contractor for installation. When the Department furnishes the temporary sign panels and off-project detour signing is required and the signing requirements are shown in the plans, the Contractor shall also install the detour signing. When the Department furnishes the construction signing and the detour signing requirements are not shown in the plans, the Department will furnish, install and maintain the detour signing except when the municipality is responsible for such work in accordance with Section 104.04(a) of the Specifications.

Signs and their placement shall conform to the requirements of the *Virginia Work Area Protection Manual*, the *MUTCD*, plans and as directed by the Engineer. The Contractor shall submit to the Engineer a sketch of their proposed construction sign layout for approval prior to installation. The Contractor shall furnish supports (wood posts, barrier and wall attachments,) and hardware for use with the temporary sign panels. In lieu of using wood posts, the Contractor may request permission of the Engineer to use alternate products contained on the Special Products Evaluation List (SPEL). The request shall contain all information related to the manufacturer's installation requirements, including but not limited to, post spacing and square meter of sign panel the product can support based on AASHTO requirements for a 97 kph wind speed. The Contractor shall be responsible for covering, uncovering, or removing and reinstalling existing signs which conflict with the signs needed for maintenance of traffic. Covering of existing signs shall be accomplished in accordance with the requirements of Section 701.03(d) of the Specifications. The Contractor shall also furnish and install flags for the temporary sign panels as directed by the Engineer except flags will not be required for use on portable sign supports. Signs shall be installed and attached to wooden supports in accordance with Standard WSP-1 of the Road and Bridge Standards. Size and number of wooden supports shall be in accordance with the Standard Drawings. When alternate products for supports are approved for use by the Engineer, the supports (including size and number) and signs shall be installed in accordance with the manufacturer's recommendation.

Non-retroreflective, flexible sign base materials and retroreflective, flexible sign base materials conforming to the requirements of Section 247 of the Specifications for a ASTM D4956 Type VI material will be permitted for use from 1 hour after sunrise to 1 hour before sunset until December 31, 2002. In addition, the retroreflective material may also be used for emergency (non-planned) nighttime operations not to exceed one night. Beginning January 1, 2003, all flexible sign base materials shall be retroreflective conforming to the requirements of Section 247 of the Specifications for material that is not ASTM D4956 Type VI material. During periods of low visibility, such as darkness, fog, rain, snow, or heavy overcast, temporary sign panels constructed of these materials shall not be used. Non-retroreflective, flexible sign base material shall be a single ply woven mesh weighing a minimum of 509 grams per square meter. The yarn shall have a minimum diameter of 0.45 millimeters and shall be polyester core coated.

Retroreflective, flexible sign base materials conforming to the requirements of Section 247 of the Specifications for material that is not ASTM D4956 Type VI material may be used both day and night up to a maximum of 14 continuous days.

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

The Contractor may furnish portable sign stands for mounting temporary sign panels in accordance with the following:

1. Sign installations shall be used for no longer than 3 consecutive days (72 hours).
2. Portable sign stands shall be used with signs having a substrate material of the type required by Section 512.02(e) of the Specifications and only those that were tested and found to be in compliance with the requirements of *NCHRP* Report 350, Test Level 3 or otherwise accepted in a FHWA acceptance letter for that specific sign stand.

Portable sign stands shall be self-erecting and shall accommodate signs of the shape being utilized. Portable sign stands shall support a 1.5 square meter sign panel in 80 kph winds without tipping over, walking, or rotating more than ± 5 degrees about its vertical axis. Additional mass consisting of no more than one 11-kilogram sandbag placed on each leg or no more than two cone weights positioned on the center of the sign stand and around the mast may be used to accomplish this requirement. When used on uneven surfaces, the portable sign stand shall be capable of adjusting to those surfaces to allow the signs to be installed in their normal upright 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 legible to a person in a standing position.

Portable sign stands shall conform to the requirements of *NCHRP* Report 350, Test Level 3 and shall be selected from those shown on the Department's Approved List or 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 shall be submitted prior to their use.

Tripod sign stands will not be allowed for use on any roadway.

The Contractor shall erect, maintain, move and be responsible for the security of sign panels and shall ensure an unrestricted view of sign messages for the safety of traffic. The Contractor shall maintain and store signs furnished by the Department in a manner approved by the Engineer until they are returned to the Department.

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 Department 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 1.2 meters to the top of the topmost delineator. The bottom delineator shall be mounted 150 millimeters below the top delineator.

Section 512.03 (b) Flagger Service and Pilot Vehicles is amended to include the following:

When one-way traffic is approved, the Contractor shall provide flagger service and, where necessary, pilot vehicles to maintain traffic. Each vehicle shall be equipped with at least one roof-mounted rotating amber flashing light and shall display required signs while in service.

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 District

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

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 (c) Electronic Arrows is amended to include the following:

Trailers supporting arrow boards and the boards themselves shall be either Virginia highway orange (DuPont Color #LF74279 AT or color equivalent) or federal yellow in color. The trailer's back frame shall have 50 millimeter height retroreflective sheeting conforming to the requirements of Section 247.02(c) of the Specifications installed on the area facing traffic. The sheeting shall have alternating 275- millimeter width vertical red stripes and 175-millimeter width vertical white stripes.

Section 512.03 (d) 3 Type C Steady Burn Lights is replaced with the following:

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. When used on Group 2 channelizing devices, the channelizing devices shall have been tested with the light and a FHWA acceptance letter issued indicating compliance with *NCHRP* Report 350, Test Level 3 as required in Section 512.03(e) of the Specifications. Lights shall be placed at intervals of 24 meters along tangent sections and 12 meters along bridges, transitions, and curves greater than 6 degrees. 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 as directed by the Engineer.

Section 512.03 (e) Channelizing Devices is amended to replace the first paragraph including the spacing chart with the following:

(e) **Channelizing devices** purchased after October 1, 1998 with the exception of drums/cones with an auxiliary device (sign, light, etc.) attached and portable vertical panel assemblies shall conform to the requirements of *NCHRP* Report 350, Test Level 3. Drums/cones with an auxiliary device attached and portable vertical panel assemblies purchased after October 1, 2000 shall conform to the requirements of *NCHRP* Report 350, Test Level 3. However, beginning January 1, 2003, all channelizing devices shall conform regardless of the purchase date. Channelizing devices shall be selected from those shown on the Department's Approved List beginning with the above applicable purchasing dates. The Contractor shall provide a certification letter stating the brands and models of channelizing devices contained on the listing that will be used. In lieu of using channelizing devices on that listing, the Contractor may utilize other brands and/or models conforming to specification requirements provided he submits catalog cuts/brochures of each brand and model prior to their use and the following requirements:

1. Channelizing devices except drums/cones with an auxiliary device attached and portable vertical panel assemblies -- A copy of a self-certification letter from the manufacturer that the specific channelizing device is crashworthy – that it will meet the evaluation criteria of the *NCHRP* Report 350. This self-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 – A copy of the FHWA acceptance letter indicating compliance with *NCHRP* Report 350, Test Level 3.

Also, the Contractor shall provide, when applicable, a certification letter indicating that those channelizing devices being used that are not contained on the Department's Approved List and for which no catalog cuts/brochures and self-certification are being supplied were purchased prior to October 2, 1998 or October 2, 2000, as applicable.

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

Spacing of channelizing devices shall be in accordance with the *Virginia Work Area Protection Manual*.

- a. **Group 1 devices** shall consist of tubular delineators or cones approximately 900 millimeters in height for interstate and other limited access roadways and approximately 700 millimeters in height for other roadways. They shall be used as temporary channelizing devices. When used during hours of darkness, they shall be provided with reflectorized collars or sleeves.
- b. **Group 2 devices** shall be drums or vertical panels. Drums shall be round, or round with no more than one flatside, made from plastic, have a minimum height of 900 millimeters, have a cross-sectional width no less than 450 millimeters in any direction and conform to the *Virginia Work Area Protection Manual*. Drum 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 (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 125 millimeters in height. Two-piece drums may also utilize a flared drum foundation and collar of not more than 125 millimeters in height and of suitable shape and mass to provide stable support. One-piece drums may be used provided they meet the above requirements.

Vertical panels shall be mounted on posts conforming to the requirements of AASHTO's *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*.

Vertical panels will be allowed only for use in locations indicated in the contract documents. Non-portable vertical panels shall be mounted on posts conforming to the requirements of AASHTO's *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*.

Open top drums will not be allowed. Markings on drums shall be horizontally circumferential, alternating from the top of the drum with orange and white, 150 millimeters wide, retroreflective stripes. Each drum shall have a minimum of two orange and two white stripes and the top stripe shall be orange. Any non-retroreflective areas on the drum except the base shall be orange in color and spaces between retroreflective stripes shall not exceed 50 millimeters in width.

The Contractor shall also furnish and install signs (Stop, Chevron, Keep Right, etc.) for the drums as directed by the Engineer. Sign panels used on drums tested for conformance to NCHRP requirements shall be of the same material as that used for the test except that materials as allowed by the FHWA acceptance letter may be used when approved by the Department.

Section 512.03 (f) Traffic Barrier Service is amended to replace the sixth sentence of the third paragraph with the following:

The transition flare rate shall be in accordance with the requirements of the *Virginia Work Area Protection Manual*. For speeds below 50 kph, the transition flare rate shall be the same as that indicated for 50 kph.

Section 512.03 (f) Traffic Barrier Service is amended to replace the last paragraph with the following:

The Contractor shall visually inspect all traffic barrier service shipped to a project prior to placing it in use. Concrete barrier sections shall be structurally sound with no concrete missing along the

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

top surface and no through cracks. Any traffic barrier service found by the Contractor to be unacceptable due to inadequate structural integrity or functionality shall be removed from the project site. The Contractor shall furnish a self-certification to the Engineer for the traffic barrier service stating that traffic barrier service has been inspected and found to be in conformance with *NCHRP 350* requirements and is acceptable for use.

The Contractor shall maintain the structural integrity of the barrier and its alignment while it is in use and shall maintain warning lights, barrier vertical panels, delineators, and other devices in a clean and visible condition at all times. Concrete barrier service shall be cleaned or coated sufficiently to afford good visibility and uniformity of appearance.

Section 512.03(f)2. Concrete Barrier Service is amended to replace the fourth paragraph with the following:

The Contractor shall visually inspect all traffic barrier service shipped to a project prior to placing it in use. Concrete barrier sections shall be structurally sound with no concrete missing along the top, bottom, sides, or end sections of the barrier, no through cracks or no exposed rebar. Any traffic barrier service found by the Contractor or Engineer to be unacceptable due to inadequate structural integrity or functionality shall be promptly removed from the project site and replaced at no cost to the Department. Traffic barrier service shall be selected from those shown on the Department's Approved List, except that the Contractor may utilize other traffic barrier service, provided he submits a copy of the FHWA acceptance letter indicating compliance with *NCHRP 350*, prior to their being used.

Section 512.03(h) Temporary Signalization is replaced with the following:

(h) **Temporary Signalization:** When specified on the plans, the Contractor shall install and maintain temporary or portable traffic control signal equipment. The Contractor shall submit to the Engineer a plan for locating, installing and maintaining signals that shall depict the Contractor's intent for maintaining traffic flows during construction operations, including type of vehicle detection, phase sequencing and timings. The Contractor shall receive acceptance of the plan from the Engineer prior to beginning work that would necessitate installing the proposed temporary or portable traffic control signals. The Contractor's design shall conform to the requirements of the applicable sections of *AASHTO's 1994 Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, MUTCD*, and the *Virginia Work Area Protection Manual*. Existing traffic control signal equipment materials on the project may be used. New, salvaged or refurbished traffic control signal equipment materials brought to the project shall conform to the Contract specifications and standards.

1. **Temporary traffic control signals** shall conform to the following:

Controller, accessory, auxiliary and conflict monitoring equipment shall conform to the requirements of NEMA TS-1, NEMA TS-2 or as approved by the Engineer.

2. **Portable traffic control signals** shall conform to the following:

- a. Portable traffic control signals shall provide phase sequencing, timings and conflict monitoring equivalent to NEMA TS-1 (Functional Standards).
- b. Shall provide five programmable day programs within a 24-hour period.
- c. Shall utilize 300-milimeter traffic signal head sections with backplates mounted in the vertical display arrangement.
- d. Shall incorporate vehicular detection that will detect all licensed vehicles unless otherwise indicated in the contract documents.

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

- e. Shall have adequate safeguards to prevent unauthorized entry to the control equipment.
- f. Shall be a trailer-mounted type with at least one of the two traffic signal heads positioned over the travelway with a minimum 5-meter clearance from the pavement to the lowest point of the signal head assembly.
- g. Shall operate from its own self-contained power supply with the capability of connecting to an external 110-VAC electrical power supply. When operating from a self-contained solar power supply, the battery backup shall be capable of operating for 18 continuous days at 25 degrees C without solar array assist.
- h. The trailer's back frame shall have 50-millimeter height reflective sheeting conforming to the requirements of Section 247.02(c) of the Specifications installed on the area facing traffic. The sheeting shall have alternating 280-millimeter width vertical red stripes and 180-millimeter width vertical white stripes.
- i. Shall be designed when in the operating mode to meet loading conditions associated with wind gusts of 130 kph as outlined in *AASHTO's 1994 Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*.

Temporary and portable traffic control signals that are not specified on the plans but installed by the Contractor for his convenience shall be installed at the Contractor's expense and shall be approved through the process described herein.

Maintenance and operation of temporary and portable traffic control signals shall be the responsibility of the Contractor and shall be in accordance with the requirements of Section 703.03(a) of the Specifications Prosecution of Work, fourth paragraph.

When required, the Contractor shall make arrangements with the local utility company for electrical service for a new temporary and portable traffic control signals, which shall include the costs of connection, disconnection and energy. If electrical service is not available, the Contractor shall provide a generator capable of continuously operating the temporary and portable traffic control signals for at least 24 hours unassisted. The Contractor shall demonstrate the signal's operational procedures and reliability to the Engineer for approval prior to beginning work necessitating use of the signal equipment.

Section 512.03 (i) Construction Pavement Markings is replaced with the following:

- (i) **Construction Pavement Markings:** Construction pavement markings shall be installed at locations shown on the plans and in the *Virginia Work Area Protection Manual*, and at other locations as directed by the Engineer. Construction pavement markings shall be selected from the Department's approved list of Construction Pavement Marking Materials. Construction pavement markings are classified as Types D, Classes I and II (removable tape), E (non-reflective black removable tape) and F, Classes I and II (temporary markings). Construction pavement markings shall be used as follows:
 - 1. **Type D construction pavement markings** shall be used on final roadway surfaces or in areas where traffic patterns are subject to change before pavement is resurfaced unless the surface temperature of the pavement is below the pavement marking manufacturer's recommended minimum application temperature. When the surface temperature of the pavement is below the manufacturer's minimum application temperature, a Type F construction pavement marking on the approved list under the same class as the specified Type D construction pavement marking may be used except on final surfaces. The Contractor shall select a Type F product known to perform the best under those temperature

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

conditions. When a Type F construction pavement marking is utilized in lieu of a Type D due to the surface temperature being below the manufacturer's minimum application temperature, the Contractor will be paid the price bid for Type D, which will include the Type F markings and any necessary eradication of existing pavement markings.

2. **Type E construction pavement markings** shall be used to cover existing markings in accordance with Section 512.03(j) of the Specifications.
3. **Type F construction pavement markings** shall be used where the roadway is to be resurfaced prior to changes in the traffic pattern or where pavement is to be demolished and traffic patterns will not change before demolition.

Construction pavement markings shall be installed in accordance with the manufacturer's recommendations. Application thickness and bead application shall be in accordance with the manufacturer's recommendations except as follows. In the event the manufacturer's recommendation for material thickness and quantity of beads is less than utilized when the material was tested by the National Transportation Product Evaluation Program (NTPEP), the minimum values used during product installation shall conform to the NTPEP test values which are indicated on the approved list for the specific marking. The Contractor shall furnish a copy of the manufacturer's installation recommendations including the thickness, bead embedment and dispersment to the Engineer.

The Contractor shall maintain the construction pavement markings and shall correct any deficient markings by reapplying markings. Deficient construction pavement markings are considered to be any markings that do not provide adequate guidance to motorists due to inadequate retroreflectivity or color qualities, or due to problems with adherence to the pavement. The Engineer will make a visual nighttime inspection of all construction pavement markings to identify areas of markings that have inadequate retroreflectivity qualities.

Those markings that have inadequate retroreflectivity qualities as determined by the Engineer shall be replaced by the Contractor with the following exceptions:

- a. Reapplication of skip line construction pavement markings is not required unless the inadequate retroreflectivity qualities are for at least two consecutive skip lines.
- b. Reapplication of center, lane (except skip lines) or edge line construction pavement markings is not required unless the inadequate retroreflectivity qualities are for at least a continuous section of 21 meters.
- c. Reapplication of transverse markings is not required unless the inadequate retroreflectivity qualities are for at least a continuous section exceeding 1 meter.

In lieu of replacement of construction pavement markings based on visual observations by the Engineer, the Contractor may have retroreflectivity readings made. These measurements shall be taken within 48 hours after the Contractor has been notified of the deficient markings except additional time will be granted due to inclement weather that prevents the adequate measurement of the markings. The Contractor shall brush any form of debris from the line before performing the measurements. Measurements shall be taken in the presence of the Engineer using Contractor furnished equipment conforming to the requirements of ASTM E1710. The Contractor shall operate the equipment in accordance with the manufacturer's instructions and a copy of such instructions shall be provided to the Engineer. The photometric quantity to be measured is coefficient of retroreflected luminance (R_L) which shall be expressed as millicandelas per square meter per lux. Measurements shall be accomplished at three random locations within each area of markings that have inadequate retroreflectivity qualities. When the length of the visually inadequate area is greater than 1.5 kilometers, measurements shall be accomplished at three locations per 1.5-kilometer segment or portion thereof. Measurements for all lines shall be

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

accomplished in the middle of the line horizontally. Measurements for skip lines shall be accomplished in the middle of its length. Measurements for transverse lines shall be taken outside of the wheel path locations. The Engineer will designate the locations along the line segments that the measurements shall be taken. The Contractor shall make a log of the measurements along with their locations and provide a copy to the Engineer. When the average of the three readings for an area is below 100 millicandelas per square meter per lux, the Contractor shall reapply the markings as indicated above.

Construction pavement markings that have become unadhered to the pavement shall be reapplied by the Contractor with the following exceptions:

1. Reapplication of skip line construction pavement markings is not required unless the unadherence is for at least two consecutive skip lines.
2. Reapplication of center, lane (except skip lines) or edge line construction pavement markings is not required unless the unadherence is for at least a continuous section of 21 meters.
3. Reapplication of transverse markings is not required unless unadherence is for at least a continuous section exceeding 1 meter.

However, all construction pavement markings that have become unadhered to the roadway that may cause guidance problems for the motorists shall be removed by the Contractor.

Removable construction pavement markings shall also be replaced on tined concrete and high hit asphalt locations on time frames as recommended by the manufacturer of the marking to prevent the need for eradication. The Contractor shall furnish a copy of the manufacturer's recommendations to the Engineer.

Those construction pavement markings found in need of reapplication in accordance with the above requirements shall be reapplied by the Contractor at no additional cost to the Department with the following exceptions:

- a) Markings that have been under traffic for more than 90 days will be paid for at the contract unit price when needing reapplication unless the manufacturer's warranty coverage is still in effect.
- b) Markings damaged by the Department's snow removal or other maintenance and construction operations will be paid for at the contract unit price.

Construction pavement markings shall be replaced in accordance with the time requirements of Section 704 of the Specifications.

Eradication for reapplication of Type F construction pavement markings is not required if allowed by the marking manufacturer provided the existing marking is well adhered and the total thickness of both the existing and reapplied marking combined will not exceed 1.016 millimeters. If not well adhered, 90% of the existing markings shall be removed prior to reinstallation of the markings.

Temporary pavement markers shall be installed with construction pavement markings in accordance with (k) herein.

Section 512.03 (j) Eradicating Pavement Markings is amended to replace the last three paragraphs with the following:

Eradication shall be performed by grinding, blasting or a combination thereof. Grinding shall be limited to removal of material above the pavement surface except when removing thermoplastic and preformed tape markings, which may be removed by grinding alone. Blasting shall be used on

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

both asphalt concrete and hydraulic cement concrete pavements to remove all other types of markings. Other methods may be submitted for approval by the Engineer. The Contractor shall ensure that the least amount of damage as possible occurs to the roadway surface when accomplishing the eradication.

When eradicating pavement markings, the Contractor shall ensure workers are protected in conformance to the requirements of *Occupational Safety and Health Administration's (OSHA)* standards as detailed in 29 CFR 1910 or 1926, whichever is the most stringent at the time. The Contractor shall collect the eradication residue during or immediately after the eradication operation, except dust shall be collected during the entire operation. Eradication residue from the removal of any pavement markings is considered to be a non-hazardous waste material and shall be disposed of in a properly permitted waste disposal facility in accordance with state and federal laws and regulations. Testing of the eradication residue for the eight RCRA metals will not be required.

When markings are removed for lane shifts/transitions, 100 percent of the marking shall be removed.

Non-reflective removable black construction pavement marking may be used to cover existing markings in lieu of eradication methods on asphalt concrete surfaces when its use will not be required for more than 120 days and 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 construction pavement marking shall be applied in accordance with the manufacturer's recommendations.

Section 512.03 (k) Temporary Pavement Markers is replaced with the following:

- (k) **Temporary pavement markers** shall be installed with construction pavement markings, except non-reflective removable markings, in transition (lane drop) or lane shift areas of work zones which will encroach upon the traveled roadway for a period of more than three days and in other areas as required by the Engineer.

Temporary pavement markers shall be installed on 6-meter centers in lane shift and transition areas. When temporary pavement markers are required in other areas, they shall be installed on 12-meter centers unless otherwise required by the Engineer. Temporary pavement markers shall be located between and in alignment with broken lines and beside solid line pavement markings. Where double line pavement markings separating traffic are installed, two-way markers shall be installed beside each line. The Contractor may install two one-way markers in lieu of each two-way marker at no additional cost to the Department.

Temporary pavement markers shall be installed with a hot-applied bitumen adhesive except epoxy may be used on hydraulic cement concrete roadways and non-final surfaces of asphalt concrete roadways. Damage created in the pavement by removal of markers shall be repaired in kind by the Contractor at no additional cost to the Department.

Temporary pavement markers found in need of replacement shall be replaced by the Contractor at no additional cost to the Department except those markers damaged by the Department's snow removal operations or other maintenance and construction operations will be paid for at the contract unit price.

