

**Supplemental Specifications to the August 2001 Standard Specifications**  
**(Revised January 15, 2010)**

**\*\*\* Note: Modifications to the Supplemental Specifications under this Revision have been highlighted in gray for easy identification.\*\*\***

**Subsection 101.39 Holidays. (9/4/2009)**

Delete item C and H.

**Subsection 101.78 Subcontractor. (3/18/2004)**

Modify the second paragraph as follows:

Exceptions to this definition are suppliers limited to delivering and depositing, but not incorporating material, suppliers of services that transport material, and the work performed which does not advance the completion of the Contract and is not considered as an item of work.

**Subsection 101.79 Substantial Completion. (3/18/2004)**

Modify the sentence as follows:

The point at which all Contract items are complete as deemed by the Department excluding any warranties or vegetation growth.

**Subsection 102.07 Irregular Proposals. (5/15/2006)**

Modify Paragraph B. as follows:

- B. There are unauthorized additions, interlineations, conditional bids, or irregularities of any kind that may tend to make the proposal incomplete, indefinite, or ambiguous.

Delete paragraph G.

Modify Paragraph I. as follows:

- I. The Contractor fails to provide a proposal guaranty.

**Subsection 104.04 Accident Notification. (5/15/2006)**

Modify the paragraph as follows:

Notify the Transportation Management Center (T.M.C.) at 659-2400 and Engineer concerning any accidents.

**Subsection 104.14 Contractor's Responsibility for Work. (9/4/2009)**

Add the following paragraph:

The Contractor must submit shop drawings and signed and sealed calculations from a Delaware Licensed Professional Engineer, and be reviewed from the Bridge Design Engineer to changes in loads on the existing or proposed structure resulting from changes in the size and location of loads such as material stockpiles, vehicular traffic (such as shifting travel lanes to shoulders), or construction equipment (including crane loading). All primary members, including connections, shall be analyzed for proposed anticipated construction loads. All stresses for existing and proposed members shall be within allowable ranges for strength service, and fatigue as directed by the AASHTO Specifications.

**Subsection 105.04 Plans and Working Drawings. (5/15/2006)**

Modify the 4<sup>th</sup> paragraph as follows:

Working drawings for concrete structures shall provide such details as are required for successful prosecution of the work. These shall include plans for items such as falsework, bracing, sheeting, shoring, cofferdams, formwork, masonry layout diagrams and bending diagrams for reinforcing steel.

**Subsection 105.06 Coordination of the Plans, Standard Specifications, Supplemental Specifications, and Special Provisions. (1/3/2008)**

Modify and renumber the following:

1. General Notices (Including Pre-bid meeting minutes & Pre-bid Questions and Answers)
2. Pay Units in Bid Proposal Forms
3. Plans
4. Cross Sections
5. Special Provisions
6. Supplemental Specifications
7. Standard Construction Details
8. Standard Specifications

**Subsection 105.09 Utilities. (1/3/2008)**

Add the following paragraph:

Overhead High-Voltage Line Safety requires notification to and mutually agreeable measures from the utility from any person intending to carry on any function, activity, work or operation within 10' of any high voltage overhead line.

**Subsection 105.13 Maintenance During Construction. (3/18/2004)**

Add the following:

The contractor shall mow all grass and weeds within the limits of the Contract, as directed by the Engineer, up to 4 times a year to a height in compliance with subsection 107.01.

**Subsection 105.20 Project Acceptance. (3/18/2004)**

Modify the first paragraph as follows:

Final acceptance will not occur until completion of the Project in accordance with Subsection 101.16. The Contract time will be stopped at substantial completion.

**Subsection 106.09 Disposal of Unacceptable Materials. (5/15/2006)**

Modify the paragraph as follows:

All waste materials removed by earthwork operations shall become the property of the Contractor and shall be removed from the Project or otherwise disposed of as specified. Unless specific disposal sites are designated on the Plans, the Contractor shall procure disposal sites. Such disposal sites shall be submitted to and approved by the Engineer. If the contract is federally funded or Federally permitted, the Engineer will submit the proposed site to the State Historic Preservation Office for their approval prior to utilization by the Contractor. No areas that are designated as wetlands will be permitted for use as disposal sites. The submittal shall include a plan of the disposal area, proposed sediment and erosion control devices, existing and proposed final contours, and proposed security measures. All permit requirements such as those required by the Department of Natural Resources and Environmental Control (DNREC) and the U.S. Army Corps of Engineers shall be met by the Contractor when preparing and utilizing off-site disposal areas. The Contractor shall submit a similar proposal for use of designated disposal sites if such detail is not included in the Contract documents. Costs for preparing these plans are incidental to Section 201. For disposal sites designated on the Plans, payment will be made separately under applicable bid items for all necessary erosion and sediment controls, seeding, and mulching. For Contractor-procured disposal sites, such costs are incidental to Section 201. The Department will not consider any delays or monetary claims of any nature resulting from the Contractor's failure or difficulty in finding the necessary disposal sites.

**Subsection 107.04 Contractor's Responsibility for Utility Property and Services. (5/15/2006)**

Modify the 3<sup>rd</sup> paragraph as follows:

Fire hydrants on or adjacent to the highway shall be kept accessible to fire apparatus at all times and no material or obstruction shall be placed within 15' (4.5 m) of any such hydrant. Work shall be left entirely accessible at all points to fire apparatus at all times. Whenever any work is done in the area of a fire hydrant or whenever a fire hydrant is relocated or installed, the center of the hose outlet shall be a minimum of 18 in. (457 mm) above the final grade directly beneath the hose outlet.

**Subsection 107.07 Public Convenience and Safety. (1/3/2008)**

Add the following paragraph:

The Contractor shall maintain a safe work site at all times and be prepared to make repairs as needed after normal working hours in the case of an emergency. If the Department is unable to contact the Contractor to make these repairs then State Maintenance forces or a third party contractor may be used to make such repairs. The cost for this work shall be calculated according to Subsection 109.04(D) for all state personnel involved or third party contractor, including vehicles, equipment and materials needed. This cost will be deducted from money due the Contractor under the Contract.

**Subsection 107.09 Protection and Restoration of Property. (5/15/2006)**

Modify the 4<sup>th</sup> sentence in the first paragraph as follows:

The Contractor shall not injure or destroy trees or shrubs outside the limits of construction, nor remove or cut them without proper authority.

**Subsection 108.01 Subletting of Contract. (3/18/2004)**

Modify the second paragraph as follows:

If the Contractor to whom a contract is awarded proposes to subcontract any part of the work, the scope and value of the work to be done by the subcontractor shall be outlined. The cost of materials to be used by the subcontractor shall be outlined. The cost of materials to be used by the subcontractor shall be included in the value of the subcontracted work. A subcontractor shall not subcontract further a portion of the work intended to be done by the original subcontractor without the express written permission of the Engineer. In granting such permission, the Engineer shall ensure that the subcontractor seeking to subcontract the work to be performed by another shall nonetheless perform with its own organization work amounting to not less than 50% of the total subcontracted bid price.

**Subsection 108.09 Schedule of Liquidated Damages. (9/4/2009)**

Update table with these new numbers.

**Schedule of Liquidated Damages**

Awarded Contract Value		Daily Charge	
For More Than –	To and Including –	Work Day	Calendar Day
\$ 0	\$ 25,000	\$ 430.00	\$ 310.00
25,000	50,000	450.00	320.00
50,000	100,000	600.00	430.00
100,000	500,000	940.00	670.00
500,000	1,000,000	1,220.00	870.00
1,000,000	2,000,000	1,500.00	1,070.00
2,000,000	5,000,000	1,570.00	1,120.00
5,000,000	10,000,000	1,750.00	1,250.00
10,000,000	15,000,000	2,790.00	1,990.00
15,000,000	20,000,000	4,650.00	3,320.00
20,000,000	25,000,000	6,500.00	4,640.00
25,000,000	30,000,000	8,340.00	5,960.00
30,000,000	35,000,000	10,210.00	7,290.00
35,000,000	Over	12,050.00	8,610.00

**Subsection 109.01 – Measurement of Quantities. (1/3/2008)**

Add the following sentence to Paragraph A:

A. Weight tickets shall be computer generated.

**Subsection 109.04 Payment for Differing Site Conditions, Major Changes, Extra Work, and Force Account. D.8. Subcontracting. (5/15/2006)**

Modify the paragraph as follows:

Should an agreed price involve work to be performed by a Subcontractor, then the Prime Contractor's total allowable mark-up on the Subcontracted portion of work shall not exceed 10% of the Subcontractor's proposed price. The Prime Contractor shall, upon request by the Department, submit documentation substantiating the Subcontractor's proposed price.