Section 512.03 (n) Construction Pavement Message Markings is replaced with the following:

- (n) **Construction Pavement Message Markings:** Markings shall be installed at locations designated on the plans and as determined by the Engineer and shall consist of messages in accordance with the requirements of Section 704 of the Specifications. Construction pavement message marking material including maintenance of the markings shall be in accordance with

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

the requirements for construction pavement markings. Retroreflective measurements shall be taken out of the wheel path locations and each separate entity of a pavement message marking shall be replaced when the average of the three readings for that entity is below 100 millicandelas per square meter per lux.

Section 512.03—Procedures is amended to include the following:

- (o) **Type III Barricades** shall conform to the requirements of the plans except those purchased or built by the Contractor after October 1, 2000 shall conform to the requirements of *NCHRP* Report 350, Test Level 3 and be at least 1.2 meters in width. However, beginning January 1, 2003, type III barricades shall conform regardless of the purchase date. Type III barricades beginning October 2, 2000 shall be selected from those shown on the Department's Approved List. The Contractor shall provide a certification letter stating the brands and models of type III barricades contained on the listing that will be used. In lieu of using type III barricades on that listing, the Contractor may utilize other brands and/or models provided he submits prior to their use a copy of the FHWA acceptance letter indicating compliance with *NCHRP* Report 350, Test Level 3. Also, until January 1, 2003, the Contractor shall provide, when applicable, a certification letter indicating that those type III barricades being used that are not contained on the Department's Approved List and for which no FHWA acceptance letters are being supplied were purchased or built by the Contractor prior to October 2, 2000.
- (p) **Truck mounted attenuators** shall conform to the requirements of the *National Cooperative Highway Research Program (NCHRP)* Report 230, test numbers 50, 51, 52 and 54 or Report 350, Level 2 or 3 with the following exceptions:

Truck mounted attenuators purchased after October 1, 1998 shall conform to the requirements of Report 350, Level 2 or 3.

Truck mounted attenuators shall conform to the requirements of Report 350, Level 3 beginning January 1, 2003 regardless of the truck mounted attenuator purchase date.

All tests conducted in accordance with Report 230 shall have been conducted at 28 or 37 kph.

Prior to their use, the Contractor shall submit catalog cuts/brochures of the truck mounted attenuator and the following:

For truck mounted attenuators conforming to *NCHRP* 350, a copy of the FHWA's acceptance letter documenting acceptance of the specific truck mounted attenuator as conforming to such.

For truck mounted attenuators conforming to *NCHRP* 230, a copy of a certification from the truck mounted attenuator manufacturer indicating the specific truck mounted attenuator has been tested and conforms to the above test requirements. The certification shall include a complete description of the above tests. In addition, the Contractor shall supply a dated sales receipt as documentation that the truck mounted attenuator was purchased prior to October 2, 1998. In the event that a dated sales receipt is not available and the truck mounted attenuator was purchased prior to October 2, 1998, the Contractor shall provide a certification letter that the specific truck mounted attenuator was purchased prior to October 2, 1998.

The truck mounted attenuator shall be no less than 1800 millimeters wide and no more than 2400 millimeters wide. Color of the truck mounted attenuators shall be yellow or orange.

The rear panel shall have alternate 150-millimeter width orange and black chevron (inverted v) stripes. Stripes shall be sloped at a 45° angle downward in both directions from the upper

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

center of the rear panel. Stripes shall be fabricated from fluorescent orange prismatic lens reflective sheeting conforming to Section 247.02(e) of the Specifications.

Mass of the support truck shall be as recommended by the truck mounted attenuator manufacturer. The Contractor shall provide a copy of the manufacturer's recommendation to the Engineer and a copy of a weigh ticket for the truck. The weigh ticket shall contain adequate information to properly associate the ticket with the applicable truck. Additional mass may be added to the support vehicle to achieve the range recommended by the truck mounted attenuator manufacturer provided the total mass is within the GVWR of the support vehicle and is installed such that no movement will occur during impacts

The support vehicle shall have at least one rotating amber light or high intensity amber strobe light functioning while in operation in accordance with the *Virginia Work Area Protection Manual*. When allowed by the *Virginia Work Area Protection Manual*, an electronic arrow operated in the caution mode may be used in lieu of the rotating or high intensity amber strobe light.

The support vehicle with the truck mounted attenuator in use shall have the transmission in second gear (park for automatics) with the parking brake applied and the front wheels aligned straight ahead when operating in the stationary mode.

Limitations: Support vehicles shall not be used for other purposes while the truck mounted attenuator is being used. There shall be no additional devices in the bed of the support vehicle except the additional mass as allowed by Section II and traffic control devices such as truck-mounted electronic arrows. There shall be no additional devices, including but not limited to, signs, lights, and flag holders attached to the truck mounted attenuator except those that were tested on the truck mounted attenuator and provided by the truck mounted attenuator manufacturer.

In the event the truck mounted attenuator is impacted, resulting in damage which would cause the unit to be ineffective, all work requiring the use of the truck mounted attenuator shall cease until such time that the Contractor can provide an acceptable unit, by means of repair or replacement.

Work performed in conjunction with Sections 512.03(i), (j), (k) and (n) of the Specifications shall be in accordance with Section 704 of the Specifications except as noted herein.

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* publication with the following additions and exceptions:

1. Requirements herein for replacement and correction of construction pavement markings shall be used in lieu of the requirements contained in the section entitled Evaluation Guide Pavement Tape & Raised Pavement Markers.
2. The categories for Arrow Panel (Flashing Arrow and Double Arrow Mode) are replaced by the following:

Acceptable:

No lamps out in stem and arrow head(s), and dimming properly.

Marginal:

No more than 1 lamp out in the stem and no lamps out in the head(s), and dimming properly.

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

Unacceptable:

Any lamp out in the head(s) or more than 1 lamp out in the stem, or arrow panel not dimming properly.

- 3. Arrow Panel (Caution Mode - Bar or Corners) is replaced by the following:

EVALUATION GUIDE - ARROW PANEL (CAUTION MODE - CORNERS)

Acceptable:

No lamps out and dimming properly.

Unacceptable:

Any lamp out or arrow panel not dimming properly.

Note: Any operating lamp that is out of alignment will be considered "not functioning".

- 4. The unacceptable category for arrow panels shall require immediate corrective action if the device is found in operation on the jobsite.

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

Flagger service will be measured in hours as authorized or approved by the Engineer except when used for the Contractor's convenience, such as for ingress and egress for moving construction equipment or materials. In such cases, payment will not be made for flagger service. Flagger service will be paid for at the contract unit price per hour. This price shall include paddles, safety equipment and portable traffic control signals.

Section 512.04—Measurement and Payment for Electronic Arrows is amended to replace the first sentence with the following:

Electronic arrows will be measured in hours of actual use, as required by the Engineer, except when used as an option to the use of a rotating amber light or alternating high intensity amber strobe light. In such cases, payment will not be made for electronic arrows. Electronic arrows will be paid for at the contract unit price per hour.

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

Warning lights for use on sign panels will be measured in days of actual use for the type specified, and will be paid for at the contract unit price per day. This price shall include maintaining, relocating, and removing. Warning lights installed on traffic barrier service will not be measured for separate payment, but the cost thereof shall be included in the meter price bid for traffic barrier service.

Section 512.04—Measurement and Payment for Group 2 Channelizing Devices is replaced with the following:

Group 2 channelizing devices, as required by the Engineer, will be measured in days and will be paid for at the contract unit price per day. This price shall include 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 the group 2 channelizing devices are moved 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.

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



Section 512.04—Measurement and Payment for Traffic Barrier Service is replaced with the following:

Traffic barrier service will be measured and paid for at the contract unit price per meter per location. This price shall include warning lights, delineators, barrier vertical panels, fixed object attachments, patching restraint holes, maintaining, and removing when no longer required. When fixed object attachments are used on traffic barrier service in locations where existing guardrail is in place, this price shall include restoring existing guardrail to its original condition. When traffic barrier service is moved to a new location as directed or approved by the Engineer, the relocation will be measured for separate payment. Payment for traffic barrier service will not be made until the work behind the barrier is actively pursued.

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

Temporary traffic control signal will be paid for on a lump sum basis. This price shall include, but not be limited to, poles; span wire; conduit; conductor cable; traffic signal heads; backplates; hanger assemblies; necessary control items; vehicle detection and when approved portable traffic control signal equipment. The price shall also include maintaining, adjusting, and aligning equipment; providing electrical service; utility company costs and removing equipment when no longer required.

Section 512.04—Measurement and Payment for Construction Pavement Markings is replaced with the following:

Construction pavement markings will be measured in meters and will be paid for at the contract unit price per meter. This price shall include marking materials, preparing the surface, adhesive, maintaining, removing removable markings when no longer required, inspections, and testing.

Section 512.04—Measurement and Payment for Construction Pavement Message Markings is replaced with the following:

Construction pavement message markings will be measured in units of each and will be paid for at the contract unit price per each. This price shall include marking materials, preparing the surface, adhesive, maintaining, and removing removable markings when no longer required.

Section 512.04—Measurement and Payment for Eradication of Pavement Markings is replaced with the following:

Eradication of existing pavement markings will be measured in meter of a 150-millimeter width or portion thereof. Widths that exceed a 150-millimeter increment by more than 12 millimeters will be measured as the next 150-millimeter increment. Eradication of pavement markings will be paid for at the contract unit price per meter. This price shall include removing pavement line markings and messages and disposal of residue.

Section 512.04—Measurement and Payment is amended to delete **Traffic barrier service guardrail terminal**.

Section 512.04—Measurement and Payment is amended to delete **Wood posts, hardware, and portable stands**.

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

Aggregate material will be measured in metric tons and will be paid for at the contract unit price per metric ton for the type specified. This price shall include preparing the grade and furnishing, placing, maintaining, and removing material as required.

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

Section 512.04—Measurement and Payment is amended to delete the last paragraph.

Section 512.04—Measurement and Payment is amended to include the following:

Type III barricades will be measured in units of each and will be paid for at the contract bid price per each for the width specified. Multiple 1.2 meter width type III barricades may be used together to obtain the width being specified in the pay item. This price shall include the barricades, retroreflective sheeting, maintaining, relocating to new locations and removing when no longer required.

Construction signs when furnished by the Contractor will be measured in units of square meters and will be paid for at the contract bid price per square meter. This price shall include furnishing, installing, maintaining, covering and uncovering, relocating and removing temporary sign panels, sign supports, hardware, delineators and flags. Payment based on square meter shall be compensation for the sign(s) for the duration of the project; multiple payments for the same sign used more than once will not be allowed. Construction signs when furnished by the Department will not be measured for separate payment. The cost thereof shall be included in the price bid for other appropriate pay items.

Truck mounted attenuator will be measured in hours of actual use and will be paid for at the contract unit price per hour. This price shall include the truck mounted attenuator, support 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 bid for truck mounted attenuators. When electronic arrows are required and not only allowed on the truck mounted attenuator support vehicles, they will be paid for separately.

Portable traffic control signal will be paid for on a lump sum basis. This price shall include portable traffic control signal equipment, installation, energy source, maintaining, adjusting, aligning, removing and relocating equipment.

Section 512.04—Measurement and Payment is amended to delete the following Pay Items and Pay Units:

Pay Item	Pay Unit
Crusher run aggregate (No.)	Metric ton
Traffic barrier service guardrail terminal	Each or meter

Section 512.04—Measurement and Payment is amended to revise the following Pay Item and Pay Unit:

Pay Item	Pay Unit
Type III barricade (width)	Each

Section 512.04—Measurement and Payment is amended to add the following Pay Items and Pay Units:

Pay Item	Pay Unit
Type III barricade (width)	Each
Construction Signs	Square meter
Aggregate material No. _____	Metric ton
Truck Mounted Attenuator	Hour

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



Temporary traffic control signal
Portable traffic control signal

Lump sum
Lump sum

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



**GUIDELINES— PROJECTS WITH CATEGORY I PROGRESS SCHEDULES, COMPLEX CPMS OR AS DIRECTED BY THE ENGINEER.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM512K0B-0408

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
WORK ZONE TRAFFIC CONTROL MANAGEMENT**

October 4, 2007

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:

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



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.
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.

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

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 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:

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

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 108.09 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

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



**GUIDELINES— PROJECTS REQUIRING FIELD OFFICE(S).
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM514A0B-0408

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 514—FIELD OFFICE**

September 28, 2006

SECTION 514—FIELD OFFICE of the Specifications is replaced with the following:

514.01—Description

This work shall consist of furnishing, erecting, equipping, maintaining and removing upon completion a field office of the type specified for the exclusive use of Department Engineers and Inspectors at a location on the project approved by the Engineer.

514.02—Procedures

The field office and equipment as required herein shall remain the property of the Contractor. The field office shall be separated from buildings and trailers used by the Contractor and shall be erected and made functional as an initial operation. Failure to have the field office functional when work first begins on the project will result in withholding payment of the Contractor's monthly progress estimate, except that the estimate will not be withheld if the Contractor has shown that the failure is not due to negligence on his part or for reasons beyond his control. The field office shall be operational throughout the duration of the project and shall be removed upon completion and final acceptance of the project. Furnishings and equipment specified shall be in sound and functional condition throughout the duration of the project.

The field office shall be weatherproof, tightly floored and roofed, constructed with an air space above the ceiling for ventilation, supported above the ground and anchored against movement. The width of the field office shall be at least 2.4 meters, and the floor-to-floor ceiling height shall be at least 2.3 meters. If a trailer is provided for the field office, its width shall be at least 2.3 meters and the floor-to-ceiling height shall be at least 2 meters. The inside walls and ceilings shall be constructed of, Masonite, gypsum board, or other similarly suitable materials as permitted by fire and building codes. The exterior walls, ceiling and floor shall be insulated. Field office shall be provided and outfitted as follows according to the type specified.

Type I Field Offices shall have an enclosed floor space of at least 46 square meters with 9.2 square meters of counter space and 11 square meters of overhead shelving. The field offices shall be equipped with the following:

Quantity	Item
4	Double-pedestal desk, keyed, (approximately 1500 millimeters by 860 millimeters) at least 1.3 square meters
1	Plan and drafting table (approximately 750 by 2500 millimeters) with an adjustable stool
2	Computer tables – 740 millimeters height, with surface area approximately 1200 millimeters by 750 millimeters
3	4-Drawer metal fire protection file cabinets, 380 millimeter drawer width, minimum UL rating of Class 350
2	2-Drawer fire protection file cabinet, 380 millimeter drawer width, minimum UL rating of Class 350

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



- 2 Rolling Plan rack for 600 by 900 millimeter drawings with 6 plan clamps
- 2 Bookcase 900 millimeters by 100 millimeters with four shelves
- 1 Dry erase board – wall mounted, minimum 1.3 square meters, with eraser and markers
- 1 Small frost free refrigerator
- 1 Small microwave
- 2 Printing calculators
- 6 Office Chairs, 2 with casters
- 3 Wastebaskets
- 3 Folding conference tables – minimum 900 millimeters by 1800 millimeters
- 4 Folding chairs
- 1 Pencil sharpener
- 1 Answering Machine
- 1 Facsimile machine with optional memory and service contract for preventative maintenance, including replacement print cartridges
- 1 Copy machine with the following features:
 - Capability of copying 8-1/2" x 11", 8-1/2 x 14" and 11" x 17" sized originals
 - Bin sorter
 - Automatic Feed
 - Automatic paper size selection
 - Size magnification/reduction from 200% to 50% of original image size
 - Service contract with preventive maintenance, including drum replacement and toner supply
- 1 First Aid kit containing eyes and skin protection for emergencies.
- 2 Smoke detectors with batteries

Type II Field Offices shall have an enclosed floor space of at least 37 square meters and shall be equipped with the following:

Quantity	Item
1	Double-pedestal desk, keyed (approximately 1500 millimeters by 860 millimeters) at least 1.3 square meters
1	Plan and drafting table (approximately 750 millimeters by 2500 millimeters) with an adjustable stool
1	Computer table – 730 millimeter height, with surface area approximately 1200 millimeters by 750 millimeters
1	4-Drawer metal fire protection file cabinet, 380 millimeter drawer width, minimum UL rating of Class 350
2	2-Drawer fire protection file cabinet, 380 millimeter drawer width, minimum UL rating of Class 350
1	Rolling Plan rack for 600 by 900 millimeter drawings with 6 plan clamps
1	Bookcase, 900 millimeter by 1000 millimeters with four shelves
1	Dry erase board – wall mounted, minimum 1.3 square meters, with eraser and markers
1	Small frost free refrigerator
1	Small microwave
1	Printing calculator
4	Office chairs, 2 with casters
4	Folding chairs
4	Wastebaskets
1	Folding conference table – minimum 900 millimeters by 1800 millimeters
1	Pencil sharpener
1	Answering Machine
1	Copier machine capable of copying 200 millimeter by 200 millimeter and 200 millimeter by 430 millimeter sized originals

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



- 1 First Aid kit containing eye and skin protection for emergencies.
- 2 Smoke detectors with batteries

Type III Field Office shall have an enclosed floor space of at least 19 square meters and shall be equipped with the following:

Quantity	Item
1	Double-pedestal desk, keyed (approximately 1000 millimeters by 750 millimeters) at least 0.8 square meters
1	Plan and drafting table approximately 750 millimeters by 1800 millimeters with an adjustable stool
1	Computer table – 740 millimeters height, with surface area approximately 1200 millimeters by 750 millimeters
1	4-drawer metal fire protection file cabinet, 380 millimeter drawer width, minimum UL rating of Class 350
2	2-Drawer fire protection file cabinet, 380 millimeter drawer width, minimum UL rating of Class 350
1	Rolling Plan rack for 600 by 900 millimeter drawings with 6 plan clamps
1	Dry erase board – wall mounted, minimum 1.3 square meters, with eraser and markers
1	Small frost free refrigerator
1	Small microwave
1	Printing calculators
3	Office chairs, 2 with casters
4	Folding chairs
2	Wastebaskets
1	Folding conference table – minimum 900 millimeters by 1800 millimeters
1	Pencil sharpener
1	Answering Machine
1	First Aid kit containing eye and skin protection for emergencies.
1	Smoke detector with batteries

(a) **Windows and Doors:** The field office shall have at least three windows with removable screens and appropriately sized blinds or shades. Each window shall have an area of at least 50 square meters, capable of being easily opened and secured from the inside. All field office types shall have at least two exterior passage doors. Doors shall be at least 750 millimeters in width and 2000 millimeters in height. Exterior passage doors shall be equipped with locks and at least two keys per door shall be furnished to the Engineer or Project Inspector.

In addition, each exterior door shall be equipped with a steel security bar that is installed horizontally and fabricated to lock with a 9-millimeter diameter padlock shank. The Department will furnish the padlocks for the security bars.

(b) **Steps:** Steps shall conform to the requirements of the *State Building Code* and shall be maintained free from obstruction.

(c) **Storage Facility for Nuclear Gage(s):** The field office shall be furnished with an outside storage facility for the Department's nuclear gage(s), which shall not be located within 3 meters of any structure. This facility shall be provided with electrical power and shall be equipped for an interior switched light and one single-phase, 120V, 15 amps, grounded, weatherproof, duplex receptacle for recharging the nuclear gage(s). The storage facility for the nuclear gage(s) shall be weatherproof, tightly floored and roofed, having a tamper resistant key operated lock with two keys furnished to the Engineer or Project Inspector.

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



- (d) **Storage Facility for Test Equipment:** The field office shall be provided with a storage facility, separate from the office for storage of test equipment, other than the nuclear gage. The storage facility shall have a minimum floor space of 6 square meters and include four shelves at least 230 millimeters deep mounted along the length of one wall. The storage facility for test equipment shall be weatherproof, tightly floored and roofed, having a tamper resistant key operated lock with two keys furnished to the Engineer or Project Inspector.
- (e) **Lighting, Heating, and Air Conditioning:** The field office shall have satisfactory functional lighting, electrical outlets, heating equipment, an exhaust fan, and air conditioner connected to an operational power source. At least one of the light fixtures shall be a fluorescent light situated over the plan and drafting table. There shall also be at least one 100-watt exterior light fixture at each exterior doorway. Electrical power and fuel for heating equipment shall be furnished by the Contractor.
- (f) **Fire Extinguishers:** The Contractor shall furnish and maintain one fire extinguisher for each required exterior passage door. Fire extinguisher(s) may be chemical or dry powder, UL Classification 10B:C (minimum), suitable for Type A:B:C fires and shall be mounted and maintained in accordance with OSHA Safety and Health Standards.
- (g) **Toilets –** Toilets shall conform to the requirements of the state and local boards of health or other bodies or courts having jurisdiction in the area. Toilet facilities may be either inside the Field Office or portable toilet facilities.

If the Contractor provides toilet facilities inside the Field Office, the toilet facilities shall have a continuous supply of water at a flow rate of not less than 19 liters per minute. The toilet facilities shall be connected to either a sewer line or a permitted sewage holding tank with sewage pumping at a frequency that prevents overflow and back ups. The toilet facilities shall have a positive functional lock on the inside of the doors.

If the Contractor provides portable toilet facilities, then there shall be separate facilities for both male and female personnel with appropriate signs for "Men's Rest Room" and "Women's Rest Room" having lettering at least 50 millimeters in height. Both men's and women's portable toilet facilities shall have an adequate positive locking system provided on the inside of the doors. The facility labeled "Women's Rest Room" shall also have a positive, uniquely-keyed, exterior locking device; and the Contractor shall provide two keys to the Engineer or Project Inspector.

The Contractor shall provide washing facilities in accordance with VOSH regulations.

- (h) **Drinking Water:** The Contractor may provide either potable water inside the Field Office or bottled drinking water service that includes a dispenser capable of providing both hot and cold water, and disposable cups. The Contractor shall cause the bottled drinking water service to replenish both bottled water and disposable cups no less frequently than twice per month.
- (i) **Utilities:** Except for telephone services, the Contractor shall make arrangements for necessary utility connections, maintain utilities, pay utilities service fees and bills, and make arrangements for final disconnection of utilities. The Contractor shall also furnish two touch tone telephones in each field office and permit the work necessary to install them.
- (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.

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

- 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 II 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.

514.03—Measurement and Payment

Compensation for use of the field office will be based on the time it is used, expressed in calendar months. This price shall include furnishing, erecting, maintaining, and removing the field office when no longer required, and providing the facilities, furnishings, equipment, utilities and services as described herein. Payment for periods less than one month shall be based on the pro-rata days during the month in which the field office is in use by the Engineer, except that payment will not be made for any time in excess of the time limit established in the Contract as extended in accordance with the requirements of Section 108.09 of the Specifications.

Installation and service fees for the telephone(s) will be paid for by the Department.

Payment will be made under:

Pay Item	Pay Unit
Field Office (Type)	Month

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



**GUIDELINES— PROJECTS WHERE DEMOLITION OF BUILDINGS AND/OR CLEARING OF PARCELS ARE REQUIRED.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.**

SM516A1B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 516—DEMOLITION OF BUILDINGS AND CLEARING PARCELS

August 29, 2006

SECTION 516—DEMOLITION OF BUILDINGS AND CLEARING PARCELS of the Specifications is replaced with the following:

516.01—Description

This work shall include disconnecting utilities, closing wells, demolishing building(s), removing materials from the right of way, and removing improvements and material unsuitable for use in roadway embankments from vacant parcels and other areas within the right of way.

516.02—Procedures

- (a) **Utilities:** The Contractor shall make necessary arrangements and perform necessary work, in accordance with local ordinances, involved with disconnecting or interrupting public utilities or services. These shall include, but not be limited to, gas, water, sewer, electricity, and telephone.
- (b) **Closing Wells:** The Contractor shall close all wells prior to any demolition and clearing parcels in accordance with State Board of Health Private Well Regulations, State Water Control Board, and local jurisdictions.
- (c) **Refrigerant-Containing Appliances:** The Contractor shall disconnect all chemical refrigerant-containing equipment including air conditioners and heat pumps in accordance with State and Federal laws and regulations; any disconnections shall be made by certified individuals.
- (d) **Demolition:** The Contractor will be notified in writing when buildings are ready for demolition. Demolition shall include removing and disposing of materials from buildings and appurtenances down to the ground lines or below the ground lines in the case of basements or similar existing below ground structure. Any structures that contain non-regulated asbestos-containing materials (non-regulated RACM) shall be demolished in accordance with the *Special Provision for Demolition of Structures Containing Non-Friable Asbestos-Containing Materials*.

The Contractor may use buildings designated for demolition for project-related office space or storage or as a field office for Department personnel only after approval is obtained from the Engineer in writing prior to occupancy. The Contractor shall remove all regulated asbestos-containing materials (RACM) in accordance with the *Special Provision for Asbestos Removal for Road Construction Demolition Projects* prior to occupancy.

The Contractor shall assume all personal and property liability associated with **the use of or salvaging of materials from** such buildings and shall protect and save the State harmless from any and all damages and claims associated with such buildings. **Salvage operations shall not be performed in advance of the VDOT asbestos inspection and if asbestos-containing materials are identified, prior to asbestos abatement activities.** The Contractor is advised that VDOT asbestos inspection procedures are intended to support whole structure demolition and as such, may not be sufficient to support worker protection for salvage operations. Contractor is advised that any additional

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

testing, abatement, notification and/or worker protection activities required to salvage materials shall be the sole obligation and expense of the Contractor.

Buildings, materials resulting from their removal, and improvements on the property shall become the property of the Contractor at the time of their removal and shall be disposed of outside and away from the parcel site. Nothing herein shall be construed as giving the Contractor any rights in and to the buildings in the Contract except for their demolition or for the purposes permitted herein. The Contractor shall have no right to sell or lease the buildings. The Department does not warrant or guarantee the existence or continued existence of any materials that are a part of the demolition item(s), nor will it be responsible in any way thereof to the Contractor.

- (e) **Clearing Parcels:** Parcels shall not be cleared until buildings have been demolished or removed.

Clearing parcels shall include disposing of materials from noncombustible foundations down to and including floor slabs, basement slabs, and any improvement designated for removal but not listed as a pay item. Combustible debris and rubble, including fences, posts, or pillars, shall also be removed from the right of way or from within limits of easements obtained for removing buildings that may be partially outside the right of way.

The Contractor shall limit the cutting or removing of trees and shrubs to those necessary for completion of the work as approved by the Engineer. Trees or shrubs that are cut shall be removed from the right of way. The Contractor shall not enter or encroach on any parcel that is not included in the Contract.

Materials contained in cisterns, septic tanks, and other openings, including basements shall be removed and properly disposed of in accordance with Section 107.01 of the Specifications. Underground tanks shall be closed and removed, cisterns, septic tanks, and other openings, including basements, shall be demolished, and the area shall be backfilled with materials suitable for use in roadway embankment in accordance with the requirements of Section 303 of the Specifications.

516.03—Measurement and Payment

Demolition of buildings will be paid for at the contract lump sum price for the parcel and structure specified. This price shall include coordinating and performing utility work, disposing of materials, and cleaning up. The Contractor shall also take into consideration the salvage value of any material removed and shall include the same in the lump sum price.

Clearing parcels will be paid for at the contract lump sum price for the specified parcel. This price shall include disposing of materials, backfilling, and cleaning up. The limits of payment shall be from the construction limits to the right-of-way or easement line.

Closing wells will be measured and paid for on an each basis, which price shall include chlorination, cement grout or bentonite grout, or other material as applicable, backfilling, and filing of abandonment documents with the Health Department. The Contractor shall execute and file abandonment documents in accordance with the requirements of Section 107.01 of the Specifications.

Payment will be made under:

Pay Item	Pay Unit
Demolition of building (Parcel no.) (D no.)	Lump sum
Clearing parcel (Parcel no.)	Lump sum

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



Closing well

Each

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

**GUIDELINES - PROJECTS REQUIRING TRAINEES. USE WITH SPECIAL PROVISION COPIED
NOTE cm518a0b
EXCEPTIONS: NONE.**

SM518A0B-0605

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 518—TRAINEES ON CONSTRUCTION PROJECTS

March 7,2005

SECTION 518—TRAINEES ON CONSTRUCTION PROJECTS of the Specifications is completely replaced with the following:

518.01—Description.

This work shall consist of providing the training specified herein as part of the Contractor's EEO Affirmative Action Program. This training special provision implements 23 Code of Federal Regulations (CFR), Part 230, Subpart A, Appendix B.

518.02—Procedures.

The Contractor shall provide each trainee with a copy of the specific program and, upon completion of the training program, a certificate showing the type and duration of training satisfactorily completed. The Contractor shall maintain records and furnish periodic reports documenting compliance with the requirements herein.

- (a) **Number of Trainees:** the number of trainees for each contract shall be as specified. The number of trainees are determined by the District Civil Rights Manager (DCRM). If the Contractor sublets a portion of the contract, the Contractor shall determine how many trainees are to be trained by the subcontractor. The Contractor shall retain the primary responsibility for conforming to the training requirements imposed by this specification. The Contractor shall ensure that these training requirements are made applicable to the subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.
- (b) **Distribution of Trainees:** the number of trainees shall be distributed among the work classifications on the basis of the Contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment. The Contractor will be credited for each trainee employed by him under the Contract who is currently enrolled or becomes enrolled in an approved program.

The enrollment of minorities, women and other disadvantaged persons is approved and monitored by the District Civil Rights Manager. Trainees will be enrolled and approved by the District Civil Rights Manager on Form C-65, prior to the start of training.

- (c) **Minorities and Women:** training and upgrading of minorities and women toward journeymen status are primary objectives. The Contractor shall make every effort to enroll minority and female trainees by conducting systematic and direct recruitment through public and private sources likely to yield minority and female trainees to the extent such persons are available within a reasonable area of recruitment. The Contractor shall demonstrate the steps taken in pursuance thereof prior to a determination as to whether or not he is in compliance with the requirements herein. This training commitment shall not be used to discriminate against any applicant for training, whether a member of a minority group or not.
- (d) **Use of Journeymen:** no employee shall be employed as a trainee in any classification in which the person has successfully completed a training course leading to journeyman status or has

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



been employed as a journeyman. The Contractor shall satisfy this requirement by including appropriate questions on the employee application or by other suitable means. The Contractor's records shall document the findings in each case.

- (e) **Length and Type of Training:** the minimum length and type of training for each classification will be established in the training program selected by the Contractor and approved by the District Civil Rights Manager. The District Civil Rights Manager will approve a program if it is reasonably calculated to meet the EEO obligations of the Contractor and qualify the average trainee for journeyman status in the indicated classification by the end of the training period. Apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a state apprenticeship program (Virginia Department of Labor & Industry) recognized by the U.S. Department of Labor, Bureau of Apprenticeship and Training, will also be considered acceptable in meeting the trainee contract goal, provided they are being administered in a manner consistent with the EEO obligations of the contract. Approval of a training program shall be obtained from the District Civil Rights Manager prior to the commencement of work in the classification covered by the program.

Training shall be provided in the construction trade classifications indicated in the On the Job Training (OJT) Manual for Standard Pre-Approved Job Classifications. The Contractor shall provide all training on state or federally funded projects of the Department.

- (f) **Commencement of Training:** it is normally expected that a trainee will begin training on the project as soon as is feasible after the start of the work that requires the skill involved and will remain on the project as long as training opportunities exist in the work classification or until the trainee has completed the training program. It is not required that all trainees be on board for the entire duration of the contract. The number trained will be determined on the basis of the total number enrolled under the contract for the entire contract period.
- (g) **Payment to Trainees:** trainees shall be paid at least 60 percent of the appropriate prevailing minimum journeyman's rate for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent of the last quarter of the training period unless apprentices in an approved existing program are enrolled as trainees on the project. In such cases, the appropriate rates approved by the District Civil Rights Manager in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by these requirements.
- (h) **Failure to Provide Required Training:** The Contractors' failure to provide the required training damages the effectiveness and integrity of this Affirmative Action Program and circumvents the Departments' federal mandate to bring women and minorities into the construction industry. Therefore, when the Contractor has failed, by the end of the project, to have met the required trainee contract goal; written good faith documentation shall be submitted indicating the reasons the trainee goal was not attained. This documentation shall be submitted to the District Civil Rights Manager and should it be determined insufficient; the lack of commitment to this Affirmative Action Program will be relayed to the Engineer for inclusion in the Contractors' Performance Report, Form C36, for the project.

Efforts taken by a Contractor that results in the OJT contract goal being exceeded will be recognized for their support of the Department's commitment to assuring skill improvement opportunities for minorities and women in highway construction. To exceed an OJT goal is to enroll and graduate more trainees than the number specified in the contract. Such efforts will be documented in the Bonus Section of the Contractor's Performance Report, Form C36, for the project.

518.03—Measurement and Payment.

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

Except as otherwise noted herein, the Contractor will be paid \$3.00 per hour, for each employee who is trained in accordance with the approved training program. The District Civil Rights Manager can request approval by the Engineer, that a Contractor be paid for training persons in excess of the trainee contract goal specified or for trainees enrolled on a contract without a trainee goal. This payment will be made even though the Contractor received additional training program funds from other sources provided such other sources does not specifically prohibit the Contractor from receiving other payments. The Department will pay the Contractor stipend \$3.00 per training hour for training occurring on state or federally funded projects of the Department.

Method of Measurement: The Contractor will be credited for each apprentice/trainee employed on the project and reimbursed on the basis of hours worked listed on certified payrolls and the weekly submittal of trainee Form C-67. This form will serve as a record of trainee hours completed.

If, in the judgment of the Contractor, Engineer and District Civil Rights Manager, a trainee becomes proficient enough to qualify as a journeyman before the end of the prescribed training program and the Contractor so employs the trainee, full credit will be given toward the attainment of the trainee goal; however, the Contractor will be paid only for the actual trainee hours completed. The Department will pay the Contractor for only those training hours completed if the trainee does not complete training due to lay-off, termination or resignation.

No payment will be made to the Contractor should the required training not be provided or the trainee is not hired as a journeyman and there is evidence of a lack of good faith on the part of the Contractor in meeting the requirements herein.

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



**GUIDELINES - PROJECTS THAT SPECIFY SOUNDWALL COLOR COATING.
EXCEPTIONS: NONE**

SM519A0B-0197

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SOUNDWALL COLOR COATING

July 17, 1990
Reissued January 1, 1997

- I. **DESCRIPTION** - This work shall consist of furnishing and applying a soundwall color coating in accordance with this provision. The color and location shall be as specified on the plans or as directed by the Engineer.
- II. **MATERIALS** - The soundwall color coating shall not diminish the noise absorption coefficient specified for the soundwall upon which it is applied when tested in accordance with ASTM C423. The coating shall be a semiopaque toner containing methyl methacrylate-ethyl acrylate copolymer resins with toning pigments suspended in solution at all times by a chemical suspension agent and solvent. Color toning pigments shall consist of laminar silicates, titanium dioxide and inorganic oxides. There shall be no settling or color variation. The use of vegetable or marine oils, paraffin materials, stearates or organic pigments in the coating formulation will not be permitted.

Physical properties of the coating shall be as follows:

Mass per liter	1 kilogram (min.)
Solids by mass	30 percent (min.)
Solids by volume	21 percent (min.)
Drying time	30 minutes (max.) at 21 °C and 50 percent humidity

Coating material shall not oxidize and shall show no appreciable change in color after 1000 hours when tested in accordance with ASTM D822; shall have excellent resistance to acids, alkalis, gasoline and mineral spirits when tested in accordance with ASTM D543; shall allow moisture vapor from the concrete interior to pass through when tested in accordance with ASTM E398 or D1653; and shall reduce the absorption rate of exterior moisture into the pores of the concrete surface when tested in accordance with Federal Specification TT-C-555 B.

The soundwall color coating shall be from the approved list of absorptive concrete soundwall color coatings.

- III. **APPLICATION** - Surface preparation, application rate and application procedures shall be as specified by the coating manufacturer, using airless spray equipment, having a minimum capacity of 6,895 kilopascals and 1.9 liters per minute. Coating shall not be applied when the air temperature is below 10 °C, to damp surfaces or when the air is misty or unsatisfactory for this work as determined by the Engineer.
- IV. **QUALITY CONTROL PANEL** - Prior to beginning coating operations the Contractor shall provide and erect on the project site a representative sample of the color coated soundwall containing at least 2.8 square meters, for approval of uniformity and appearance of the color coating. This approved sample shall remain on the project site and will be used by the Engineer as a basis for comparison and acceptance of the Contractor's finished coating.
- V. **METHOD OF MEASUREMENT** - Unless otherwise specified, soundwall color coating will not be measured for separate payment but shall be included in the price bid for sound barrier wall.

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



When specified as a contract item, soundwall color coating will be measured in square meters of surface coated.

VI. BASIS OF PAYMENT - When specified as a contract bid item soundwall color coating will be paid for at the contract unit price per square meter, which price shall be full compensation for furnishing and applying the soundwall color coating, surface preparation and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

Pay Item

Soundwall Color Coating

Pay Unit

Square Meter

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



GUIDELINES— PROJECTS REQUIRING SOUND BARRIER WALLS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

SM519B0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 519—SOUND BARRIER WALLS

September 26, 2006

SECTION 519—SOUND BARRIER WALLS of the Specifications is replaced with the following:

519.01—Description

This work shall consist of furnishing and constructing sound barrier walls in accordance with these specifications and approved working drawings and within the specified tolerances for the lines, grades, and details shown on the plans or as established by the Engineer.

(a) **Acoustic Performance standards:**

1. Sound barrier walls shall provide a transmission loss of at least 23 dB(A) when tested in accordance with the requirements of ASTM E90 using the typical truck noise spectrum and shall have vibration-free joints and fittings.
2. Absorptive sound barrier walls shall be designed so that the absorptive portion on the highway side has a minimum noise reduction coefficient of 0.70 when measured in accordance with the requirements of ASTM C423.
3. Sound barrier walls shall be designed to minimize or eliminate gaps or openings to prevent transmission of sound through the barrier.

(b) **Design Standards:**

1. Structural design loadings for sound barrier walls shall be based on a design life of not less than 50 years. They shall be designed in accordance with the requirements of the current AASHTO Guide Specification for Structural Design of Sound Barriers except as modified herein. References in the AASHTO sound barrier specification to "an industry recognized specification" shall not apply. All concrete, steel, and aluminum members shall be proportioned with reference to the service load design methods (allowable or working stress design) of the current AASHTO Standard Specifications for Highway Bridges. Fatigue and traffic impact shall be considered in the design of these structures. Sound barrier walls subject to lateral earth pressure shall have those portions so loaded, designed in accordance with the aforementioned AASHTO specifications. In all cases, settlement shall also be considered.
2. Unless specified otherwise, this paragraph governs the selection of wind pressure coefficients in Virginia. Any sound barrier wall to be constructed within one half mile of the shore of the Chesapeake Bay or the Atlantic Ocean shall be designed for exposure category D. All other ground-mounted sound barrier walls shall be designed for exposure category B2, and all other structure-mounted sound barrier walls shall be designed for exposure category C. The wind pressure to be applied to the full height of the wall shall be based on the height to the centroid of the loaded area. For structure-mounted walls, this height shall be measured from the surface of the feature over which the bridge or structure crosses (e.g. mean sea level of the Chesapeake Bay, normal water level at stream crossings, roadway surface on the low shoulder at highway intersections) or in the case of

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

sound barrier walls mounted on retaining walls, measured from the prevailing ground elevation in the vicinity.

3. Unless specified otherwise, this paragraph governs the selection of wind speeds for design purposes (50-year mean recurrence interval) in Virginia. Sound barrier walls in Hampton Roads District shall be designed for a wind speed of not less than 100 mph. Walls in Fredericksburg, Northern Virginia and Richmond Districts shall be designed for a wind speed of not less than 90 mph. Walls in Bristol, Culpeper, Lynchburg, Salem and Staunton Districts shall be designed for a wind speed of not less than 80 mph. Any continuous wall crossing district boundaries may use the lower of the two adjacent wind speeds.
4. The vertical posts shall be proportioned to have a maximum deflection of no more than $\frac{h}{240}$ due to wind load, where "h" is the cantilever height of the post from the top of foundation to the top of the sound barrier wall. The unbraced length of the post for design shall not be less than "h" unless both flanges are sufficiently braced to allow a reduction of the unbraced length of the section. Post design shall account for all holes needed for connections. Wall panels and other supporting members shall be proportioned to have a maximum deflection of no more than $\frac{l}{240}$ due to wind load, where "l" is the length of the panel or member.
5. Structure-mounted sound barrier panels shall not weigh more than 7.5 psf and the structure-mounted sound barrier system shall not weigh more than 15 psf. Posts for structure-mounted sound barrier wall panels shall not be spaced more than 2.4 meters on center. Posts shall be mounted on the outside of parapets only. Posts for ground-mounted sound barrier panels shall not be spaced more than 7 meters on center. The Contractor and wall manufacturer shall be responsible for the anchorage of the sound barrier wall to the structure to include the location of anchor rods, pattern or layout of rods, size, length of embedment, base plate for attachment, posts, etc. Slip forming of the elements of structures that are designed to receive sound barrier walls will not be permitted.
6. Anchor rod performance shall be evaluated against the net area of the anchor rod after reduction to account for threads. Anchor rods shall be checked against the effect of combined stresses in accordance with the following formula (found in the 2001 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals):

$$\left(\frac{f_v}{F_v}\right)^2 + \left(\frac{f_t}{F_t}\right)^2 \leq 1.0$$

Where:

F_t is the allowable normal stress on the rod, $0.5 \times F_y$

f_t is the predicted normal stress on the rod due to direct compression or tension and bending:

$$f_t = f_a + f_b \text{ where:}$$

f_a is the predicted stress on the rod due to direct compression or tension

f_b is the predicted stress on the rod due to bending about the rod's neutral axis

f_b shall be included in the computation of f_t whenever the clearance between the bottom of the leveling nuts and the top of the concrete foundation is greater than or equal to the diameter of the rod

F_v is the allowable stress on the rod due to direct shear, $0.3 \times F_y$

f_v is the predicted stress on the rod due to direct shear

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

Note: All stresses are based on the applied load acting on the net area after consideration for the reduction due to the presence of the threads.

$$\text{e.g. NetArea} := 0.7854 \left(D - \frac{0.9743}{n} \right)^2 \quad \text{and} \quad S_x := 0.0982 \left(D - \frac{0.9743}{n} \right)^3$$

where "D" is the diameter of the rod in millimeters and "n" is the number of threads per millimeter.

No mortar, grout or concrete shall be placed between the bottom of the base plate and the top of the concrete

7. Soil friction angle and strength of soils shall be used when designing foundations. Foundations shall be designed in accordance with the requirements of the current AASHTO Standard Specifications for Highway Bridges. Foundation designs may require pilings, caissons, or special design as indicated by subsurface investigations (soil reports and boring logs) to establish soil capacity.
8. When caissons are used, the soil at the surface to a depth equal to the required diameter of the caisson, but not less than .6 meter or as required by the conditions, shall not be considered effective when calculating the required embedment of the caisson. The ground surface slope shall be taken into account when determining caisson embedment.

An unfactored wind load shall be used in the analysis. Deflections and factors of safety for caissons shall be determined using actual wind loads not factored loadings.

For axial capacity the caisson tip elevation shall provide a length of caisson such that at least two thirds of the total predicted resistance is provided by shaft resistance. Total vertical deflection of the caisson head, from settlement and elastic shorting of the caisson, is limited to 25 millimeter under service axial design loads.

The minimum area of longitudinal reinforcement for caisson type foundations shall be one percent of the gross area of the foundation section. In caissons where the wall post/beam is embedded to the bottom of the caisson, no reinforcement is required.

The required allowable stresses for steel and concrete in the caisson may be modified by the allowable overstress permitted in the wind load condition.

9. The Brom's method may be used for the design of laterally loaded caissons less than 6 meters in length. For Group II and Group IV where wind is a contributing load, a minimum safety factor of 2.25 shall be used if soil parameters are based on the results of standard penetration tests. When parameters are based on the results of subsurface exploration and laboratory testing programs as detailed in the current AASHTO Standard Specifications for Highway Bridges, or are set by the Department, a safety factor of 2.0 may be used.

The preferred method of analyses for the design of laterally loaded caissons is the "p-y curve" method for the design and analysis of caissons under lateral loads, using public-domain computer program such as COM624P or commercially available software. The caisson embedment shall provide a length where the second point of zero deflection is reached. The second point of zero deflection may be assumed to be the point on the deflection curve where the deflection is decreasing and becomes less than 0.5 millimeter. The total horizontal deflection at the head of the caisson is limited to 13 millimeters.

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

Temporary casing may be used to stabilize a drill hole, however, the casing shall be removed immediately prior to or while placing the concrete. If the drill hole can not be maintained other methods, such as wet hole construction with slurry, shall be used.

If at the time of placing concrete, water in the hole exceeds 1.5 meters or 20% of the caisson length, whichever is greater, the concrete shall be placed by pump or tremie.