## **Section 110 - Erosion, Sediment Control and Water Pollution (1/3/2008)**

Delete Section 110 in its entirety modify as follows:

- 110.01** Definitions
- 110.02** Legal Authority
- 110.03** Sediment and Stormwater Permit Approval
- 110.04** Description of Work
- 110.05** Completion of the Work
- 110.06** Plan Changes
- 110.07** Limits of Construction
- 110.08** Division of Responsibilities
- 110.09** Vegetative Stabilization
- 110.10** Temporarily Stockpiled Material
- 110.11** Channel and Ditch Scour Protection
- 110.12** Sediment-Laden Runoff
- 110.13** Dewatering Operations
- 110.14** Clean Water Diversions
- 110.15** Stream Diversions
- 110.16** Temporary Stream Crossings
- 110.17** Wash Water
- 110.18** Waste Water
- 110.19** Water Pollution Violations Enforced
- 110.20** Maintenance
- 110.21** Erosion and Sediment Control Reports
- 110.22** Failure to Implement and Maintain Erosion and Sediment Control Measures
- 110.23** Contractor Payment
- 110.24** Fines Resulting from Non-Compliance

### **110.01 Definitions.**

*Clearing.* The clearing of trees, brush, shrubs, downed timber, rotten wood, rubbish, and any other vegetation, except where excluded by the definition for grubbing, as well as the removal of fences and structures. See Subsection 201.01.

*Disturbed Area.* An area where any activity has been initiated which may result in soil erosion from water or wind or movement of sediments or pollutants into state waters or onto lands in the state, or which may result in accelerated stormwater runoff, including, but not limited to, clearing, grubbing, grading, excavating, transporting, filling, and backfilling of land.

*Grubbing.* Shall mean the removal of trees, stumps, roots, brush, root mat, and debris from the ground.

*Limited Suspension of Activity.* Suspension of specific land disturbing work activities when the Contractor fails to implement and maintain the erosion and sediment controls after verbal or written direction to do so by the Engineer. This suspension would be specific to the land disturbing activities that are not compliant. During a Limited Suspension of Activity, progress payments for these specific activities will be withheld until the Contractor has corrected the problems. Time charges will continue and no claim for delay will be considered during a Limited Suspension of Activity.

*Phasing.* Staged construction sequencing as shown in the Plans.

*Significant Rain Event.* A rain event that generates erosion.

*Site Reviewer.* A person on the Contractor's staff assigned to erosion and sediment control review, implementation and maintenance. The level of training (Contractor's Certification or Certified Construction Reviewer) required for the Site Reviewer will be noted in the project plans.

- A. *Contractor's Certification (Blue Card).* Introductory training for erosion and sediment control provided by the Department of Natural Resources (DNREC). For projects designated as having Minor erosion potential, the Contractor must submit as part of his bid, the name and certification number for someone other than the Superintendent who has a Blue Card certification.
- B. *Certified Construction Reviewer (CCR, Gold Card).* Advanced training for erosion and sediment control provided by the Department of Natural Resources (DNREC). For projects designated as having Medium or Major erosion potential, the Contractor must submit as part of his bid the name(s) and certification number(s) for the individuals on his staff who have a CCR (Gold Card) certification as noted on the plans.

**110.02 Legal Authority.** The Department is a delegated agency of DNREC as defined in Chapter 40, Title 7 of the Delaware Code and the Delaware Sediment and Stormwater Regulations. Any project built by Contract with the Department shall maintain compliance with the aforementioned law and regulations at all times throughout the life of that project. As a delegated agency, the Department shall enforce compliance with the law and regulations through the Contract documents or may refer a violation to DNREC for enforcement action.

**110.03 Sediment and Stormwater Permit Approval.** A signature, date, and seal in the Stormwater Engineer's block on the title sheet of the Plans indicates that the Plans were designed in conformance with the applicable State and Federal stormwater regulations and that the Sediment and Stormwater Permit is approved. All work shall be completed pursuant to the Plans and as directed by the site reviewer and the Stormwater Engineer.