10. For walls on spread footings, a bearing capacity analysis shall be submitted as part of the design calculations and the safety factor against bearing failure shall be taken as 2.25 for Group II and Group IV where wind is a contributing load. The ground surface slope shall be taken into account when determining bearing capacity of the soil. The depth of the embedment of footings shall be in accordance with the requirements of the aforementioned current AASHTO Standard Specifications for Highway Bridges.
11. For walls on piles, foundation design shall be in accordance with the requirements of the current AASHTO Standard Specifications for Highway Bridges. The factor of safety shall be on the level of construction control as required in Subsection 4.4.6.2. The required factors of safety may be modified by the allowable overstress permitted in the wind load condition.
12. Where new sound barrier walls tie into existing barriers existing sound barrier walls and other structures shall be analyzed to determine if they are adequate for the addition of new loads, if the Contractor chooses to use them for support. The Contractor shall make any field measurements and observations necessary to analyze the existing structures and detail all connections. Alternatively, the new wall may be designed independent of existing structures with details for closing gaps.
13. The Contractor shall submit to the Department nine (9) copies of the working drawings and supporting calculations in accordance with the requirements of Section 105.02 of the Specifications to:

Virginia Department of Transportation
Location and Design Division
Engineering Services
1401 E. Broad Street
Richmond, Virginia 23219

Working drawings shall contain all specific details and dimensions (such as post spacings, post sizes, foundation details, and panel fabrication and attachment details) necessary for the complete review, construction and inspection of the work. The working drawings for Sound Barrier Walls shall also reflect coordination with the working drawings for retaining walls or bridges or other adjacent construction items where applicable. Working drawings and the accompanying calculations shall be sealed by a Professional Engineer holding a valid license to practice engineering in the Commonwealth of Virginia. Calculations using computer programs or spreadsheets shall include a description of the design methodology necessary to validate the results of the computer output.

Any changes to the working drawings by the Contractor after the initial submittal shall be clearly identified. Changes shall be identified on the working drawings and denoted in narrative (e.g. cover letter) and dated after marking all requested changes. This format shall be followed until all requested changes are completed to the satisfaction of the Engineer. Approval of these shop drawing shall not relieve the Contractor of the responsibility for accuracy of the drawings or conformity with the contract and site requirements. Approval will not indicate a check on dimensions.

519.02—Materials

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

The Contractor may furnish plastic, metal, concrete or in specific applications, wood sound barrier walls. Walls shall conform to the requirements of the contract documents, AASHTO material specifications and the following applicable specifications. Wall system designs shall have been pre-approved for use by the Department. Requirements for evaluation and approval of sound barrier wall may be obtained from the Air, Noise, and Energy section of the Environmental Quality Division.

- (a) **Concrete** shall conform to the requirements of Section 217 of the Specifications and Sections 404 or 405 of the Specifications as applicable. Concrete for reflective sound barrier panels or concrete posts shall be Class A5. Concrete for footings or leveling pads shall be Class A3. All other concrete shall be Class A5 or Class A4. Sound absorptive concrete shall be considered a sound coating subject to other provisions in the specifications; the manufacturer's cited standards or proprietary materials. The use of systems employing such sound absorptive concrete materials shall require pre-approval of the Department.
- (b) **Reinforcing steel** shall conform to the requirements of Section 223 of the Specifications. Reinforcing steel requiring welding shall be ASTM A706, Grade 60, and shall be welded in accordance with the current AWS D1.4. All other reinforcing steel shall be ASTM A615, Grade 60, or ASTM A706, Grade 60. Threads on reinforcing steel bars shall be UNC (coarse) Series, Class 2A as specified in ANSI B1.1. Welded wire fabric used to reinforce panels shall conform to the requirements of Section 223 of the Specifications.
- (c) **Aluminum** shall conform to the requirements Section 229 of the Specifications for the use and shape specified. Welding of aluminum shall be performed in accordance with the requirements of the current AWS D1.2.
- (d) **Steel piles** shall conform to the requirements of Section 228 of the Specifications. The portion of steel piles that serve as a post shall be galvanized in accordance with Section 233 of the Specifications above the finished grade and to a point 0.6 meters below the finished grade.
- (e) **Structural Steel** shall conform to the requirements of Sections 226 and 407 of the Specifications, and shall be galvanized in accordance with the requirements of Section 233 of the Specifications. Painting of structural steel shall be in accordance with the requirements of Section 411 of the Specifications.
- (f) **Structural tubing** shall conform to the requirements of ASTM A500, Sections 226 and 407 of the Specifications, and shall be galvanized in accordance with the requirements of Section 233 of the Specifications. Structural tubing serving as posts is subject to Charpy V-Notch Impact test requirements in accordance with the requirements of Section 226 of the Specifications.
- (g) **Miscellaneous steel** shall conform to the requirements of Sections 226 and 407 of the Specifications, and shall be galvanized in accordance with the requirements of Section 233 of the Specifications.
 - a. **Asphalt mastic** shall conform to and be applied in accordance with the requirements of AASHTO M243.
 - (i) **Miscellaneous hardware** shall conform to the following: Anchor rods shall conform to the requirements of Section 226.02(c) of the Specifications, and shall be galvanized in accordance with the requirements of Section 233 of the Specifications. One nut and one washer shall be provided above and below the base plate at the connection to the anchor rods. The nut against the base plate shall be installed in such a way as to tension the anchor rod and create adequate friction between the nut and the base plate. There shall be no play or slack in the connection of the anchor rods to the base plate after the nuts have been

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

tightened. The distance from the underside of the base plate to the top of the concrete shall be no more than the diameter of the anchor bolt plus 25 millimeters.

Bolts, nuts, and washers shall be high strength and conform to the requirements of Section 226.02(h) of the Specifications and shall be galvanized in accordance with the requirements of Section 233 of the Specifications. Self-drilling screws shall be Class 410 stainless steel conforming to the requirements of FS QQ-S-763 and shall be cadmium coated in accordance with the requirements of ASTM B766.

- (j) **Caulking sealant** shall conform to the requirements of FS TT-S-00230, TT-S-001543, or TT-S-001657. Exposed caulking shall be color-pigmented so as to match or be similar to the color of finished panels or as approved by the Engineer.
- (k) **Steel flashings and caps** shall be of the same material and thickness as the metal panels. Protective coating requirements shall be the same as those for panels.
- (l) **Elastomeric pads** shall conform to the requirements of ASTM D1056, Grade 1B3 C1, 1B4 C1, or 1B5 C1. Adhesives shall conform to the manufacturer's recommendations.
- (m) **Interlocking panels** shall conform to the following: Metal panels shall be of a cold-formed, trapezoidal-faced configuration. The covering width of the panel face shall be at least 300 millimeters. Each panel shall have a male and female rib providing a friction interlock connection with adjacent panels. The friction interlock connection shall provide sufficient connection when two connected panels are held in the same vertical and horizontal positions.
- (n) **Finish** - The sound wall panel finish of metal or plastic barrier shall be embossed or otherwise designed or treated to minimize light reflectance under wet conditions.
- (o) **Protective color coating** for metal panels shall be System No. 1 or System No. 2 as specified on the plans. When the system is not specified, System No. 1 shall be furnished. The coating system shall be flat in accordance with the Federal Standard Number(s) specified on the plans or as approved by the Engineer.
 - 1. **System No. 1** shall be either PVF plastic film (PVF₁) or urethane coating. System No. 1 coatings shall have an abrasion index of at least 16 liters per mil in accordance with the requirements of ASTM D968, shall be resistant to permanent graffiti markings, and shall produce an impervious finish free from cracks and crazings.
 - a. **PVF₁** shall have a thickness of at least 1.5 mils per coated side and shall be applied at the factory to the thoroughly cleaned and pretreated galvanized steel in accordance with the requirements of ASTM D2092, Method F. The PVF₁ film shall be pigmented to obtain optimum color performance and shall be laminated to the steel with heat and adhesive to produce a uniform, durable coating.
 - b. **Urethane coating** shall be acrylic or polyester material with a chromate-bearing epoxy prime coat, shall have a thickness of at least 1.2 mils per coated side, and shall be applied at the factory to the thoroughly cleaned, pretreated, and galvanized steel sheets. The urethane coating shall be inorganically pigmented to obtain optimum color performance and oven cured under quality controlled conditions to produce a uniform and durable coating.
 - 2. **System No. 2** shall be PVF (at least 70 percent resin) enamel (PVF₂) with a dry film thickness of at least 1 mil per coated side and shall be applied at the factory to thoroughly cleaned and pretreated galvanized steel in accordance with ASTM D2092, Method F. The PVF₂ enamel shall be pigmented to obtain optimum color performance and oven

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

baked under quality controlled conditions to produce a uniform, durable coating free from cracks and crazings.

- (p) **Protective color coating** for concrete panels shall be a semiopaque toner containing methyl methacrylate-ethyl acrylate copolymer resins with toning pigments suspended in solution at all times by a chemical suspension agent and solvent. Color toning pigments shall consist of laminar silicates, titanium dioxide and inorganic oxides. There shall be no settling or color variation. The use of vegetable or marine oils, paraffin materials, stearates or organic pigments in the coating formulation will not be permitted.

Physical properties of the coating shall be as follows:

Mass per gallon	8.3 pounds (min.)
Solids by mass	30 percent (min.)
Solids by volume	21 percent (min.)
Drying time	30 minutes (max.) at 70°F and 50 percent humidity

Coating material shall not oxidize and shall show no appreciable change in color after 1000 hours when tested in accordance with ASTM D822; shall have excellent resistance to acids, alkalis, gasoline and mineral spirits when tested in accordance with ASTM D543; shall allow moisture vapor from the concrete interior to pass through when tested in accordance with ASTM E398 or D1653; and shall reduce the absorption rate of exterior moisture into the pores of the concrete surface when tested in accordance with Federal Specification TT-C-555 B.

Surface preparation, application rate and application procedures shall be as specified by the coating manufacturer, using airless spray equipment, having a minimum capacity of 1,000 psi and 1/2 gallon per minute. Coating shall not be applied when the air temperature is below 50°F, to damp surfaces or when the air is misty or unsatisfactory for this work as determined by the Engineer.

The sound wall color coating shall be from the Department's approved products list of materials for absorptive concrete sound wall color coatings.

- (q) Wood used for sound barrier walls shall conform to the requirements of Section 236 of the Specifications and shall be CCA preservative pressure treated with a minimum net retention of 0.60 pcf in accordance with American Wood Preservers Association UC4B. Panel design shall result in a sound transmission class of 38 or better when tested in accordance with the requirements of ASTM E90 or ASTM E413. Wood sound barrier walls shall be from the Department's approved barrier systems. The use of wood sound barrier systems shall be limited to those applications specifically identified on the plans or in the contract documents.
- (r) Plastic used in sound wall designs shall be of a high density, high impact resistant material such as, but not limited to; acrylic, fiberglass, polyethylene, polyvinylchloride, or polyurethane with antioxidant additives, UV stabilizers and capable of being produced with integral color pigmentation where such color is identified by project plans. Plastic sound barrier systems shall be pre-approved by the Department for use.

519.03—Procedures

The Contractor shall design the wall when traversing a grade in such a manner that the finish profile of the top panels shall be as uniform in height as possible. The top face of the sound barrier wall shall be aligned to maintain a continuous appearance and shall not deviate from true alignment by more than 13 millimeters in 3 meters.

- (a) Foundations

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



Existing ground line elevations shall be established and verified by the Contractor prior to submitting working drawings. The Contractor shall remove and dispose of all above ground obstruction such as trees and other clearing and grubbing items unless otherwise directed by the Engineer.

The Contractor shall adjust foundations to avoid conflicts with pipes or utilities. Wall panel lengths may be shortened or lengthened so that foundation locations may be adjusted to avoid conflicts and clear existing pipes, utilities, and other underground obstructions. When a conflict cannot be avoided using this method, the Contractor shall submit his alternative design for the Department's written approval. The Contractor shall modify the design of wall foundations where foundations may conflict with the limits of proposed or existing rights-of-way or where foundation designs may leave a portion of the foundation exposed above the finished ground line. Such conflicts and proposed modifications shall be reviewed with the Engineer prior to installation. Where sound barrier walls are self-supporting, they shall be designed to prevent pipe or utility damage caused by excessive bearing loads when placed over pipes, utilities, or other underground obstructions.

(b) Piles and Posts

Piles shall be driven in accordance with the requirements of Section 403 of the Specifications except that the tolerance for the position of a single steel H-pile shall be ± 13 millimeters.

The portion of posts from the finished grade to the bottom end and the portion of the H-pile lapped with posts shall be painted with asphalt mastic after splicing. Voids between posts and piles created by the use of shims for plumbing posts shall be caulked prior to the application of asphalt mastic.

The Contractor may furnish the galvanized post and girts with the protective color-coating system specified for panels, thereby eliminating the related flashing covering, provided the posts and girts conceal threads of bolts and screws.

Structure-mounted sound walls shall have metal posts.

(c) Panels

1. General Requirements

The patching of panels will not be permitted without the written approval of the Engineer. Where patching is permitted by the Engineer, it shall be performed in accordance with the manufacturer's recommendations. Cut, marred, or scratched surfaces shall be repaired in accordance with the manufacturer's recommendations. Panels having deficiencies such as cracking, crazing, scaling, efflorescence, segregation, mottling of the color coating or stains on the finish shall be rejected. Irregularities at panel edges that appear broken, ragged, chipped or dented to the extent that a gap appears once they are stacked will be cause for rejection.

Sound absorptive coating shall be permanently bonded or attached to the panel's core material and have the same service life as the core materials.

The absorptive finish of concrete panels shall meet the requirements of ASTM C666, Procedure B, for 300 cycles

Where sound barrier panels do not occupy the full width between the flanges of the sound barrier posts, panel attachment details shall be furnished with the working drawings. Such details shall also include material descriptions. Post flanges and panels

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

shall overlap at least 38 millimeters after installation. The face of the panel on the roadway side of the barrier shall fit tightly against the post flange for the full height of the panel after installation. Spacer blocks/wedges will not be permitted.

Joints and connections shall be secured so as to be structurally sound with no visible openings for sound transmission and shall not be a secondary source of noise attributable to vibration.

All lifting devices cast into panels shall be galvanized and flush with the panel.

2. Structure-Mounted Barriers

All structure-mounted sound barrier panels shall be metal or other pre-approved lightweight material. The bottom portion of the panels within 150 millimeters of the top of the parapet to which the wall is to be mounted shall not have an absorptive finish. The panels on structure-mounted sound barrier walls shall be oriented either vertically or horizontally to match any adjacent ground mounted sound barrier walls. Panel orientation shall be such that panels are free draining to prevent moisture buildup and possible corrosion. Structure-mounted sound barrier walls shall aesthetically match adjacent ground mounted barriers as to color unless stated otherwise in the contract. Anchor rods for structure-mounted walls shall be integrally cast into parapets. Concrete parapets or retaining walls shall not be slip formed when used as mounting structures for structure-mounted sound barrier walls. Connections between the panel and the posts and the sound barrier panel and the bridge shall account for the movement of the bridge as well as the expansion and contraction of the panels.

3. Ground-Mounted Barrier

Base Panels shall be a minimum height of 0.6 meters and shall be embedded in the ground a minimum of 150 millimeters to prevent sound leaks. A non absorptive durable finish is required on that portion of the base panels below ground and 150 millimeters above the ground line.

When panels are stacked, horizontal joints shall be aligned to create continuous horizontal lines; however, foundations and/or ground contact panels may be adjusted within the limits established herein to provide for the continuous horizontal alignment of joints. Horizontal joints formed where panels mate together and false or dummy joints (if present) must match in appearance and alignment. Once installed, the edges of stacked panels shall be neat, and sides that mate together shall be straight and true.

Reflective concrete sound barrier panels shall have all edges chamfered 19 millimeters or rounded to 13 millimeter radius. V-shaped control joints, 9 – 13 millimeters deep, shall be scored into one side of panels less than 200 millimeters thick and both sides of panels 200 millimeters or more in thickness to control temperature and shrinkage cracking. These joints shall be no more than 2.4 meters on center.

All panel connection hardware and portions of metal base panels to be embedded in the ground shall be coated with asphalt mastic.

4. Sample Section

The Contractor shall erect a sample section of the ground-mounted wall at the job site prior to receiving final written approval to proceed with panel fabrication from the District office. The sample section shall be three bays of panels with posts to show how panels shall be secured to posts with attachment hardware. Sample panels shall show the

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

attachment area formed in the panel. Sample panels shall show color and finishes of both sides of the wall.

(d) **Drainage Requirements**

Ground surface drainage shall be accommodated in the design. Sound barrier walls shall be designed to deter impoundment and trapping of water. Disturbed areas shall be graded in front and behind the sound barrier wall to control and dispose of roadway and slope drainage using a graded ditch or similarly functional drainage. The ground-mounted sound barrier posts and bottom sound barrier wall panel shall be designed with consideration for additional load created by the ditch slope where it rests against the wall.

Weep holes shall be provided in panels, where necessary, to facilitate proper drainage. Drainage design shall not create sound leaks.

Disturbed areas of earthwork shall be seeded in accordance with the requirements of Section 603 of the Specifications.

(e) **Other Detail Requirements:**

1. **Concrete clear cover** over reinforcing steel, except precast concrete panels, shall not be less than 75 millimeters for primary reinforcement and 64 millimeters for ties and stirrups. Concrete clear cover shall not be less than 38 millimeters for precast concrete panels. Concrete clear cover excludes any sound absorptive concrete finish.
2. **Steel reinforcement** shall be designed to resist in-service loads as described in 519.01(b) and handling loads resulting from manufacture, transport and installation. All concrete elements shall have at least enough reinforcement to satisfy the requirements in article 8.20, "Shrinkage and Temperature Reinforcement," aforementioned AASHTO specifications. Mechanical butt spliced connections shall develop at least 125% of the tensile yield strength of the bar. If welds are necessary, they shall be detailed on the working drawings.
3. **Anchor rods** shall be embedded into concrete a distance equal to or greater than the development length of an equivalent reinforcing steel bar in accordance with the article 8.25, "Development of Deformed Bars and Deformed Wire in Tension," AASHTO Standard Specifications for Highway Bridges. Hooked anchor rods shall not be used to reduce the embedment length. Anchor rods shall be enclosed in reinforcing steel ties over their full embedded length. These ties shall not be spaced more than 300 millimeters on center and shall not be less than #3 in size. A minimum of four anchor rods shall be used per post if the anchor rods have adequate capacity to resist 150% of the design loads; otherwise a minimum of six anchor rods shall be used per post. Anchor rods shall not be heated or bent in the field to accommodate misalignment of anchor rods without approval of the Engineer. Anchor rods, washers and nuts of ground mounted sound barrier walls shall be coated with asphalt mastic both above and below base plates after installation.
4. **Epoxy or adhesive anchors, expansive anchors, split washers, and lock nuts** shall not be allowed. Multiple washers shall not be allowed as spacers for bolted connections or anchor rods.
5. **Base panel leveling pads** (support blocks), where needed, shall be cast-in-place reinforced concrete with steel dowels embedded in the concrete foundation.
6. **Precast concrete members**, including panels, shall not be lifted from casting beds until their design compressive strength is sufficient to prevent damage. Concrete shall have

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

attained the minimum 28-day design compressive strength before members are shipped to the project site. During storage, stacked members shall be separated from each other by wood spacing blocks. Curing, storing, transporting, and handling of precast members shall be done in such a manner as to avoid excessive bending stresses and to prevent cracking, spalling, chipping or other damage. Units damaged by improper storage or handling shall be replaced at the Contractor's expense. Acceptable lifting and support points and directions of reactions shall be shown on the working drawings. The Contractor shall be responsible for the design and safety of the lifting devices used. Embedded lifting inserts and devices shall be steel and galvanized in accordance with the requirements of Section 233 of the Specifications. Computations accompanying the working drawings shall demonstrate that stresses in the member are within the allowable range during shipping, handling, and installation using appropriate impact factors.

- 7. **Grout** between the base plate and concrete shall not be used.

519.04—Measurement and Payment

Sound barrier walls will be measured in square meters of surface from the finished grade to the sound attenuation line shown on the plans and from end to end of the wall, complete-in-place, and will be paid for at the contract unit price per square meter. The 150 millimeter minimum embedment in the ground of all base panels of ground mounted sound barrier walls will be considered incidental and will not be measured for separate payment. Structure-mounted sound barrier walls shall be measured in square meters of surface from the top of the parapet or mounting structure to the sound attenuation (noise abatement) line shown in the plans. This price shall include designing, furnishing; installation; providing modifications to avoid utility, Right-of-Way, foundation exposure, and tie-back conflicts; grading, seeding; disposing of surplus and unsuitable material; restoring property; and construction outside the grade or sound attenuation line. Excavation of tree roots, existing limited access fence and other clearing and grubbing items such as those identified in Section 301 of the Specifications required for the placement of walls shall be included in the square meter price bid of the sound barrier walls. The cost of foundation designs and supplemental geotechnical investigation and foundations shall be considered incidental and will not be measured for separate payment but shall be included in the price bid per square meter of sound barrier wall. Costs for ultrasonic and radiographic testing and all other quality control measures required by the specifications shall be included in the price bid per square meter of sound barrier wall.

After the second submittal of working drawings, costs for review shall be in accordance within the provisions of Section 105.02 of the Specifications.

Payment for sound barrier walls shall be made incrementally as construction progresses in accordance with the following percentages: 20 percent of the contract unit square meter price after completion of wall design and submission acceptance, 20 percent of contract unit square meter price after construction and installation of foundations and posts including posts caps, and geotechnical\subsurface investigation, testing where specified and if applicable, 45 percent of contract unit square meter price after installation of panels, and 15 percent of contract unit price after completion of sound barrier wall and color coating, if specified.

Where multiple walls are specified in the contract, incremental payments will not apply to individual walls but to all walls specific to the individual pay items listed.

Sound wall color coating will be paid for at the contract unit price per square yard, which price shall be full compensation for furnishing and applying the sound wall color coating, surface preparation and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item

Pay Unit

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



Sound barrier wall, absorptive	Square meter
Sound barrier wall, reflective	Square meter
Structure-mounted sound barrier wall, absorptive	Square meter
Structure-mounted sound barrier wall, reflective	Square meter
Sound wall color coating	Square yard

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



**GUIDELINES - ALL PROJECTS.
EXCEPTIONS: NONE.**

SM522A0B-0407

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
PARTNERING**

April 3, 2007

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.

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

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

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 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

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

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

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



6-

— DIVISION VI—ROADSIDE DEVELOPMENT —

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



600 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)

**GUIDELINES – PROJECTS REQUIRING SEEDING.
EXCEPTIONS: NONE.**

(cm603a0b-0206) **SECTION 603.03—PROCEDURES** of the Specifications is amended as follows:

Section 603.03 (c) Applying Fertilizer is amended to replace the first paragraph with the following:

- (c) **Applying Fertilizer:** When dry fertilizer is used, it shall be applied uniformly to the seeding areas at the time of seeding at the rate of 336 kilograms of fertilizer per hectare (approximately 50 kilograms of nitrogen per hectare or 5 kilograms of nitrogen per 1,000 square meters) or as directed by the Engineer. All slow release and slowly soluble fertilizer may be applied through a hydraulic seeder except for Sulfur Coated Urea (SCU). The method of application for all fertilizer products shall be approved by the Engineer prior to applying the fertilizer. When applied in liquid form or mixed with water, fertilizer shall provide the same value of nutrients per hectare as specified for dry fertilizer. Fertilizer applied in liquid form shall be constantly agitated during application.

Section 603.03 (d) Applying Seed is amended to add the following:

Temporary Seeding shall consist of applying seed, fertilizer, and mulch in accordance with the rates specified in the plans or Section 603.03 of the Specifications to stabilize areas on which it is anticipated grading operations will be suspended for durations greater than 15 days. Where temporary seeding is required or directed by the Engineer, the cost for removal of vegetation once grading operations resume shall be included in the price of seeding.

6-10-04 (SPCN)

— 600 SERIES SPs (SPECIAL PROVISIONS) — (SPs)

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



GUIDELINES— PROJECTS REQUIRING TOPSOIL.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

SM602A0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 602--TOPSOIL

October 10, 2006

SECTION 602--TOPSOIL of the Specifications is replaced with the following:

602.01--Description

This work shall consist of applying topsoil in accordance with the requirements of these specifications and in conformity with the depths and limits shown on the plans or as established by the Engineer.

602.02--Materials

- (a) **Class A Topsoil** shall conform to the requirements of Section 244.02(b)1 of the Specifications.
- (b) **Class B Topsoil** shall conform to the requirements of Section 244.02(b)2 of the Specifications.

602.03--Procedures

- (a) **Submittals:** When Class B Topsoil is specified the Contractor shall submit soil test reports to the Engineer for Class B Topsoil in accordance with Section 244.02(b) of the Specifications.
- (b) **Preparing Areas To Receive Topsoil:** Unless otherwise designated on the plans or directed by the Engineer, areas designated to receive topsoil shall be graded, shaped, and then scarified or tilled by disking, harrowing, or other approved methods to a depth of approximately 50 millimeters. Topsoil shall be applied only when the subsoil is in a loose, friable condition. Subsoil on slopes that have been horizontally grooved in accordance with the plans shall not be loosened.
- (c) **Applying Topsoil:** The loose depth of topsoil shall be sufficient to allow the area to conform to the elevations shown on the plans after topsoil settles. After topsoil has been applied, large clods, hard lumps, and stones larger than 75 millimeters in diameter; brush; roots; stumps; litter; and foreign material shall be removed from the area. Where residential or commercial yards exist, the size of the large clods, hard lumps, and stones shall not exceed 19 millimeters in diameter. Such areas shall provide a smooth yard suitable for mowing by a yard mower. When the topsoiling is complete, the area shall be in a condition to receive seed, sod, or plants without further soil preparation.

602.04--Measurement and Payment

Topsoil will be measured in hectares of surface area computed to the nearest 0.1 Hectare and will be paid for at the contract unit price per hectare. For smaller areas, and/or as identified on the plans, topsoil will be measured and paid for at the contract unit price per Cubic meter. Such areas will be identified and labeled on the plans for Cubic meters of soil to be applied. This price shall include soil testing and provision of test reports; preparing areas to receive topsoil; furnishing, loading, transporting, and applying topsoil; finishing areas; and restoring damaged areas.

Payment will be made under:

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

Pay Item

Pay Unit

Topsoil (Class, and depth)
Topsoil (Class, and depth)

Hectare
Cubic meter

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



GUIDELINES— PROJECTS REQUIRING PLANTS.
[USE BY THE APRIL 2008 ADVERTISEMENT]
EXCEPTIONS: NONE.

SM605A0B-0408

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 605 – PLANTING

October 10, 2006

SECTION 605—PLANTING of the Specifications is replaced with the following:

605.01--Description.

This work shall consist of furnishing and planting trees, shrubs, vines, and other plants of the kinds, sizes, and quantities specified on the plans or by the Engineer and maintaining and replacing plants as specified herein.

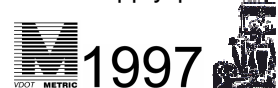
605.02--Materials.

- (a) **Plants** shall conform to the requirements of Section 244.02(i) of the Specifications.
- (b) **Drainage stone** shall conform to the requirements of Section 204 of the Specifications.
- (c) **Composted Yard Waste** shall conform to the requirements of Section 244.02 (j) of the Specifications.
- (d) **Geotextile Drainage Fabric** shall conform to the requirements of Section 245 of the Specifications.
- (e) **Top Soil** shall conform to the requirements of Section 244.02(b) of the Specifications.
- (f) **Horticultural Grade Perlite** shall conform to the requirements of Section 244.02(j) of the Specifications.
- (g) **Tree Tubes** shall conform to the requirements of Section 244.02(j) of the Specifications.
- (h) **Tree Anchors, Staking and Guying Materials** shall conform to the requirements of Section 244.02(j) of the Specifications.
- (i) **All other Misc. Planting Materials** shall conform to the requirements of Section 244.02(j) and 244.02(k) of the Specifications.

605.03--Procedures.

- (a) **Documentation of Confirmed Order:** The Contractor shall submit documentation to the Engineer of a confirmed order of all plant materials 60 days in advance of the proposed planting operation. The documentation shall list the source(s) of supply, all species by common and botanical name, specific variety, and cultivar in the sizes reserved. When special requirements are listed on the planting summary sheet, such as "Specimen Quality," or "Specimen Street Tree", etc., the documentation shall certify that the species reserved meet those specific requirements. Once the Documentation of Confirmed Order is received, the Engineer reserves the right to require sample photographs of materials to be supplied. The Engineer also reserves the right to inspect and approve the selection of plant materials at the source of supply prior to

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



delivery. In the event that specific materials are not available, the Contractor shall submit a request for substitutions in accordance with the requirements of Section 605.03(e) of the Specifications.

- (b) **Planting Season:** The Planting Season shall be from November 1, through March 31, unless otherwise identified on the plans. The Contractor shall notify the Engineer 48 hours prior to beginning work. All sources of supply, materials, construction schedule, and methods of construction shall be approved by the Engineer prior to beginning work on the project. Plants requiring either spring or fall planting only will be designated on the plans.
- (c) **Sources of Supply:** All plants shall be obtained from a nursery certified by a "Certificate of Registration" in accordance with The Virginia Department of Agriculture and Consumer Services (VDACS), or by a comparable agency responsible for nursery inspection and issuance of a "Certificate of Registration" from the State of origin. A copy of the certification shall accompany each separate delivery of plant materials to the project site, and shall be submitted to the Engineer.
- (d) **Inspecting and Identifying Plants:** Plants will be inspected and identified in accordance with the *Standardized Plant Names* prepared by the Editorial Committee of the American Joint Committee on Horticultural Nomenclature. The Engineer may inspect plants at any time and place. Plants will be inspected immediately prior to being planted. If plants are installed prior to inspection and found to be unsatisfactory, they shall be replaced with approved plants at the Contractor's expense.
- (e) **Substitutions:** No change in the quantity, size, kind, or quality of plants from those specified will be permitted without the written approval of the Engineer. When requesting permission to substitute, the Contractor shall submit to the Engineer written evidence in accordance with the requirements of Section 605.03(a) of the Specifications that the specified plants are not available and shall suggest substitute plants that conform to the requirements of the Contract. The Contractor shall indicate the reduced cost, if any, that will accrue to the Department as a result of the substitution. The Engineer may delete plants from the Contract in lieu of approving substitutions.
- (f) **Layout:** Plant locations and outlines of bed areas to receive plants shall be staked or marked by the Contractor and will be inspected by the Engineer for approval prior to plant installation. The Contractor shall notify the Engineer a minimum of 48 hours prior to scheduling the inspection. Planting shall not be permitted until the Engineer has approved the staking layout. Unforeseen conditions such as the location of traffic signs, utilities and drainage items may necessitate adjustments in plant locations, and such adjustments will only be permitted when approved in writing by the Engineer.
- (g) **Delivery:** The Contractor shall notify the Engineer at least 48 hours in advance of the anticipated delivery date for plants. A legible copy of the invoice showing the kinds and sizes of plants in each shipment shall be submitted to the Engineer. A copy of the current Certificate of Nursery Inspection from the State of origin shall accompany each shipment of plants.
- (h) **Labeling:** Plant material delivered to the project shall be legibly identified with a waterproof label as to the genus, species, and size of the plants. When plants are in bales, bundles, boxes, or other containers, a legible label indicating the genus, species, size, and quantity of the plants shall be attached to each container. A minimum of 10 percent of each species in each shipment shall be so labeled. Failure to comply with this identification labeling will be cause for rejection.
- (i) **Transporting and Protecting:** Plants transported to the project in open vehicles shall be covered with suitable covers securely fastened to the body of the vehicle. Closed vehicles

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

shall be adequately ventilated to prevent overheating plants. Plants shall be kept moist, fresh, and protected at all times.

- (j) **Storing:** When plants are to be stored, they shall be stored at a location approved by the Engineer. Plants stored for more than 30 days shall not be used unless approved by the Engineer. Unless the Engineer approves other methods of storage, bare-root plants that are not planted within 24 hours after delivery shall be heeled-in in a moist trench dug in the ground. Bundles shall be opened, and plants shall be separated and placed singly in the trench with the roots spread in a natural position. Roots of each layer of plants shall be immediately covered in a manner satisfactory to the Engineer with moist, pulverized soil; moist sawdust; or other approved material. Root-covering materials shall be kept moist at all times. Shade shall be provided as directed by the Engineer. At the discretion of the Engineer, balled material, container-grown material, and plants in plantable pots that are not planted within 48 hours of delivery shall have their root zone protected by wet sawdust or other approved material. Rejected plants shall be removed from the storage area within 24 hours of rejection or, with the written approval of the Engineer, may be marked with yellow paint or otherwise made readily identifiable. If rejected plants have not been removed or acceptably marked within 24 hours, the use of plants from the storage area will not be allowed until rejected plants have been removed or identified by marking.

(k) **Planting:**

1. **Underground and Aboveground Conditions:** It shall be the responsibility of the Contractor to have marked, the location of all underground utilities with Ticket Information Exchange (TIE) / (Miss Utility) and all other applicable underground utility providers such as sewer and water service, and VDOT traffic signal cable prior to digging. The Contractor shall be responsible for locating and working around aboveground utilities. If underground obstructions or any other unforeseen subsurface or above surface conditions that could interfere with a utility or become detrimental to plant growth are encountered, the Engineer may require that plant pits be enlarged or relocated or that the plants be deleted from the contract.
2. **Planting Trees or Shrubs on Slopes Steeper than 3:1:** Drainage requirements for trees or shrubs on slopes steeper than 3:1 will be determined by percolation tests, with no more than 3 tests per slope, as designated by the Engineer. Slopes for this test are determined from cut and fill slopes shown on the cross sections. Percolation testing shall consist of the following: The Contractor shall auger holes that are 300 millimeters in diameter and 600 millimeters in depth. Three holes shall be distributed across the slopes vertically and horizontally. The Contractor shall fill the holes with water and allow them to drain. If soil is extremely dry, fill holes twice and allow to drain. Fill holes again and measure rate at which water percolates into the soil. Water in holes should recede at the rate of 50 millimeters per hour (minimum) or pit modification for improving drainage shall be required.
3. **Preparing Planting Pits for Trees and Shrubs:** Planting pits shall be excavated to meet the minimum the requirements VDOT Road and Bridge Standards unless otherwise indicated on the plans by detailed drawings. Sides of pits that become plastered or glazed shall be scarified. Surplus excavation and unsuitable material shall be disposed of in accordance with the requirements of Section 106.04 of the Specifications or as otherwise approved in writing by the Engineer. Preparation of the planting medium (soil mix) shall utilize 3 parts of the original excavated soil from the digging operation thoroughly mixed with 1 part composted yard waste, except where linear or oversize planting pits are specified on the plans.

If the Contractor determines that the original excavated soil is not suitable for reusing with amendments for achieving an acceptable growing medium, the

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

Contractor shall notify the Engineer. The Engineer shall make a determination as to the quality of the soil, and if found to be unacceptable; will direct the Contractor to use topsoil or composted yard waste for use in the soil mix. In such cases, the planting pit, and unsuitable soils surrounding the pit shall be removed as directed by the Engineer. The Engineer reserves the right to have the original soil tested prior to making a determination for replacement.

4. **Preparing Plant Beds:** Plant beds shall be prepared by the Contractor in accordance with the following:

- a) Plant bed preparation shall only be required on slopes of 3:1 or flatter. Where grass and weeds are present, the Contractor shall treat the designated bed area(s) with a broad spectrum grass and weed killing herbicide at least two weeks prior to beginning bed preparation, or physically remove turf and weeds immediately before bed preparation. The entire area of the plant bed shall be cultivated to a depth of 100 millimeters by a rotary cultivator or other approved method. The Contractor shall then apply composted yard waste at a depth of 75 millimeters over the entire plant bed and re-till to form a homogenous soil medium. Soil shall be cultivated so that there are no clods larger than 50 millimeters in diameter.
- b) Any remaining grass, sod, and weeds shall be removed from the bed. Rocks over 75 millimeters in diameter, clods, roots, and other objectionable material remaining on the surface shall be removed and disposed of in accordance with the requirements of Section 106.04 of the Specifications or as approved in writing by the Engineer. Individual planting pits shall not be dug until after the bed is prepared to the satisfaction of the Engineer.
- c) Upon completion of planting, the bed shall be hand raked to an even surface and neatly edged with a "V" cut edge located a minimum of 300 millimeters from the root ball of plants along the outer edge of the bed. Mulch shall be applied to the entire bed area. On certain projects where mulched beds around large quantities of plant materials are used to control weed growth and are not intended as a prepared soil medium, tilling and application of composted organic material throughout the plant bed shall be waived when beds are labeled on the plans as "Bed Preparation Not Required".

5. **Linear Planting Pit:** Areas labeled on the plans and details as "Linear Planting Pit" shall be excavated to the horizontal and vertical dimensions indicated on the plans to receive soil mixture. Soil mixture shall consist of 1 part composted yard waste, and 1 part horticultural grade perlite, unless otherwise indicated in the contract documents, and shall include any necessary excavation required for installation of plant underdrain systems. Plant underdrain system(s), as applicable, shall be indicated on the plans, listed as a pay item and installed in accordance with plan details.

Soil mix for linear planting pits shall be installed in 150 millimeter lifts, lightly compacted by foot or other approved method, and moistened prior to proceeding with next lift. If settlement occurs prior to planting, additional soil mix shall be added at the direction of the Engineer. Prior to planting the Contractor shall till the linear planting pit to a depth of 100 millimeters, hand rake the area and adjust the grade adjacent to curb or sidewalk to receive 75 millimeters of mulch.

6. **Oversize Planting Pit:** shall be prepared in accordance with the plan details at locations shown on the plans. Backfill shall consist of one-half part native soil excavated from the plant pit, and one-half part composted yard waste. If native

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

soil is determined by the Engineer to be unsuitable, 100 percent composted yard waste shall be used. If settlement occurs prior to planting, additional soil mix shall be added at the direction of the Engineer. After planting the planting pit shall be neatly edged except when the planting pit falls within a larger bed area.

7. **Installing Trees and Shrubs:** Balled and burlapped and containerized plant materials shall be installed in plant pits in accordance with the requirements of the VDOT Road and Bridge Standards, unless otherwise indicated on the plans. Bare roots of plants shall be spread out in a natural position. Broken or bruised roots shall be pruned. After positioning plants in the planting pit and prior to backfilling, root ball wrapping materials, except metal root ball cages shall be cut and dropped to the bottom of the pit. Root ball wrapping materials shall not be removed from under the root ball. Metal root ball cages shall be cut and removed to a minimum of 150 millimeters below finished grade. Wrapping materials within root ball cages shall be cut or unwrapped to the same elevation as the cage. All other wrapping materials such as tags, twine and colored marking ribbon shall be removed from the plant unless otherwise directed by the Engineer. The soil mixture shall then be filled in around roots and lightly tamped. Light tamping around root balls shall be performed using a method approved by the Engineer. Foot tamping will be permitted in the bottom of pits before plants are installed, around root balls when there is ample room to accommodate the foot without damage to the ball, and in the planting of bare-root plants after roots have been covered with the soil.

Backfill material in pits shall be saturated with water. The amount of water applied and method of application shall be approved by the Engineer. Failure to water properly at the time each plant is installed will be cause for rejection of the plant. Frozen backfill material shall not be used.

Potted plants shall not be removed from their container until immediately before planting. Containers shall be removed by approved methods that will not damage roots or loosen soil balls. The sides of containerized materials shall be scarified prior to planting.

When planted, watered, and fully settled, plants shall be vertical and shall stand at a height flush with the height of which they were growing.

8. **Handling Plants during Planting:** Roots of bare-root plants shall be kept covered with moist burlap or other approved material prior to planting. Forest tree seedlings and forest tree transplants shall be carried in a container filled with sufficient mud to puddle roots. When seedling roots have been coated with a protective material, the seedlings shall be protected in accordance with the U.S. Forest Service's recommendations relative to treatment of seedling roots while seedlings are being planted. Plants will be rejected if their roots are exposed to drying conditions at any time.
 - (l) **Forming Water Rings and Saucers:** Immediately after the installation of each plant, a saucer shall be formed around the plant pit. Soil used to form the saucer shall be compacted by tamping to prevent runoff of water from the pit. Saucers shall measure 100 to 150 millimeters in width, and 50 to 75 millimeters in height after tamping. Saucers will not be required for forest tree seedlings, or forest tree transplants. Water rings and saucers shall be formed on the wetland trees and shrubs planted on slopes and upland areas adjacent to the wetland.
 - (m) **Applying Mulch:** Mulch shall be applied uniformly to a 75 millimeters depth over the entire area of the plant pit or plant bed within 48 hours after completion of planting. Re-mulching at the terminus of the establishment period shall be applied at a depth of 38 millimeters. Mulch

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

shall be anchored in a manner satisfactory to the Engineer. Mulch shall not be required for wetland trees and shrubs, or upland forest tree seedlings. Mulch shall be applied to wetland trees and shrubs on slopes and upland areas adjacent to the wetland.

- (n) **Staking, Guying, Anchoring:** Each plant shall be staked and guyed or secured with below ground tree anchors immediately following planting, unless otherwise indicated in the Planting Plan Summary and General Notes. Below ground tree anchors shall be used when specified on detailed drawings in the plans. Staking and guying shall be required for wetland trees and shrubs on slopes and upland areas adjacent to the wetland.
- (o) **Pruning:** Plants that have been freshly pruned before delivery will be rejected. If necessary, plants shall be pruned either immediately before or within 48 hours after they are planted. Pruning of trees and shrubs to be planted on projects shall consist of removing dead, diseased, broken or other branches deemed injurious to the health of the plant, and for removal of sprouts and sucker growth. Care shall be taken to preserve the natural character of the plant. Pruning shall be performed with tools and equipment in excellent working condition that are specifically designed for the appropriate work. All pruning shall be performed in accordance with the current American National Standards Institute (ANSI A300) and as directed by the Engineer. All debris removal including disposal from the pruning operation shall be the responsibility of the Contractor.
- (p) **Pit Drains:** Pit drains or plant underdrain systems shall be installed as shown on the plans.
- (q) **Tree Tubes:** This work shall consist of installing tree tubes on all seedling trees in accordance with the manufacturer's recommendations, the plans and product specifications.

605.04—Care of Plants.

Plant care shall begin immediately after each plant is satisfactorily installed and shall continue until final acceptance. Care shall include but not be limited to replacing displaced mulch, repairing and reshaping water rings or saucers, maintaining stakes and guys as originally installed, watering when needed or as directed by the Engineer, and performing any other work required to keep plants in a healthy condition. Dead, defective, or rejected plants shall be immediately removed and replaced in accordance with the requirements of Section 605.05(b)4 of the Specifications.

605.05--Establishment Period.

- (a) **Beginning of Establishment Period:** The establishment period shall begin on a date following completion of the planting (spring or fall), when the Contractor receives written confirmation from the Engineer, that all work has been completed in accordance with the requirements of this Section and the plans, and that all plants are living, healthy and in a viable growing condition as determined by the Engineer. Plants that are replaced in order to meet these initial specifications are not considered as "plant replacements."
- (b) **Establishment Period:** The establishment period shall continue through a minimum of one growing season, and shall terminate on the date determined in writing by the Engineer. During the establishment period, the Contractor shall do all work necessary to keep the plants in a healthy growing condition, including, but not limited to the following:
 - 1. **Watering:** The Contractor shall prepare and submit to the Engineer a schedule for watering in accordance with the frequency listed on the project summary sheet. However, the Contractor shall be responsible for watering as frequently as is necessary to maintain an adequate supply of moisture within the root zone of all plantings at all times or if there is less than 25 millimeter of rainfall in a seven day period during the months of April through September. Water shall not be

applied at a force that will displace soil or mulch. Quantities and frequency of watering shown on the plans are for minimum estimating purposes only.

- a) The Engineer may require the use of watering needles or other approved methods to prevent displacement of soil, mulch and runoff of water. The Engineer may make periodic inspections to ascertain the adequacy of the Contractor's watering and the moisture content of the soil.
 - b) The quantity of water supplied shall not be in excess of that normally required to ensure optimum growing conditions. Watering shall not commence until methods and equipment have been approved by the Engineer. The Engineer may require or suspend watering at any time.
2. **Notification and Scheduling:** When notified by the Engineer that watering is required, the Contractor shall begin watering within 48 hours with sufficient labor and equipment and shall continue to water daily where and as directed, without delays or interruptions, to ensure that the root zone does not become dry at any time. In the event the Contractor fails to begin watering operations within 48 hours after notification, the Engineer may proceed with adequate forces, equipment, and materials to perform the watering operations and the entire cost of the watering operations will be deducted from monies due the Contractor.
 3. **All establishment period maintenance work**, except watering, shall begin within 7 working days after the Engineer notifies the Contractor that the establishment period has begun.
 4. **Plant Replacements:** Between the beginning and ending dates of the establishment period, plants that are dead, defective, or otherwise not in a healthy growing condition as determined by the Engineer shall be removed immediately at the Contractor's expense. Plant replacements shall be made once in the spring if required (Between March 1 and March 31), and once in the fall if required (Between November 1 and December 31), as necessary to replace dead or defective plant materials as directed by the Engineer. For each plant replaced, the first replacement, if required, shall be at the Contractor's expense. The second replacement, if required, will be paid for at 35 percent of the original contract unit price per each plant replaced.
 5. **Stakes, and Guys, and/or Below Ground Tree Anchors** shall be repaired or replaced immediately as needed. Stakes and Guys shall be removed when no longer required as directed by the Engineer. Tree anchors shall remain in place.
 6. **Eroded Saucer Rings** shall be repaired or replaced as needed and/or as directed by the Engineer.
 7. **Mulch** shall be redressed as needed and/or as directed by the Engineer throughout the establishment period.
 8. **Re-mulching:** When established as a separate pay item, remulching shall be reapplied to all individual plants and plant beds prior to the terminus of the establishment period at a rate of approximately 38 millimeter depth, uniformly over all individual plant pits and plant beds, and/or as directed by the Engineer.
 9. **Vegetation Control** shall consist of the control and/or removal of weeds, grass and root growth from plant beds and mulched areas around individual plants. Such weeding shall be performed once in the month of May, June, July, August, and September for a total of five weeding operations over the duration of the

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



establishment period. The Contractor shall submit a schedule for vegetation control for approval by the Engineer prior to the Contractor beginning vegetative control operations.