Neither review and approval of the erosion, sediment control, and water pollution control plans nor errors and omissions in the plans shall relieve the Contractor from its responsibilities for compliance with the Delaware Sediment and Stormwater Regulations or other applicable laws or regulations and the more stringent water pollution control requirements shall apply.

**110.04 Description of Work.** Erosion and sediment control measures shall be applied to erodible earth material exposed by any of the Contractor's land disturbing activities on the Project. The work shall consist of the application of temporary and permanent erosion and sediment control items as provided in the Contract or ordered by the Site Reviewer or the Engineer. The temporary erosion control items shall be coordinated with the permanent erosion control items specified. The items shall include, but are not limited to, the use of berms, dikes, dams, sediment basins, traps, geotextiles, stone check dams, silt fences, phased construction, special land grading methods, mats and nets, aggregates, mulches, grasses, slope drains, chemical binders, tackifiers, and other erosion and sediment control items or approved methods as designated in the Contract documents or as directed by the Site Reviewer or the Engineer.

**110.05 Completion of the Work.** The Contractor shall implement the temporary and permanent erosion control items for each phase of construction as detailed in the Contract documents. Additional erosion and sediment control items may be required

during the Project as deemed necessary by the Site Reviewer and the Engineer in order to provide continuous erosion and sediment control protection.

Before starting each phase of any land-disturbing activity, the Site Reviewer shall make certain that all erosion and sediment control items required in that phase are properly installed and functional.

**A. Construction Phasing.** For Project sites in excess of 20 ac (8 ha), the construction must be phased in 20 ac (8 ha) increments. Once grading is initiated in one 20 ac (8 ha) increment, a second 20 ac (8 ha) increment may be cleared and grubbed provided the Contractor installs and maintains effective erosion and sediment control measures on both sections in such quantities and locations as deemed acceptable by the Site Reviewer and the Engineer.

When balancing earthwork, such as when borrow from a cut is used as fill at a noncontiguous location distant from the cut, more than a total of 20 ac (8 ha) may be allowed to be grubbed and graded within the overall limits of the Project at any one time with prior written approval from the Engineer. In such cases, one 20 ac (8 ha) increment in cut and one 20 ac (8 ha) increment in fill may be grubbed and graded at each separate location concurrently. Examples of when this would likely occur would be on interchange construction or on a new alignment.

The Site Reviewer or the Engineer may further limit the area of clearing, grubbing, stripping, and grading operations to the Contractor's capability and actual progress of keeping the finish grading, mulching, seeding, and other temporary or permanent erosion control measures current according to the approved progress schedule and construction sequence.

**B. Construction Sequence.** The Contractor shall sequence the construction to comply with the following constraints unless indicated otherwise on the Plans:

1. Implement temporary erosion and sediment control items prior to any operation, which exposes soil to erosion, such as during the clearing portion, and prior to the grubbing portion of each phase of construction.
2. Schedule and perform the clearing and grubbing operations so that grading operations and permanent stabilization can follow immediately thereafter. Once earthwork has begun, the operation shall be continuous from clearing and grubbing through to completion of grading and final stabilization in accordance with Subsection 110.09 A.2. Any interruption in these operations in excess of 14 calendar days must be approved by the Engineer and shall require interim stabilization in accordance with Subsection 110.09 A.1.
3. Vegetatively stabilize bare soil areas in each phase of construction in accordance with Subsection 110.09 A.1 prior to advancing the work into the next phase of construction.
4. Vegetatively stabilize all cut and fill slopes of the highway excavation and embankment as the work progresses in height increments not to exceed 4' (1.2 m) of embankment. This will minimize exposed soil on the slopes to bands of 9-12 feet as measured along the slope face. Excavate roadside ditches as early in the Project as possible to establish good drainage.
5. Vegetatively stabilize all grass ditches, swales, and medians within seven calendar days after their initial excavation.

6. Remove temporary erosion and sediment controls after final stabilization is complete in accordance with Subsection 110.09 A.2. Return land contours to original grade or as indicated on the Plans, and vegetatively stabilize any remaining bare soil areas.

**110.06 Plan Changes.** The Contractor shall not deviate from the erosion, sediment control, and stormwater management aspects of the Contract shown in the Plans and contract documents, other than as specified in 110.08.A.2.b without prior review and approval by the Engineer, the Stormwater Engineer, the Department's Environmental Section and appropriate regulatory authorities.