- a) Removal of weeds, grass and root growth may be completed by hand or through the application of "pre-emergent" and "post emergent" herbicides as approved by the Engineer. All herbicide applications shall be performed by certified pesticide applicators in accordance with the requirements of Section 601.01 of the Specifications. Additional weeding may be performed when requested by the Engineer and with written agreement from both parties. The Engineer also reserves the right to delete individual weeding cycles at no cost to the Department when necessary. The Contractor shall be responsible for replacing plants that are damaged or that die due to the application of herbicide treatments.
- b) When herbicides are used for post emergent weed control, the weeds shall be cut to a height of 150 millimeters or as recommended by the manufacturer if necessary, prior to applying the herbicide. The Engineer reserves the right to change the frequency or delete specific areas scheduled for weed control. Other pesticides, adjuvants and plant growth regulators may be used when approved by the Engineer.
- c) Turf maintenance which includes grass and other vegetation around individual plant pits, between groups of plant pits that are 4.5 meters on center or less, and around the perimeter of plant beds shall be cut to a height of approximately 100 millimeters. For each individual plant pit, group of plant pits, and plant beds, a perimeter extending 1.5 meters in width shall be maintained around the outermost plant pits and edge of beds where grass and other vegetation is present, and where such areas exist within the right-of-way or construction easement. Mowing shall be performed once in each month of May through September. Additional mowing may be performed when requested by the Engineer. The Engineer reserves the right to delete individual mowing cycles when deemed necessary by the Engineer.

10. **Additional Work**, including pruning of dead, broken or diseased branches, and seasonal spraying with approved insecticides and fungicides, shall be performed to ensure plant survival as approved or directed by the Engineer.

- (c) **Termination of Establishment Period:** Any dead, missing, or defective plants shall be replaced as directed by the Engineer prior to termination of the establishment period. The Engineer shall be notified within 48 hours prior to beginning the replacement work.

The establishment period shall end on a date established by the Engineer, when the Contractor receives written notification from the Engineer that confirms all the requirements of (b) herein have been satisfactorily completed.

605.06--Guarantee.

The Contractor's performance bond, furnished in accordance with the requirements of Section 103.05 of the Specifications, shall provide for necessary maintenance during the establishment period and replacements in kind, or with a substitute acceptable to the Engineer, for plants that are not in a healthy growing condition or that have died back to the crown or beyond the normal pruning limit.

605.07--Measurement and Payment.

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

Plants will be measured by an actual count of living plants in a healthy growing condition and will be paid for at the contract unit price per each. Plants that the Engineer deleted from the Contract will not be measured for payment. This price shall include furnishing and delivering plants and miscellaneous planting materials; preparing planting pits, except when established as a separate pay item, forming saucers; installing plant materials; watering, except during establishment period, applying fertilizer; back filling with approved soil mixture; staking; guying; anchoring; pruning; applying mulch, except to areas designated on the plans as plant beds, replacing dead or damaged plants; repairing, replacing and removing stakes and guys when no longer needed; and maintaining plants in a healthy growing condition until final acceptance.

Trees or shrubs planted on a slope steeper than 3:1 with pit modification as indicated in the Department's Road and Bridge Standard Section 1201.06 will be paid for at 125 percent of the price bid. Such price shall also include the cost of pit modification, stone and geotextile filter fabric. Percolation tests shall be included in the price bid for plants.

Bed Preparation will be measured and paid for in units of 9.2 square meters of surface area. This price shall include herbicide spraying of areas to be prepared for planting or physically removing turf and weeds, restoring areas to original grade with topsoil (as applicable) as directed by the Engineer, tilling soil, furnishing, delivering, and applying composed yard waste at the specified depth, tilling in composted yard waste, hand raking, neatly edging bed, and all incidentals necessary to prepare a healthy growing medium for planting.

Pit drains when detailed and established as a separate pay item on the plans will be measured and paid for in units of each, complete-in-place, which price shall include drainage stone, pipe, pipe grate, prefabricated drainage core, drainage/aeration cloth, and geotextile drainage fabric as designated on the plans.

Linear Planting Pit will be measured and paid for in units of cubic meters of excavated material required to achieve the horizontal and vertical dimensions indicated on the plans to receive soil mixture, including furnishing, delivering and storage of soil mixture materials to be used, and disposal of surplus excavated materials. Such price shall also include the cost of mixing and installing all components of the soil mix (horticultural grade perlite and composted yard waste), bed preparation, hand raking and adjusting surface to receive mulch, and furnishing and installing underdrain system(s) if indicated on the plans, including drainage stone, drainage/aeration cloth, prefabricated drainage core, geotextile drainage fabric, pipe, and pipe grate in accordance with the plans and detailed drawings, and all necessary incidentals complete in place.

Oversize Planting Pit will be measured and paid for in units of each, which price bid shall include excavation and disposal of unsuitable material, provision, and installation of pit drain materials if shown as part of the plan details, installation of approved backfill material and mixing with composted yard waste.

Replacements for plants lost during the establishment period because of theft, damage, or destruction caused by persons or equipment belonging to persons or organizations other than those engaged in performing the work or during delivery of the plants, or plants lost due to damage from animals either wild or domestic, will be paid for at the rate of 35 percent the contract unit price per each. If vandalism or vehicle damage is determined by the Engineer to be the cause the rate will be 50% the contract unit price per each. This price shall include all costs associated with furnishing and installing the replacement. Replacements for plants that die due to other reasons shall be replaced and paid for in accordance with the requirements of Section 605.05(b)4 of the Specifications.

Mulching will be measured in units of 10 square meters of surface area. Mulch for plant beds at the time of initial installation will be paid for at the contract unit price per 10 square meters. This price shall include furnishing, delivering, and applying mulch. No separate payment will be made for initial application or maintenance of mulch around plants that are not in continuous mulched plant beds. The cost thereof shall be included in the price for the plant.

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



Re-mulching, when established as a separate pay item, will be measured and paid for in cubic meters. This price shall include furnishing, delivering, and applying mulch to plant beds, and to plants in individual saucer rings prior to the terminus of the establishment period. Remulching does not include regular maintenance of individually mulched plants or plant beds for the duration of the establishment period.

Watering during the establishment period will be measured in units of 3,785 liters, and will be paid for at the contract unit price per unit, applied at the rates designated on the plans. This price shall include furnishing, delivering, and applying water and performing all other work in connection therewith and incidental thereto. No payment will be made for watering at the time of original planting or during the installation period until from plant installation until the start of the establishment period or whenever replacements are planted.

Vegetation Control: Vegetation Control will be measured and paid for on a unit basis. Compensation for weeding (removal of weeds, grass, and root growth) and turf maintenance shall be made on a Unit basis consisting of each complete project weeding and turf maintenance operation accomplished by the Contractor, including the removal and disposal of unwanted vegetation, application of pesticides, the performance of mowing around and between individual plants, and as reviewed and approved by the Engineer.

Tree Tubes will be measured and paid for at the contract unit price per each which shall include furnishing and installing the tube, including all incidentals necessary to complete the work. This price shall also include the removal and disposal of the tree tube at the end of the establishment period.

Payment will be made under:

Pay Item	Pay Unit
(Name of) Plant (Size)	Each
Mulching	Unit (10 square meters)
Re-mulching	Cubic meter
Watering	Unit (3,785 liters)
Vegetation Control	Unit
Linear Planting Pit	Each
Oversize Planting Pit	Each
Bed Preparation	Unit (9.2 square meters)
Pit Drain	Each
Tree Tube	Each

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



7-

— DIVISION VII—TRAFFIC CONTROL DEVICES —

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



700 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)

**GUIDELINES - PROJECTS WITH TRAFFIC SIGNS.
EXCEPTIONS: NONE.**

(cm701a1b-1106) **SECTION 701—TRAFFIC SIGNS** of the Specifications is amended as follows:

Section 701.03(a)4. Letters, numerals, arrows, symbols, borders, and other features of the sign message is amended to include the following:

- d. **Type L4, overlay film, pressure applied:** Features of the sign message are created by using a background sheeting of the color needed for the sign message and then applying the overlay film with the sign message areas removed from the film. The overlay film shall be transparent and shall be of the color needed to provide the correct background color of the sign.

Section 701.04—Measurement and Payment is amended to replace **Sign panels** with the following:

Sign panels will be measured in square meters and will be paid for at the contract unit price per square meter. This price shall include background sheeting, sign messages, framing units and hanger assemblies.

10-26-05c (SPCN)

**GUIDELINES - PROJECTS HAVING ROAD EDGE, BARRIER OR GUARDRAIL DELINEATORS.
EXCEPTIONS: NONE.**

(cm702a0b-0402) **SECTION 702.04(b) - BARRIER AND GUARDRAIL DELINEATORS** of the Specifications is amended to replace the third paragraph with the following:

Barrier delineators shall be installed on the top surface of the barrier wall, except barriers greater than 900 mm in height, barriers with glare screens or handrail attached and barriers located in construction work zones shall have the delineators installed at a height of approximately 630 mm above the roadway. Delineators

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



installed on the sides of the barrier shall be positioned so the reflective surface lies in the vertical plane facing oncoming traffic. Barrier delineators shall be installed using an adhesive as recommended by the delineator's manufacturer.

10-31-01 (SPCN)

GUIDELINES - USE ON ALL PROJECTS HAVING TRAFFIC CONTROL CENTER CABINETS.
EXCEPTIONS: NONE.

(cm705a0b-0200) **SECTION 705.03(e) CONTROL CENTERS** of the Specifications is amended to include the following:

Door openings for control center cabinets shall be at least 200mm wider than the enclosed widest panelboard or other installed equipment whichever is wider. When multiple door control centers are provided, the door openings for each door shall be identical.

3-29-99 (SPCN)

— **700 SERIES SPs (SPECIAL PROVISIONS)** —

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



**GUIDELINES— PROJECTS REQUIRING SIGNS, SIGNALS, LIGHTING OR NAVIGATIONAL LIGHTS.
EXCEPTIONS: NONE.**

SM700C7B-0708

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 700—GENERAL

June 9, 2008

SECTION 700—GENERAL of the Specifications is amended as follows:

Section 700.01—Description is revised to add the following:

Installation of materials shall be accomplished in accordance with manufacturer's instructions except when otherwise indicated.

Section 700.02(i) Poles, posts, and overhead and bridge-mounted sign structures is replaced with the following:

- (i) **Poles, posts, and overhead and bridge-mounted sign structures** shall conform to the following:
- **Conventional and offset lighting poles** shall be steel or aluminum.
 - **Overhead and bridge-mounted sign structures, signal poles (mast arm and strain), and high-mast lighting poles** shall be steel.
 - **Pedestal poles** with a nominal diameter of more than 50 millimeters shall be steel or aluminum. Pedestal poles 50 millimeters and less in nominal diameter shall conform to the requirements of Section 238 of the Specifications for metal conduit.
 - **Sign posts** shall be wood or steel.

Lighting, signal, and pedestal poles; sign posts; and overhead and bridge-mounted sign structures not designed to support variable message signs shall conform to the requirements of the 1994 Edition of AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*.

Overhead and bridge-mounted sign structures (including "butterfly" structures) designed to support variable message signs shall conform to the requirements of the 4th (2001) Edition of the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* and the following clarifications:

- Basic wind speed shall be used in the designs. Alternate method for wind pressures (Appendix C) shall not be used.
- When the installation location of the structures lie between isotachs, the basic wind speed shall be determined by using the higher adjacent isotach.
- Any optional design parameters indicated in the AASHTO specification that are "allowed when acceptable to the owner" shall not be used for the designs.

Steel poles, posts and overhead and bridge-mounted sign structures shall be hot-dip galvanized after fabrication. Except when painting is required, steel poles and post shall be given one shop

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

coat of primer and two field coats of paint and the galvanization finish of overhead and bridge mounted sign structures shall be field treated for paint retention and two coats of paint applied.

Signal, lighting, and pedestal poles shall be of a one-piece or sectional single unit, tubular form, and shall be round or multisided. Multisided poles shall have at least eight sides. Pole shafts and arms shall have a removable cap fastened by at least three screws.

Mast arms shall not deflect below the horizontal plane or exceed a rise of 3 percent of the arm length after loads are applied. Mast arm poles shall include an arm attachment flange plate continuously welded to the gusset and side plates. The gusset and side plates shall be continuously welded to the pole and each other. The flange shall be fabricated with four studs permanently attached for receiving nuts (attaching arm). The flange plate and pole shall have a 64-millimeter wiring hole with a grommet centered in the pattern.

Strain poles shall not exceed a dead load deflection of 3 percent of the distance between the base of pole and point of dead load attachment. The minimum bottom diameter of strain poles shall be 280 millimeters.

Signal poles shall have a steel "J" hook located inside the poles for wire suspension within 125 millimeters of the top.

Lighting, signal poles, and overhead structures shall have a grounding lug welded to the inside of the pole or structure easily accessible from the hand hole. The grounding lug shall be designed to secure the grounding electrode conductor and equipment-grounding conductor by inserting the conductor under a setscrew type of lug.

Signal poles, high mast lighting poles, and all overhead sign structures (including "butterfly" structures) shall have a minimum of six anchor bolts, each having a minimum diameter of 38 millimeters. The maximum space between the bottom of base plate and top of foundation shall be no greater than the diameter of the anchor bolt plus 25 millimeters.

No grout will be permitted between the base plate and the top of the foundation of overhead structures, mast arm, lighting, and signal poles. No lock nuts or split washers will be allowed with the anchor bolts.

Section 700.02(j) Anchor bolts is replaced with the following:

- (j) Anchor bolts shall be steel, conforming to the requirements of Section 226.02(c)2 of the Specifications. The portion of anchor bolts beginning 100 millimeters below the top of the foundation and extending above the foundation shall be galvanized, except when stainless steel is used.

Anchor bolts used with signal poles, high mast lighting poles, and all overhead sign structures (including "butterfly" structures) shall conform to the requirements of Section 5.17 of the 4th (2001) Edition of the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*.

Section 700.02(k) Breakaway support systems is amended to replace the first paragraph with the following:

Breakaway support systems shall conform to the requirements of the 1994 Edition of AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*.

Section 700.03—Working drawings is amended to replace the first sentence of the first paragraph with the following:

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

The Contractor shall submit working drawings to the Department, including design calculations and catalog cuts, in accordance with the requirements of, Section 105 of the Specifications except that seven copies of each shall be submitted with the manufacturers name and address clearly noted.

Section 700.04(a) Ground Rods is replaced with the following:

- (a) **Grounding Electrodes:** Grounding electrodes (rods) shall be installed in accordance with the requirements of the NEC or by other methods approved by the Engineer. Grounding electrodes shall be installed utilizing a hydraulic/pneumatic/electric hammer drill driving device with an electrode drive bit to minimize damage to the electrode tip. Electrode drive bit shall be designed for 19-millimeter electrodes. Grounding electrodes shall include a grounding electrode conductor and grounding electrode clamp.

The following procedures shall apply for **Electrical Service Grounding Electrode installations only:**

- Grounding electrodes and grounding electrode conductors shall be installed in the presence of the Engineer at a date and time mutually agreed.
- Grounding electrode and grounding electrode conductors shall be connected utilizing exothermic welds. Exothermic welds shall be designed for the size conductor and grounding electrodes and shall be installed in accordance with the manufacturer's instructions. Grounding electrode conductors and grounding electrodes shall be cleaned to remove oxidation and any other foreign material from the surface before performing the exothermic welds.
- Primary grounding electrode(s) shall not have a resistance to ground of more than 25 Ohms. A 3-meter section of grounding electrode shall have a minimum of 2.5-meter contact with soil. Grounding electrodes shall be spaced a minimum of 3 meters between all electrodes.
- Primary grounding electrode(s) shall be installed vertically to a depth of 12 meters or until refusal. If the vertical grounding electrode cannot be installed to a minimum of 2.5-meter contact with soil, the Contractor shall install a grounding electrode at an angle of no more than 45 degrees to a depth of 12 meters or until refusal. If refusal occurs prior to installing the electrode to a minimum of 2.5-meter contact with soil, the Contractor shall remove the electrode or cut the electrode off 150 millimeters below grade and abandon.
- Primary grounding electrode(s) meeting the above requirements shall be augmented with an additional grounding electrode and connected in parallel to the primary grounding electrode to form a system. The augmented electrode shall be a single electrode driven to a depth of 100 millimeters below the finished grade. If refusal occurs prior to installing the electrode to a minimum of 2.5-meter contact with soil, the Contractor shall remove the electrode or cut the electrode off 150 millimeters below grade and abandon.
- Grounding electrodes shall be coupled at each section with couplers or exothermic welded splices. The grounding electrode conductor shall be installed to a depth of 450 millimeters below grade when connecting the primary electrode and augmented grounding electrodes.
- The Contractor shall install a JB-2C junction box at the primary grounding electrode location for access to the electrode, for connection and testing. Grounding electrode conductor(s) shall be installed under the bottom flange of the JB-2C. The grounding electrode shall be centered in the bottom of the JB-2C with a minimum of 150 millimeters

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

exposed. The JB-2C cover shall have the letters "VDOT ELEC" cast in the depression on top.

The Contractor shall notify the Engineer of those location(s) where primary grounding electrodes do not conform to the following:

- Resistance does not measure 25 Ohms or less.
- Grounding electrode does not have 2.5-meter contact with soil.

For those conditions indicated above, the Engineer will advise the Contractor how to proceed.

Grounding Electrode Testing: Primary grounding electrodes shall be tested after each 3-meter grounding electrode and/or section thereof is installed utilizing the Fall of Potential (three-point measurement) method. After the primary grounding electrode is installed and tested, the Contractor shall connect to the augmented electrode(s) to conduct a system test. The Contractor shall disconnect the grounding electrode conductor from the service equipment ground bus and bonding bushing before testing the grounding electrodes/system. The Contractor shall test the grounding electrode as required by the manufacturer's instructions for the type of earth testing equipment. The Contractor shall record the readings on a form provided by the District Traffic Engineering office. The completed form shall be signed and submitted to the Engineer after installation of the electrical service grounding.

Section 700.04(c) Concrete Foundations is replaced with the following:

- (c) **Concrete Foundations** shall be constructed and cured in accordance with the requirements of Section 404 of the Specifications and shall rest on material that will adequately support the design load. The Contractor may secure the anchor bolts to prevent their movement during concrete placement with a No. 3 or smaller rebar. Rebar shall be attached to the anchor bolts with rebar twist ties. Exposed areas of concrete foundations shall be given a Class 7 finish in accordance with the requirements of Section 404 of the Specifications. Items shall not be erected on concrete foundations until concrete has cured for at least 28 days or has obtained a compressive design strength of at least 20 megapascals.

Foundations for overhead sign structures shall be spread footings, unless inadequate soil conditions require deep foundation systems, i.e. drilled piers, driven piles. Drilled foundations may be permitted except for single pole structures (overhead-single pole in end forms, cantilever, or butterfly).

Foundation designs for signal poles, high mast lighting poles and overhead sign structures shall be furnished by the Contractor. Designs shall indicate the cubic meter quantity of concrete required for the foundations. Foundations shall be designed to conform to the requirements of the same Edition of the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* as the structure it is supporting. The Contractor shall accomplish at least one test bore, as approved by the Engineer, at each foundation location to determine the subsurface conditions prior to designing the foundation. Test bores shall be accomplished in accordance with any of the following three methods:

METHOD 1 - ASTM D420, ASTM D1452 and ASTM D1586
METHOD 2 - ASTM D3441
METHOD 3 - ASTM D4719

Depth of the test borings shall be at least 4.5 meters west of I-95 and at least 9 meters east of I-95. When test borings are accomplished in the median of I-95, the depth shall be at least 4.5 meters, north of Route 250 and at least 9 meters, south of Route 250. Soil conditions

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

shall be tested at the ground level and then on depth intervals of 1 meter in accordance with any of the three methods stated above.

When auger refusal or a count of 50 blows per 25 millimeters occurs before a 4.5-meter depth due to rock, the rock shall be continuously cored for at least 1.5 meters and be sampled in accordance with ASTM 2113. Boring logs shall be properly identified to the actual site with the centerline station and the distance perpendicular from the centerline indicated. On projects where the roadway is existing and no centerline is being surveyed, alternate methods for identifying the location shall be submitted by the Contractor for the Engineer's records. Bore log data shall be submitted electronically in accordance with Materials Division Policy and the resulting borehole log shall be included with the shop drawing submittals for the foundation designs.

The quantity of cubic meters of concrete that is indicated in the contract is an approximation. Payment will be made for the actual cubic meters of concrete based upon the foundation design supplied by the Contractor.

Test bores shall be performed within 1.5 meters of the foundation's location, as shown on the plans or as directed by the Engineer.

Section 700.04(e) Poles, Posts and Sign Structures is amended to replace the third, fourth and fifth paragraphs with the following:

A noncorrosive metal identification tag shall be permanently attached approximately 760 millimeters above the foundation to each signal, pedestal and lighting pole, overhead sign structure, bridge mounted sign structure, and steel sign post, except U-channel sign posts and square tube steel. The tag shall be of sufficient size for 6-millimeter lettering, single-spaced between lines and shall be attached by noncorrosive screws or rivets.