For plan changes initiated by the Contractor, revised construction Plans shall be submitted for review and approval by the Engineer, the Stormwater Engineer, the Department's Environmental Section and appropriate regulatory authorities. The revised Plans shall be prepared in accordance with current Department standards for roadway design, traffic control, erosion and sediment control, and stormwater management. Revised Plans shall also conform to all applicable Federal, State, or municipal pollution control laws, rules, or regulations. All supporting design calculations and cost analyses required by the Engineer shall accompany the submission. The number of copies required to be submitted for review shall be determined by the Engineer depending on the nature of the proposed revision.

Contractor proposed revisions to the Plans, as well as review time by the Department, will not justify a delay in the progress schedule. All costs involved in preparing plan revision documents for changes proposed by the Contractor shall be the responsibility of the Contractor.

**110.07 Limits of Construction.** The Contractor shall not perform any work including, but not limited to, clearing, grubbing, construction phasing, equipment storage, and material stockpiling outside the limits of construction shown on the Plans without prior approval of the Engineer.

If the Contractor should require additional lands that are not within Department rights-of-way or easements, it shall be the Contractor's responsibility to make all arrangements with the property owners and to acquire all permits from the appropriate regulatory authorities for the use of these lands.

The Contractor shall acquire a statement signed by the property owners, which releases the Department from all claims arising from the use of the property being considered. The signed statement from the property owner and copies of all permits acquired by the Contractor shall be transmitted by the Contractor to the Engineer for the Engineer's records prior to initiating any operation on the property being considered for use.

#### **110.08 Division of Responsibilities.**

A. *Site Reviewer.* The Site Reviewer is responsible for the following:

1. On Projects with Erosion Potential identified as Minor, Medium, or Major:
  - a. The Site Reviewer shall review and become familiar with all elements of the approved sediment and stormwater management plan. Any questions or issues raised during this review should be discussed with the Contractor, Designer and the Department at the pre-construction meeting. The Site

Reviewer should bring up any questions about the plans at this meeting.

- b. The Site Reviewer shall inspect all perimeter controls in accordance with the approved plan and the Department's Standard Construction Details for Erosion and Sediment Control prior to the Contractor beginning any earth disturbing activities and shall submit an Erosion and Sediment Control Report (E & S Report) to the Department stating that all perimeter controls are in place and functioning.
  - c. The Site Reviewer shall perform sediment and stormwater reviews of the site jointly with a member of DeIDOT's construction inspection staff. These inspections shall be completed at least weekly and immediately after any significant rain event. The Site Reviewer shall prepare an E & S Report, which details any corrective actions that need to be implemented and a completion date for each. If no deficiencies exist, the report shall document that all erosion and sediment control measures are in place and functioning. The Site Reviewer and the Inspector shall sign and date the E & S Report at the conclusion of the field inspection. By close of business that day, the report shall be forwarded, via email or FAX, to the Contractor's Superintendent for Implementation with copies sent to the Department's Construction Engineer, the Project Resident, the Stormwater Engineer, and the Contractor's engineer.
  - d. With concurrence of the Engineer, once all land disturbing activities are completed and all permanent erosion and sediment controls and stormwater management elements are in place and vegetatively stabilized, the Site Reviewer shall contact the Stormwater Engineer and schedule an as-built inspection of these features.
2. On Projects with Erosion Potential identified as Medium and Major the Site Reviewer shall be responsible for all of the requirements under 110.08A.1. plus the following (Site Reviewer must be a CCR):
- a. The Site Reviewer shall accurately fill out a Stormwater Management Facility Construction Checklist(s) for permanent stormwater management ponds. The Site Reviewer shall be present during the construction of these facilities to observe all checklist items for compliance with approved plans and applicable pond construction codes.
  - b. The Site Reviewer with concurrence of the DeIDOT Project Resident may approve minor changes or deviations to the approved erosion and sediment control/ stormwater management plan. Changes, so approved, shall be documented in the Site Reviewer's weekly report.

B. *Contractor's Professional Engineer.* The Contractor's Professional Engineer is responsible for the following:

1. The Contractor's PE shall supervise the Site Reviewer and assure that he or she is performing all of his or her duties and completing all reporting requirements within the timeframes identified in this specification.