The tag shall be imprinted with "VDOT" except when the structures are located within an incorporated town or city on a primary or secondary roadway, where it shall be imprinted with the municipality's name, unless otherwise noted on the plans or directed by the Engineer. The tag shall also be imprinted with the following:

1. **Manufacturer's name** on all tags
2. **Manufacturer's unique ID number** on all tags
3. **Date of manufacture** on all tags
4. **Signal poles:** gage and length of pole and mast arm(s)
5. **Pedestal poles:** gage and length of pole
6. **Lighting poles:** gage and length of pole and luminaire arm(s); electrical phase circuit designation
7. **Overhead sign structures:** gage and length of pole and span
8. **Steel sign posts:**
I-beams: length, size, and mass per meter of post

Section 700.04(e) Poles, Posts, and Sign Structures is amended to replace the seventh paragraph with the following:

Poles shall be provided with hand holes that face away from traffic. Hand holes shall be at least 75-millimeter by 125-millimeters unless otherwise specified and provided with a gasket and cover with an 450-millimeter long galvanized chain, with a minimum breaking strength of 136 kilograms, welded to the inside of the pole at the bottom of the hand hole opening and to the inside of the cover to prevent accidental loss. The cover shall be attached to the pole with noncorrosive captive screws, and attachment holes shall be drilled and tapped.

Section 700.04(g) Conductor Cables is replaced with the following:

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

- (g) **Conductor Cables:** Conductor cables in conduit runs more than 30 meters in length shall be installed with the use of an approved lubricant or pulling compound. Cleaning agents and lubricants that have a deleterious effect on cable coverings shall not be used.

Aerial cables that extend more than 6 meters shall be supported by a span wire or reinforced with a copper-clad, galvanized, or stainless steel wire for self-support. Cable rings shall be used to attach conductor cables to the supporting wire; however, lash wire may be used to attach interconnect cable when no other conductor cables are attached to the same span wire. Vinyl tape shall be used as shown on the plans to prevent sag. When aerial cables enter a service entrance head, a 200-millimeter drip loop shall be formed.

Bends in single or multiple conductor cables shall have a bend radius of at least 5 times the outside diameter of the cable.

Conductor cables shall be installed with the slack length coiled in junction boxes. The coiled length shall be sufficient to allow cables to extend at least 600 millimeters above junction boxes.

Solderless terminals shall not be used for connecting conductor cables having solid conductors to terminal posts.

Splices in lighting conductor cables will be permitted only at accessible locations. Splices in service entrance conductor cable will be permitted only for connection to the utility company's service conductor cables. Splices will not be permitted in signal and interconnect conductor cables.

Splices in lighting and service entrance conductor cables shall be made in accordance with the requirements of NEC and the following additions and exceptions. Conductor insulation shall be removed only to the amount necessary to install the connector. Exposed conductors shall be wire brushed and cleaned before splicing. Splices shall be made with properly sized non-insulated butt-end connector compression sleeves for single conductors or split bolts for branch circuit connections. Conductor connections shall be made mechanically and electrically secure. Crimping tools used on compression sleeves shall be designed for the application and sized to the splicing connectors.

Splices shall be covered with an insulation rated equal to or higher than the voltage rating of the conductor cable. Single and branch circuit conductor splices shall be properly re-insulated and made water resistant by one of the following:

- 1) Two layers of rubber electrical tape shall be applied half-lapped with the first layer extending the length of disturbed insulation, and second layer extending at least 25-millimeters onto clean undisturbed insulation of each conductor. Rubber electrical tape shall be stretched and wrapped tightly to eliminate air gaps. Rubber electrical tape shall be molded around irregular shapes and multiple conductors for smooth insulation build-up. Over the rubber electrical tape, at least two layers of vinyl electrical tape shall be applied half-lapped with each layer overlapping the end of the proceeding layer by at least 25-millimeters onto clean undisturbed insulation. The splice and at least 25-millimeters of adjacent clean insulation shall be covered using an acceptable water resistant sealing compound for electrical splices.
- 2) Heat-shrink tubing properly sized shall be installed extending at least 75 millimeters onto each end of clean undisturbed insulation. End seams around two or more adjacent conductors shall be sealed and made water resistant.

- 3) Splice kit shall be properly sized to extend at least 75 millimeters onto each end of clean undisturbed insulation.

Single conductor splices within a multi-conductor cable shall be re-insulated using heat-shrink tubing.

Re-jacketing of multi-conductor cables shall be accomplished using heat-shrink tubing properly sized.

Heat-shrink tubing shall be heated using a non-contact flameless device or a flamed heat source device equipped with a shield to prevent the flame from coming in contact with the tubing.

Breakaway connectors shall be installed on luminaire conductors and on signal conductors for signal head assemblies on pedestal poles. Breakaway connectors shall be fused for the hot conductors and nonfused for the grounded conductor. Breakaway connectors shall be located in the hand hole of the pole.

Signal and interconnect cable terminal strips shall be sealed with a moisture block compound to prevent moisture from entering the open cable end. The compound shall be soft, pliable, and easily removable and shall be used in accordance with the requirements of the manufacturer's recommendations.

Termination of interconnect cable will be allowed only in a master controller cabinet, local controller cabinet, or terminal enclosure. The cable shield shall be grounded at each termination point. Whenever the cable is entered for connection to equipment, each wire of the cable shall be connected to a terminal post position.

The Contractor shall conduct a Megger test on the installed interconnect cable and shield, for which a reading of 100M ohms shall be required. Testing for 300-volt cable shall be performed at 200 volts, and testing for 600-volt cable shall be performed at 500 volts. Cables shall be disconnected from controller cabinet terminals during testing.

Service entrance and lighting conductor cables shall be marked in accordance with the requirements of Article 310-11 of NEC. Markings shall be continuous and permanent. Signal and interconnect conductor cables shall be marked in accordance with the requirements of the applicable IMSA specification.

Prior to energizing an electrical system, the Contractor shall demonstrate to the Engineer that the system is clear and free from short circuits, open circuits, and unintentional grounds. Faulty circuits shall be repaired or replaced by the Contractor at his expense.

1. **Electrical service and lighting conductor identification:**

Grounded conductors: Insulated grounded conductors (Neutrals) shall be identified by a continuous white or gray outer finish except those larger than No. 6 AWG may be identified by three continuous white stripes on other than green insulation along its entire length.

Equipment grounding conductors: Equipment grounding conductors shall be bare, covered, or insulated. Covered or insulated equipment grounding conductors shall have a continuous outer finish that is either green or green with one or more yellow stripes.

Ungrounded conductors: Ungrounded conductors, whether used as a single conductor or in multiconductor cables, shall be finished to be clearly distinguishable from grounded, grounding, and equipment grounding conductors. Ungrounded conductors shall be identified by a continuous color-coding outer finish by phase and system except those

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

larger than No. 6 AWG may be identified only at readily accessible locations by marking tape, tagging or other approved means in accordance with NEC requirements.

Color-coding shall be as follows:

2-wire circuits, 120 Volts; 3-wire circuits, 120/240 Volts; 3-phase, 4-wire wye circuits, 208/120 Volts and; 3-phase, 4-wire delta circuits, 240 Volts

Circuit Designation	Color Code
Phase A or Line A	Black
Phase B or Line B	Red or orange*
Phase C	Blue
Grounded Conductor (Neutral)	White or gray** (see exception above)
Equipment Grounding Conductor	Bare, green, or green with one/more yellow stripes

3-phase, 4-wire wye circuits, 480/277 Volts; 3-phase, 3-wire delta circuits, 480 volts

Circuit Designation	Color Code
Phase A	Brown
Phase B	Orange
Phase C	Yellow
Grounded Conductor (Neutral)	White or gray** (see exception above)
Equipment Grounding Conductor	Bare, green, or green with one/more yellow stripes

* For 3-phase, 4-wire delta circuits, Phase B shall be the high leg and shall be orange.

** For outer covering of conductors of different systems that is contained within the same enclosure, refer to Article 200 of the NEC.

Electrical service and lighting conductors shall be permanently identified in accessible locations (hand holes, transformer bases, junction boxes, control centers, etc.) with non-ferrous metal tags or nylon tags attached to the conductor. Identifications shall be stamped or engraved on the metal tags and lettered with permanent ink on the nylon tags. Identifications shall be legible and shall indicate the electrical phase. Lighting conductors shall also indicate the electrical phase circuit designation. When the conductors are within a multi-conductor cable, the tag shall be attached to the cable jacket and shall indicate the required information for all conductors on one tag. If the conductors of a multi-conductor cable have been exposed for splicing, connections, etc., the conductors shall be tagged in lieu of the cable jacket.

- Signal and interconnect cable** jackets shall be permanently identified by integral-impregnated color coding. Color coding for signal cable shall be as follows:

Cable Insulation Color	14/12 Cable	14/7 Cable	14/4 Cable	14/3 Cable
Red	Red	Red	Red	Don't Walk
Orange	Yellow	Yellow	---	---
Green	Green	Green	Green	---
Red w/ black tracer	Red	---	---	---

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



Orange w/ black tracer	Yellow	---	---	---
Green w/ black tracer	Green	---	---	---
Blue	Green	Green	---	---
White w/ black tracer	Yellow	Yellow	---	---
Black	Red	Red	Yellow	Walk
Black w/ white tracer	Spare	---	---	---
Blue w/ black tracer	Spare	---	---	---
White	AC Ground	AC Ground	AC Ground	AC Ground

Signal and interconnect cables shall be permanently identified in the controller cabinet, junction boxes, hand holes and other accessible locations. Signal conductor cables shall also be identified in the hand hole of poles if the cables are attached to terminal strips in the hand hole. Identifications shall be indicated on nonferrous metal tags or nylon tags attached to the cable with nylon cable ties. The identification shall be stamped or engraved on the metal tags and lettered with permanent ink on the nylon tags. Identifications shall be legible and shall conform to the following:

- a. **signal cable:** phase and location of signal head; e.g., 1 NB leftturn head; 1 NB inside left-turn head; 2 SB through-lane heads; 1 left-turn head and 6 through-lane heads; 2 Ped head NW Quad
- b. **interconnect cable:** description and direction from location (if cable is a spare). The word "spare" shall be included after "inter." The direction from location is required only in the controller cabinet, e.g., Inter. NB; Inter. Spare NB; Inter. WB; Inter.

Section 700.04(h) Conduit Systems is amended to add as the first sentence of the first paragraph the following:

Conduit systems shall be rigid except where contract documents specify otherwise.

And is amended to replace the fifth, sixth, seventh and eighth paragraphs with the following:

After testing, individual non-metallic conduit runs more than 46 meters in length that are to remain empty shall be equipped with a woven polyester or aramid pull tape having a tensile strength of at least 4893 newton and less than 15 percent elongation at yield. Pull rope shall not be used in non-metallic conduit. 300 millimeters of pull tape shall be doubled back into the conduit at each end.

Metallic conduit runs more than 46 meters in length that are to remain empty shall be equipped with either a pull rope or tape having a tensile strength of at least 4893 newtons. 300 millimeters of pull tape or rope shall be doubled back into the conduit at each end.

Open ends of unused conduit shall be closed with watertight plugs or caps to seal against moisture. Open ends of conduits with conductors installed shall be sealed with an approved soft, pliable and easily removable, waterproof sealant. The sealant shall not have a deleterious effect on cable coverings.

Wherever conduit crosses a structural expansion joint, conduit shall be provided with an expansion fitting. The fitting shall permit longitudinal movement of the amount specified on the plans.

Metal conduit systems shall be bonded. When a nonmetallic conduit system is used, the Contractor shall furnish and install an equipment grounding conductor to maintain a bonded system in accordance with the requirements of the NEC.

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



Non-metallic conduit with non-metallic cable (fiber optic) within shall be equipped with a No. 8 locator wire.

Section 700.04(h)2. Buried conduit systems is amended to replace the second paragraph with the following:

When conduit is to be installed under an existing roadway, entrance or fixed object and open cutting is not permitted, conduit shall be installed by an approved Directional Boring method. Conduit for the directional boring method shall be PVC designed specifically for the directional boring operation or high density PE. With the approval of the Engineer the Contractor may elect to use the jacked method to install a pipe sleeve for installation of the required conduit at no additional cost to the Department.

Section 700.04(i) Junction Box Covers is replaced with the following:

(i) **Junction Boxes** shall be installed as follows:

The junction box site shall be excavated such that the depth of the excavation shall be the height of the junction box plus at least 300 millimeters to allow for bedding aggregate material and such that the width shall be 150 to 200 millimeters wider than the junction box.

Bedding material shall be No. 68, No. 78, or No. 8 aggregate or Crushed Glass conforming to No. 78, or No. 8 gradation requirements. Aggregate shall be a minimum of 300 millimeters in depth and entirely cover the bottom of the junction box excavation. The bedding aggregate shall be leveled and tamped prior to installing the junction box.

Junction box shall be installed and leveled to grade prior to backfilling.

Prior to backfilling the interior of polymer concrete junction boxes (JB-S1 and JB-S2) shall be braced with 50 by 100 millimeter lumber using two braces across the width and one brace across the length of the box or as required by the manufacturer. Bracing shall be installed to facilitate removal once back filling and compaction have been completed. The Contractor shall remove internal bracing after the backfilling and compacting operation has been completed.

The cover of the junction box shall be installed prior to backfilling.

The junction box shall be backfilled and compacted around its perimeter utilizing six to eight inch 150 to 200 millimeter horizontal lifts to where the concrete collar is to begin. Once the concrete collar has cured the remaining area around the collar shall be backfilled and compacted as stated above. Compaction shall be at least ninety percent of the theoretical maximum density as defined in Section 101.02 of the Specifications. A mechanical tamping device shall be used to compact the backfill and soil layer by layer around the perimeter of the junction box. The wheel of a backhoe or other type vehicle shall not be used for compaction of backfill and soil. The internal bracing shall be removed after backfilling and compaction has been completed. The area around the installed junction box shall be graded and restored as stated elsewhere in the Specifications.

Junction boxes shall not be installed or backfilled in standing water. Backfill material shall be free of large stones, wood or other debris and shall not be saturated with water.

If a special tool or wrench is required to remove the cover, the Contractor shall furnish the Engineer with five such tools.

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

Section 700.05—Measurement and Payment for Concrete foundations is replaced with the following:

Concrete foundations will be measured and paid for in units of each or cubic meters of concrete as applicable. When paid for in cubic meters of concrete, no payment will be made for concrete in excess of the cubic meters of concrete required by the foundation design unless otherwise approved by the Engineer. This price shall include foundation design, concrete, reinforcing steel, stub poles, anchor bolts, bolt circle templates, grounding equipment, conduits, excavating, backfilling, compacting, disposing of surplus and unsuitable material, and restoring existing areas.

Section 700.05—Measurement and Payment for Electrical service is replaced with the following:

Electrical service will be measured in units of each and will be paid for at the contract unit price per each. This price shall include service poles, safety switches or breaker boxes, service entrance conductor cables from utility company's service box, conductors to the safety switch and circuit breaker box, conduits and fittings on poles and steel supports, conduit straps or clamps, meter base, service entrance heads, thimbleye bolts, steel supports, wireway, junction boxes for grounding electrode and utility service, excavation, concrete, and pickup and installation of meter base and current transformer cabinet.

Section 700.05—Measurement and Payment for Luminaire arms is replaced with the following:

Luminaire arms will be measured in units of each and will be paid for at the contract unit price per each. This price shall include pole mounting brackets, fittings and mounting hardware.

Section 700.05—Measurement and Payment for Conduit is replaced with the following:

Conduit will be measured in meters and will be paid for at the contract unit price per meter. This price shall include conduit bodies, fittings, bonding systems, pull ropes, pull tapes, plastic spacers, No. 8 locator wire when required, pull or splice boxes with an area of 8390 cubic centimeters or less, supports and protective metal shields.

Section 700.05—Measurement and Payment for Junction boxes is replaced with the following:

Junction boxes will be measured in units of each and will be paid for at the contract unit price per each. This price shall include concrete collars, frames and covers, tools to remove the cover, ground rods, ground conductors, grounding lugs, knockouts, cable racks, bracing, aggregate, excavating, backfilling, compacting, disposing of surplus and unsuitable material, and restoring existing areas.

Section 700.05—Measurement and Payment is amended to include the following:

Electrical service grounding electrode will be measured in units of each (per 3-meter electrode or portion thereof) and paid for at the contract unit price per each. This price shall include testing, exothermic welds, grounding electrode(s), electrode couplers, grounding conductor, and report documentation.

Bored conduit will be measured in units of meters and will be paid for at the contract unit price per meter for the size specified. The price shall include conduit, fittings, couplings, and when required No. 8 locator wire, bonding systems, and pull rope or tape.

Payment will be made under:

Pay Item	Pay Unit
Electrical service grounding electrode (3 meter)	Each

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



Bored conduit (size)

Meter

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



**GUIDELINES - PROJECTS HAVING EXISTING SIGNS TO BE REFURBISHED.
EXCEPTIONS: NONE.**

SM701A0B-0201

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 701 - SIGN OVERLAYMENT

June 29, 2000

I. DESCRIPTION

This work shall consist of refurbishing existing signs by overlaying the sign with new reflective sheeting panels including new messages and border in accordance with the Specifications, this provision and as shown on the plans.

II. MATERIALS

Sign base material shall be 2-mm thickness aluminum alloy conforming to the requirements of Section 229.02(a) of the Specifications. Reflective sheeting shall conform to the requirements of Section 247 of the Specifications. Letters, numerals, arrows, symbols, border and other features of the sign message shall conform to the requirements of Section 701.03(a)4c of the Specifications for type L-3 reflective sheeting.

III. PROCEDURES

Procedures shall conform to the requirements of Section 701.03 of the Specifications. Fabrication shall be performed in such a manner as to assure matching of the reflective sheeting in the final overlayment.

IV. CONSTRUCTION METHODS

Overlays and demountable message including borders existing on the signs shall be removed to facilitate the installation of the new overlayment. Bullet holes and bent sections shall be flattened so that the sign face is free of projections and large indentations to facilitate installation of the new overlayment.

Overlayments 1-m or less in total horizontal dimension shall be accomplished with one panel. Overlayments greater than 1-m in total horizontal dimension shall be accomplished with panels no less than 1-m wide; except that, one panel per overlayment may be less than 1-m wide to obtain the exact horizontal dimension required. All joints shall be tightly butted and not overlapped.

Overlay panels shall be erected with aluminum rivets. Rivets shall be no less than 4.8-mm diameter and of such length as to securely fasten the panels and form a head conforming to the manufacturer's recommendations. Rivets shall be located on 300-mm centers (positioned 25-mm from each panel's edge) around the sign's perimeter. Where overlayment panels are 760-mm or greater in width, a column of rivets shall be installed on 300-mm centers down the centerline of the panel. Rivets shall be installed in such a sequence as to prevent buckling of the panels.

In the Hampton Roads District, at installations where the existing sign panel is attached by stud welds to the horizontal supports 10-mm galvanized bolts, washers, nuts and fiber washers shall be used in addition to rivets to attach the overlay panels. Bolts shall be located in alignment with each horizontal support (z-bar, t-bar), positioned 300-mm from each panel's edge and spaced on 300-mm maximum spacings along each horizontal support. At locations where existing stud welds and panel clips are in the area of the proposed bolt locations, the bolts shall be relocated as needed to miss these. Nuts shall be tightened only to the point just before the sign panel begins to buckle in that area.

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

V. MEASUREMENT AND PAYMENT

Overlay sign panels will be measured in square meters of sign panels without deductions for rounding corners. Overlay sign panel will be paid for at the contract unit price per square meter, which price shall be full compensation for verifying the size and color of overlayment panel, removal of existing overlayment and demountable messages including borders; fabricating, furnishing and installing overlayment; and, for all materials, tools, labor, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Overlay Sign Panel	Square meter

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



**GUIDELINES - PROJECTS REQUIRING TRAFFIC SIGNALS:
EXCEPTIONS: NONE.**

SM703A0B-1106

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 703—TRAFFIC SIGNALS

February 21, 2006

SECTION 703—TRAFFIC SIGNALS of the Specifications is amended as follows:

Section 703.02—Equipment is amended to replace the fourth sentence of the first paragraph with the following:

Controllers shall be furnished completely housed in a weatherproof cabinet.

Section 703.02(d)4.g. is amended to replace the third sentence with the following:

The second circuit breaker shall be rated at least 20 amps or as required by the loading and shall operate all other equipment, including the signal load.

Section 703.04—Measurement and Payment is amended to replace the third paragraph (**Traffic signal head sections**) with the following:

Traffic signal head sections will be measured in units of each and will be paid for at the contract unit price per each. This price shall include mountings, molded terminal blocks, visors, backplates, fittings, realignments, lamps and optical adjustments or LED modules as required.

And to replace the fourth paragraph (**Pedestrian signal heads**) with the following:

Pedestrian signal heads will be measured in units of each and will be paid for at the contract unit price per each. This price shall include mountings, LED indication modules, molded terminal blocks, visors, fittings, and realignments.

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



**GUIDELINES - PROJECTS HAVING TYPE B, CLASS VI PAVEMENT LINE MARKING:
EXCEPTIONS: NONE**

SM704B0B-0197

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
704 - TYPE B, CLASS VI PAVEMENT LINE MARKING

February 6, 1996
Reissued January 1, 1997

I. DESCRIPTION

This work shall consist of furnishing and installing a self-adhesive white or yellow preformed pavement line marking at locations shown on the plans and as directed by the Engineer.

II. MATERIALS

Preformed pavement line marking shall be a retro-reflective pliant polymer material consisting of a mixture of polymeric materials, pigments and glass beads distributed throughout its cross-sectional area with a reflective layer of beads embedded into the surface. The markings shall be suitable for use one year after the date of receipt when stored in accordance with the manufacturer's recommendations.

The marking shall have the following reflectance values when tested in accordance with the requirements of ASTM-D4061. The photometric quantity to be measured shall be specific luminance (SL), expressed as millicandelas per square foot per foot-candle. The metric equivalent shall be expressed as millicandelas per square meter per lux. The test distance shall be 50 ft. (15m) and the sample size shall be a 2.0 ft. x 0.25 ft. rectangle (0.61m x .076m).

	INITIAL REFLECTANCE VALUES			
	White		Yellow	
Entrance Angle	86.0°	86.5°	86.0°	86.5°
Observation Angle	0.2°	1.0°	0.2°	1.0°
Specific Luminance	1100	700	800	500

The glass beads on the surface of the material shall have a refractive index of no less than 1.70 when tested using the liquid oil immersion method. The beads shall be tested for acid resistance, in which under 20X magnification, no more than 15% of the beads shall show a distinct opaque white (corroded) layer on their entire surface when tested in accordance with the requirements of VTM 61. The glass beads mixed into the pliant polymer shall have a refractive index of no less than 1.5 when tested by the liquid oil immersion method.

Bead adhesion shall be such that beads are not easily removed when the film surface is scratched firmly with a thumbnail.