2. The Contractor's Professional Engineer shall review, sign and date all E & S Reports that proposed corrective actions that will require plan revisions.
3. The Contractor's Professional Engineer shall sign and seal any Plan Revisions the Contractor proposes to the stormwater management plan, the construction phasing, or the erosion and sediment control plans.
4. The Contractor's Professional Engineer shall review, sign and seal the Stormwater Management Facility Construction Checklist after the Site Reviewer has filled it out

C. *Engineer*. The Engineer is responsible for the following:

1. The Engineer is responsible for ensuring that all work is completed in accordance with the approved erosion and sediment control/ stormwater management plan. The Engineer shall designate an E&S inspector on each project who shall accompany the Site Reviewer on site inspections.
2. The Engineer is responsible for assuring the contractor is providing a Site Reviewer if required by the General Notes of the construction plans. The Engineer is also responsible for referring to the Stormwater Engineer any Site Reviewer who fails to perform the duties assigned by this Contract.

D. *Stormwater Engineer*. The Department's Stormwater Engineer is responsible for the following:

1. The Stormwater Engineer or his designee shall be represented at the pre-construction meeting and at any erosion and sediment control specific meetings. Any concerns about plan implementation or general procedures shall be discussed and resolved at these meetings.
2. In accordance with subsection 110.22, when the Site Reviewer refers a site or if the condition of the site is consistently not improved by the dates noted in the weekly reports the Stormwater Engineer shall recommend that the Engineer pursue enforcement actions to gain compliance. A Site Reviewer may refer a site for failure to implement the approved erosion and sediment control/ stormwater management plan, or for failure to comply with the recommendations in the E & S Reports.
3. The Stormwater Engineer or his designee shall perform annual performance evaluations of the Site Reviewers using the Department's evaluation form. If it is determined that a Site Reviewer is not providing adequate site control or is not referring problem situations, the representative shall require the Contractor to replace the Site Reviewer for the Project and request that DNREC suspend or revoke his/her certification.
4. The Stormwater Engineer or his designee shall perform an as-built inspection of the permanent erosion and sediment controls and Stormwater management features to determine compliance with the approved Sediment and Stormwater Management Plan. If the Stormwater Engineer or his designee identifies deficiencies during the inspection, a letter will be issued to the Project Resident who will notify the Contractor. These deficiencies must be satisfactorily corrected prior to project closeout.

5. The Stormwater Engineer shall complete the Notice of Intent (NOI) at the start of the project and the Notice of Termination (NOT) at the end of the project to meet the requirements of the NPDES Permit.

**110.09 Vegetative Stabilization.**

- A. *Interim and Final Stabilization.* An area of the work shall be considered vegetatively stabilized for erosion control if it meets the criteria in one of the following two cases:
  1. *Interim Stabilization.* The seeding and mulching items, sod, or erosion and sediment control items as noted on the Plans are in place and accepted by the Engineer.
  2. *Final Stabilization.* Meets the requirement for the removal of the temporary erosion controls placed during interim stabilization, and has complete vegetation growth in accordance with section 734 as determined by the Engineer. Complete growth of vegetation includes permanent grass reaching a height of 3" (75 mm) over all seeded areas.
- B. *Incremental Stabilization.* Side slopes, and other slopes 1:3 (vertical to horizontal) or steeper require placement of either temporary or permanent seeding and mulching as the work progresses in height increments not to exceed 4' (1.2 m) of embankment. This will minimize exposed soil on the slopes to bands of 9-12 feet as measured along the slope face.
- C. *Tracking of Slopes.* During grading operations the Contractor shall track all slopes 1:3 (vertical to horizontal) or steeper to prevent gully and sheet erosion. The tracking shall be accomplished by driving cleated equipment such as a bulldozer up and down the slopes so the cleats make horizontally oriented indentations in the soil. All costs associated with tracking of slopes at regular increments shall be incidental to Section 202.  
 Prior to applying seeding items on slopes 1:3 (vertical to horizontal) or steeper, the Contractor shall track the slopes as described above in order to prepare a stable seedbed. All costs associated with tracking of slopes to prepare a seedbed shall be incidental to the topsoil item being applied to the slope surface.
- D. *Maximum Soil Exposure Times.* All erodible earth material exposed by the Contractor's activities shall be vegetatively stabilized within the time frames specified below:

<u>Location</u>	<u>Maximum Time to Vegetatively Stabilize</u>
Sediment controls	Seven calendar days from initial construction (berms, ditches, traps, basins, etc.)
Areas meeting final grades	Seven calendar days from completion of grading
Areas not meeting final grades	Fourteen calendar days from ceasing work in that location

**110.10 Temporarily Stockpiled Material.** Erodible earth material designated on the Plans or required by the Engineer to be excavated and temporarily stockpiled for later use in the Project shall be located away from live streams and wetlands and placed only in areas deemed appropriate by the Engineer.