The material without adhesive shall have a minimum caliper of 0.065" (1.651 mm) at the thickest portion of the cross-section, and a minimum caliper of 0.020" (0.508 mm) at the thinnest portion of the cross-section.

The surface of the retro-reflective pliant polymer shall provide an initial skid resistance value of no less than 45 BPN when tested according to the requirements of ASTM E-303-83.

The preformed marking materials shall be capable of conforming to pavement contours, breaks and faults through the action of traffic at normal pavement temperatures. The material shall be capable of being adhered to asphalt or hydraulic cement concrete by a precoated pressure sensitive adhesive.

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



The marking shall be capable of being inlaid during a paving operation on new, dense, or open graded asphalt concrete and shall be ready for traffic immediately after application.

The marking shall be a neat, durable marking that will not flow or distort due to temperature if the pavement surface remains stable. The pliant polymer shall provide a cushioned, resilient substrate that reduces bead crushing and loss. Markings shall be weather resistant and shall show no significant tearing, roll back, lifting, shrinkage, or other signs of poor adhesion, nor appreciable fading, which will impair the intended usage of the marking throughout its intended life.

When the pay item specifies Type B, Class VI contrast pavement line marking, the preformed tape shall be an additional 3" (75 mm) minimum wider than the width specified in the pay item. This additional tape width shall be black non-reflective with 1 1/2" (38 mm) minimum on both sides of the white.

III. INSTALLATION

Surface preparation, use of solvents and primers, and equipment used in the application of the markings shall be in accordance with the manufacturer's recommendations. Marking configurations shall be in accordance with the "Manual on Uniform Traffic Control Devices". Unless otherwise indicated, markings installed on new asphalt concrete roadway surfaces shall be inlaid into the surface with the last pass of the asphalt roller (if allowed by tape manufacturer) or directly after the asphalt roller utilizing a separate roller for the tape whereby the marking becomes embedded within the pavement. Temperature requirements of the asphalt and the type of roller allowed shall be in accordance with the tape manufacturer's recommendations. The Contractor shall ensure that inlaid markings are not degraded by the pavement operation.

Markings shall not be installed directly over longitudinal pavement joints.

IV. TESTING

Visual night inspections will be made by the Engineer with both Contractor and a manufacturer's representative to identify areas of the pavement markings appearing to reflect below the specified reflectance values. Such areas shall be tested by the Contractor to measure the reflectance values. Pavement markings to be tested shall be clean and dry. Testing shall be performed with the use of an "ECOLUX" brand reflectometer at a minimum temperature of 40°F (4°C) in accordance with the following:

TESTING REFLECTANCE VALUES		
	White	Yellow
Entrance Angle	86.5°	86.5°
Observation Angle	1.0°	1.0°
Specific Luminance	150	150
Average Value, Minimum		

Test areas will be equal to three miles (4.83 km) or less and shall have a minimum of three check points for each type marking therein. Measurements for skip lines shall be 18, distributed over 6 lines at each check point. Measurements for center and edge lines shall be 18, distributed over 300 feet (90 m) or less of continuous marking. Markings more than 6 inches (150 mm) in width shall have 1/3 of its measurements on the right edge, 1/3 on the axis and 1/3 on the left edge.

Measured reflectance values, at each check point, will be averaged by type marking to determine conformance to the test reflective values.

All costs associated with testing the markings for reflectance values including but not limited to the cost of maintenance of traffic and the reflectometer shall be borne by the Contractor.

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



V. MEASUREMENT AND PAYMENT

Type B, Class VI pavement line marking will be measured in linear feet (meters) for the width specified and will be paid for at the contract unit price per linear foot (meter), which price shall be full compensation for furnishing and installing pavement line markings, surface preparation, and testing.

Payment will be made under:

Pay Item

Type B, Class VI pavement line marking (Width)
Type B, Class VI contrast pavement line marking (Width)

Pay Unit

Linear foot (Meter)
Linear foot (Meter)

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



**GUIDELINES - PROJECTS HAVING PAVEMENT MARKINGS OR MARKERS.
EXCEPTIONS: NONE**

SM704D1B-0507

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 704—PAVEMENT MARKINGS AND MARKERS

October 12, 2006

SECTION 704—PAVEMENT MARKINGS AND MARKERS of the Specifications is replaced by the following:

704.01—Description.

This work shall consist of establishing the location of pavement markings and installing pavement markings, pavement markers, and reflectorized material on specified pavements in accordance with these specifications, the *MUTCD* and as directed by the Engineer.

704.02—Materials.

The Contractor shall use an approved inventory tracking system for all materials received from the manufacturer. Shipment of materials from such inventory shall be accompanied by a signed form C-85 containing the following certification statement:

Material shipped under the certification has been tested and approved by VDOT as indicated by laboratory test numbers listed hereon.

- (a) **Pavement Markings** shall conform to the requirements of Section 246 of the Specifications.
- (b) **Glass Beads** shall conform to the requirements of Section 234 of the Specifications.
- (c) **Pavement Markers** shall conform to the requirements of Section 235 of the Specifications.

704.03—Procedures.

The Contractor shall have a certified Pavement Marking Technician present during pavement marking operations.

Pavement markings shall be installed on new roadways prior to opening the roadway to traffic. Pavement marking installation shall be completed within the time limits herein on roadways where the pavement markings have been removed or obscured and the roadway is open to traffic unless otherwise directed by the Engineer. Installation of Type B, Class VI pavement markings on asphalt roadways are not applicable to these requirements if they are inlaid with the last pass of the asphalt roller or directly after the asphalt roller utilizing a separate roller. Installation of edge lines on roadways where the existing pavement markings have been removed or obscured are also required within these time limits unless otherwise indicated by the Engineer. Exceptions to the below time limits will be granted only for weather restrictions, and installation of epoxy resin pavement markings on new pavement shall not commence until after 24 hours of final surface placement.

Pavement marking installation on roads having traffic volumes of 10,000 ADT or more shall be completed within 24 hours after the end of the workday where the pavement markings were removed or obscured.

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

Pavement marking installation on roads having traffic volumes between 3,000 and 10,000 ADT shall be completed within 48 hours after the end of the workday where the pavement markings were removed or obscured.

Pavement marking installation on roads having traffic volumes of less than 3,000 ADT shall be completed within 72 hours after the end of the workday where the pavement markings were removed or obscured.

If the Contractor will not have pavement markings installed within the time limits set above, the Contractor shall install Type D construction pavement markings within the same time limits and maintain such until the final pavement markings can be installed. The cost of installing, maintaining and removing the Type D construction pavement markings shall be borne by the Contractor with no cost to the Department.

When establishing the location of pavement markings, the Contractor may mark the locations on the roadway by installing premarkings. Premarkings shall be accomplished using Type D (removable – any class) tape, chalk, or lumber crayons except special pavement markings such as stop lines, crosswalks, messages, hatching, etc. shall be accomplished using chalk or lumber crayons. All premarkings shall be of the same general color as the pavement markings being premarked. When tape is used as premarking, premarking shall consist of 100 millimeter x 100 millimeter max. squares or 100 millimeter max. diameter circles spaced at 30 meter minimum intervals in tangent sections and 15 meter minimum intervals in curved sections. At locations where the pavement marking will switch colors, e.g. gore marking, the ends of the markings may be premarked regardless of the spacing. When chalk or lumber crayon are used as premarking, the entire length of the pavement marking may be premarked. All premarkings shall be installed whereby its installation shall not affect the adhesion of the pavement markings. When Type D tape is used as the premarking and the lateral location of such premarkings to the final pavement markings exceeds 150 millimeters, the premarkings shall be removed at no cost to the Department.

- (a) **Pavement Markings:** Pavement markings shall be white or yellow markings as required by the *MUTCD* for the specific location or as specified by the Engineer and shall be installed in accordance with Table VII-1 unless otherwise recommended by the manufacturer and approved by the Engineer. The Contractor shall furnish a copy of the manufacturer's installation recommendations to the Engineer.

The Contractor shall perform quality control testing for application thickness and glass bead rate in accordance with VTM-94 at the beginning of each workday and every 3 hours thereafter. The Contractor shall be responsible for providing the apparatus indicated in VTM-94 that are needed to perform the quality control testing. Testing shall be performed in the presence of the Engineer.

TABLE VII-1
Pavement Markings

Type	Class	Name	Surface Temp. at Time of Application	Film Thickness mm (mils)	Pavement Surface	Application Limitations
A		Traffic paint	10°C+	0.380 ± 0.025 when wet (15±1)	AC HCC	May be applied directly after paving operations
B	I	Thermoplastic alkyd	10°C+	2.286 ± 0.125 when set (90 ± 5)	AC	May be applied directly after paving operations
	I	Thermoplastic hydrocarbon	10°C+	2.286 ± 0.125 when set (90 ± 5)	AC	Do not apply less than 30 days after paving operations
	II	Polyester resin	10°C+	0.380 ± 0.025 when wet (15±1)	HCC	Needs to be coned
	III	Epoxy resin	10°C+	0.508 ± 0.025 when wet (20±1)	AC HCC	Pavement surface needs to be at least 1 day old
	IV	Plastic-backed preformed tape	Manufacturer's Recommendation	1.525 (60) – 2.286 (90)	AC HCC	Manufacturer's recommendations
	VI	Patterned preformed tape	Manufacturer's Recommendation	0.508 (20) min* 1.651 (65) min**	AC HCC	Manufacturer's recommendations
D	I & II	Removable tape	Manufacturer's*** Recommendation		AC HCC	Construction zone pavement marking
E		Removable black tape (Non-Reflective)	Manufacturer's *** Recommendation		AC	Construction zone pavement marking for covering existing markings
F	I & II	Temporary markings	Manufacturer's*** Recommendation (Film Thickness = 1.016 (40) max)		AC HCC	Construction zone pavement marking

* Thinnest portion of the tapes cross-section

** Thickest portion of the tapes cross-section

*** In the event the manufacturer's recommendation for film thickness is less than utilized when the material was tested by the National Transportation Product Evaluation Program (NTPEP) or other Department approved test facility, the minimum values used during installation shall conform to the test values which are indicated on the approved list for the specific marking.

The Contractor shall maintain a daily log (Form C-85) for both temporary and permanent pavement markings and markers. Entries in the log shall be made in ink, shall be legible, and the log shall be signed by the Contractor and delivered to the Engineer by the end of each workday.

Pavement line markings shall consist of stop lines, crosswalks, and solid or skip lines used for, but not limited to, dividing lanes, marking edges, channelizing, outlining and marking safety zones around objects, and forming islands and parking lot stalls.

- a. **Crosswalks and stop lines** shall be installed using Type B, Class I or IV markings.
- b. **Solid lines or skip lines** shall be installed using Type A or Type B markings as specified.

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

Pavement message markings shall be installed using Type B, Class I, IV or VI markings and shall include, but not be limited to, school zone markings, railroad crossing markings, disabled parking symbols, elongated arrows, word messages, etc. The word "SCHOOL" shall be formed with characters that are 3 meters in height where permitted by the normal roadway width. School zone markings shall extend transversely across both lanes of two-lane roadways and across two or more approach lanes of roadways of three or more lanes. Disabled parking symbols shall be 1040 millimeters in height, 915 millimeters in width and shall use a 100 millimeter stroke width for the lines.

The Contractor shall protect the public from damage attributable to pavement marking operations. The Contractor shall be responsible for the complete preparation of the pavement surface, including, but not limited to, removing dust, dirt, loose particles, oily residues, curing compounds, concrete laitance, residues from eradication, and other foreign matter immediately prior to installing pavement markings. The pavement surface shall be dry at the time of installation when tested in accordance with VTM-94. The Contractor shall be responsible for providing the apparatus indicated in VTM-94 that are needed to perform the moisture test. Marking material shall not be applied within 24 hours following rain or other inclement weather.

Liquid markings shall be applied so as to prevent splattering and overspray and shall be protected from traffic until track free by the use of guarding or warning devices as necessary. If a vehicle crosses a marking and tracks it or if splattering or overspray occurs, the affected marking and resultant tracking shall be removed and new markings applied at the Contractor's expense.

Equipment shall also be thoroughly cleaned between changes in colors of materials.

Pavement markings shall have clean and well defined edges without running or deformation; shall be uniform, free of waviness; shall be straight on tangent alignment; and shall be on a true arc on curved alignment. The widths of pavement markings shall not deviate more than 6 millimeters on tangent nor more than 12 millimeters on curves from the required width. The length of the gap and the length of the individual stripes that form skip lines shall not deviate more than 50 millimeters. The length of the gap and individual skip line shall be of such uniformity throughout the entire length of each that a normal striping machine will be able to repeat the pattern and superimpose additional striping upon the existing marking. Glass beads shall be applied at the rate specified herein and shall be evenly distributed over the entire surface of the marking. Beads shall be applied to the surface of liquid markings by a bead dispenser attached to the applicator that shall dispense beads simultaneously on and in the just-applied marking. The bead dispenser shall be equipped with a cut-off control synchronized with the cut off of the applied marking material so that the beads are applied totally to the completed line. Beads shall be applied while the liquid marking is still fluid. Approximately 70 percent of beads shall be buried in the marking, and the remaining 30 percent shall be 50-60 percent embedded in the surface. Beads installed on crosswalks and stop lines on roadways with curbs only (no gutter) may be hand applied for 600 millimeters at the end of each line next to the curb with 100 percent of the beads embedded 50-60 percent in the surface.

Markings found to be unacceptable shall be removed, and new markings applied at the Contractor's expense.

1. **Type A markings:** Paint may be applied to asphalt concrete and hydraulic cement concrete pavements. Paint shall not be applied over existing pavement markings of other materials unless the existing marking is 90% removed. Paint may be applied over existing paint markings.

Paint shall be applied with a line painting machine that is capable of hot spraying paint directly onto the pavement surface with a uniformity of feed through its nozzles for widths of 100 through 200 millimeters. The machine shall be capable of applying two pavement stripes, either solid or skip, at the same time when double line markings are required. Paint tanks on the equipment shall be equipped with a mechanical agitator and paint shall be thoroughly mixed and heated such that it will not track within 60 seconds after its application.

Non-truck mounted equipment shall be self-propelled and regulated to allow for calibration of the amount of material applied.

Glass beads shall be applied to the surface of the paint at the rate of 0.72 kilograms per liter of paint.

2. **Type B markings:**

Equipment shall be capable of providing mixing, heating and agitation of material. Material shall be uniformly heated throughout the system in accordance with the manufacturer's recommendations. Thermoplastic material shall be maintained in the heating kettle and applied to the road surface at a minimum temperature of 204°C. Heating kettles shall be equipped with an automatic thermostatic control device. The Contractor shall furnish a properly calibrated infrared instrument for the purpose of measuring the actual temperature of molten thermoplastic material. Multi-component material shall be applied using internally injected guns for the mixing of catalyst and hardener.

Non-truck mounted equipment for application of thermoplastic material shall be of the screed extrude type with a screw drive or shall be self propelled and regulated to allow for calibration of the amount of material applied. Non-truck mounted equipment for application of polyester and epoxy resin material shall be self propelled and regulated to allow for calibration of the amount of material applied.

- a. **Thermoplastic (Class I)** material shall only be applied on asphalt concrete pavements and shall be applied by screed extrude, ribbon gun or spray equipment. Alkyd thermoplastic may be applied directly after the paving operations, however hydrocarbon thermoplastic shall not be applied less than 30 days after the paving operations.

Alkyd and hydrocarbon materials shall not be mixed together. Equipment shall be thoroughly cleaned before types of material are changed.

Thermoplastic shall not be applied over existing pavement markings of other materials unless the existing marking is 90% removed. Thermoplastic may be applied over existing thermoplastic markings. For concrete bridge decks that occur in asphalt roadways, Type B, Class VI tape shall be used.

Primer/adhesive shall be applied to asphalt concrete surfaces more than two years old and shall be from the same manufacturer as the thermoplastic.

Glass beads shall be applied to the surface of the marking at the rate of 3.18 kilograms per 9.29 square meters.

- b. **Polyester resin (Class II)** material shall only be applied on hydraulic cement concrete pavements. Polyester resin shall not be applied over existing pavement markings of other materials unless the existing marking is 90% removed. Polyester resin may be applied over existing polyester resin markings.

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

Glass beads shall be applied to the surface at the rate of 0.96 kilograms per liter of material.

- c. **Epoxy resin (Class III)** material shall only be applied to asphalt concrete pavement more than one day old and hydraulic cement concrete pavement. Epoxy resin shall not be applied over existing pavement markings unless the existing marking is 90% removed.

Glass beads shall be applied by the gravity method to the surface at the rate of 3 kilograms per liter of material.

- d. **Plastic-backed preformed tape** shall be installed in accordance with the manufacturer's recommendations and as denoted herein. Tape may be applied to asphalt concrete and hydraulic cement concrete pavements. Tape may be installed immediately following the final rolling of the new asphalt concrete surface. Tape shall not be applied over existing pavement markings of other materials unless the existing marking is 90 percent removed.

Primer/adhesive shall be used for all installations except when tape is applied immediately following the final rolling of the new asphalt concrete surface and shall be from the same manufacturer as the tape.

Tape for pavement line markings shall be applied by an application cart as recommended by the manufacturer. Tape shall be tamped into place with a tamper cart with the weight as recommended by the manufacturer. The use of a vehicle to ride over the markings for tamping will not be permitted.

(b) **Eradication:**

Eradication of pavement markings for restriping when required shall be in accordance with Section 512 except only 90% removal of the existing markings is required.

(c) **Pavement Markers:**

1. **Snow-plowable raised pavement markers** shall be installed by cutting two parallel grooves into the pavement at the depth and dimensions recommended by the manufacturer. Grooves shall be parallel to the adjacent pavement marking. Grooves shall be cut with saw blades having a diameter to match the curvature of the steel casting bottom and keels. Keel surfaces shall be free from scale, dirt, oil, grease, or any other contaminant that might reduce bonding.

Casting keels shall be bonded in the saw-cut grooves in the manner recommended by the manufacturer of the marker. The bonding material shall be from the Department's approved list or as recommended by the manufacturer of the marker. Noses of the casting shall be installed flush with the pavement surface. The installed height of the raised pavement marker shall be approximately 12 millimeters above the pavement surface. Ambient temperature at the time of installation of the snow-plowable raised pavement markers shall be at least 10°C or higher.

The top of reflectors shall be mounted flush with the top of the casting.

2. **Raised pavement markers** shall be bonded to the pavement surface in accordance with the manufacturer's recommendations. Bonding material shall be from the Department's approved list or as recommended by the manufacturer of the marker except epoxy shall not be used on asphalt concrete pavements.

704.04—Measurement and Payment.

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

Pavement line markings will be measured and paid for at the contract unit price per meter. This price shall include the pavement marking material, surface preparation, quality control tests, daily log, guarding devices, primer/adhesive, and glass beads.

Pavement message markings will be measured and paid for at the contract unit price per each per location. This price shall include the pavement marking material, surface preparation, quality control tests, daily log, guarding devices, primer/adhesive, and glass beads.

Pavement markers will be measured and paid for at the contract unit price per each. This price shall include prismatic retroreflectors, pavement cutting, adhesive, and castings.

Eradication of pavement markings will be measured and paid for in accordance with Section 512.

Payment will be made under:

Pay Item	Pay Unit
Pavement line marking (Type and/or class and width)	Meter
Pavement message marking (Message)	Each
Pavement marker (Type, []-way, and/or type pavement)	Each

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



**GUIDELINES - REMOVAL OF PCB's IN ELECTRICAL EQUIPMENT (REMOVAL OF SIGN LIGHTING, LIGHTING, SIGNALS, ETC.)
EXCEPTIONS: NONE**

SM705A0B-0197

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
ELECTRICAL EQUIPMENT CONTAINING POLYCHLORINATED BIPHENYL

November 22, 1993
Reissued January 1, 1997

I. DESCRIPTION

This work shall consist of determining, removing and disposing of electrical equipment containing PCB as a dielectric fluid or paste. Electrical equipment consists of, but is not limited to, capacitors, ballasts and transformers. Electrical equipment found in offset luminaires are excluded from the requirements of this special provision and need not be inspected for PCB contamination.

II. PROCEDURE

A. **Determination:** The Contractor shall determine if the electrical equipment which is to be removed contains PCB. This determination shall be made prior to removal of the equipment in accordance with the following:

- 1. Check the nameplate on the equipment to determine if any of the following trade names for PCB are indicated.

ALC	DK	Nepolin
Apirolio	Dykanol	Non-Flammable Liquid
Aroclor	EEC-18	No-Flamol
Aroclor B	Elemex	Phenoclor
Asbestol	Eucarel	Pydraul
ASK	Fenclor	Pyralene
Askarel	Hyvol	Pyranol
Capacitor 21	Iclor	Pyroclor
Chlorextol	Interteen	Saf-T-Kuhl
Chlorinol	Kanechlor	Santotherm
Clorphen	Kennechlor	Santotherm FR
Clorinol	Magvar	Santovac 1 and 2
Diachlor	MCS 1489	Therminol

- 2. If the above trade names are not indicated on the nameplate of the equipment and the equipment is not labeled as not containing PCB, the Contractor shall contact the equipment manufacturer for a determination of the existence of PCB in that equipment. The Contractor shall provide the information requested by the manufacturer which will at least include the type, model and serial number of the equipment. If the manufacturer indicates PCB does not exist in the equipment, the Contractor shall request that documentation in writing on the manufacturing company's letterhead stationery. The documentation shall include all information needed to verify the piece of equipment referenced.
- 3. If the procedures herein do not allow determination of the existence of PCB or if the manufacturer will not provide the necessary documentation in writing, the Contractor shall assume that PCB is contained within that equipment.

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



4. The Contractor shall notify the Engineer in writing of the determination of the existence of PCB in each piece of electrical equipment which could contain such. This documentation shall also include the name, representative's name and telephone number for each company contacted to determine the existence of PCB. If the Contractor was able to obtain written confirmation from the manufacturer that PCB was not in a particular piece of equipment, the Contractor shall furnish the manufacturer's original letter to the Engineer.

- B. **Removal and Disposal:** The Contractor shall follow the Environmental Protection Agency's GUIDELINES and the Virginia Department of Environmental Quality's GUIDELINES for the removal, transportation, disposal and spills of PCB laden materials. The Contractor shall provide the shipping manifest and all other correspondence concerning the removal and disposal of PCB laden materials to the Engineer.

III. Measurement and Payment

Determination of electrical equipment containing PCB will not be measured for separate payment and the cost thereof shall be included in the price bid for the removal of the electrical equipment.

Removal and disposal of electrical equipment containing PCB will be paid for in accordance with the requirements of Section 109.05 of the Specifications for extra work.

[◀ BACK TO METRIC TABLE OF CONTENTS](#)

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