The Contractor shall install the erosion and sediment control items designated on the Plans or as directed by the Site Reviewer and the Engineer about the base of the pile in advance of the actual stockpiling operation. Erodible earth material shall be placed in piles of neat conformations. Side slopes shall be seeded and mulched as the pile is placed. All remaining unstabilized surfaces shall be seeded and mulched immediately following completion of the stockpiling operation.

If the Contractor proposes to stockpile erodible earth material in areas not designated on the Plans, it shall be the Contractor's responsibility to prepare and submit erosion and sediment control plans for those proposed areas, which are located within Department rights-of-way and easements for approval by the Site Reviewer and the Engineer. Materials shall not be stockpiled until an erosion and sediment control plan for the proposed stockpile has been approved by the Site Reviewer and the Engineer. The Contractor is also responsible for getting any permits that are necessary.

If the Contractor proposes to stockpile erodible earth material in areas outside of Department rights-of-way and easements, it shall be the Contractor's responsibility to prepare and submit for approval a plan for the use of the proposed site to the appropriate agencies having jurisdiction. No stockpiling operation shall commence in areas outside the Department rights-of-way and easements until the Engineer has received copies of all plans and permits approved by the appropriate regulatory agencies and received copies of statements signed by the property owners, as required under Subsection 110.07, which release the Department from any claims arising from the use of the property. The Contractor shall be responsible for all costs associated with the installation of erosion and sediment controls required by other agencies having jurisdiction on stockpiles located outside the Department's rights-of-way.

**110.11 Channel and Ditch Scour Protection.** Riprap or other proposed channel lining items designated on the Plans at pipe, culvert, and bridge inlets and outlets and along channel lengths shall be placed before the pipes, culverts, bridges, and channels become operational.

**110.12 Sediment-Laden Runoff.** Stormwater runoff from disturbed areas shall be directed to an approved sediment control measure, such as a trap or basin, prior to release to ditches, storm drain systems, streams, or surface water bodies of any type. All storm drain pipes, which convey sediment-laden runoff, shall discharge to a sediment trap or sediment basin prior to release from the Project limits of construction as shown on the Plans, or as directed by the Site Reviewer and the Engineer.

~~110.13 Dewatering Operations.~~ **MOVED TO SECTION 111.**

**110.14 Clean Water Diversions.** Stormwater runoff from non-disturbed areas shall be directed away from work areas using any combination of berms, pipes, dikes, swales, pumps and slope drains or as shown on the Plans, or as directed by the Site reviewer and the Engineer.

**110.15 Stream Diversions.** The Contractor shall not conduct work in a stream without having first obtained the appropriate wetland and subaqueous lands permit(s).

When work is to be conducted in the flow line of a stream, whether the stream is perennial or intermittent, the Contractor shall use any combination of dikes, swales, ditches, cofferdams, pipes, pumps, and other devices as shown on the Plans, or as directed by the Engineer to direct the stream flow around the work area.

**110.16 Temporary Stream Crossings.** Equipment shall not be operated in live streams without a stream diversion being installed to the satisfaction of the Engineer. Temporary bridges or other structures shall be installed if the work requires the crossing of a stream by construction equipment.

**110.17 Wash Water.** Water containing sediment from any construction activity on the Project such as truck washing, saw cutting, milling, aggregate washing, and equipment washing and which is not regulated as a waste water under State or Federal statutes shall be discharged to a sediment trapping device and treated by filtration or settling. Sediment-laden wash water shall not be discharged directly to any ditches, storm drain systems, streams, or surface water bodies of any type. Water mixed with Bentonite (a natural material formed from clay particles) used for drilling or augering shall be collected and removed appropriately. An appropriate use may be disposal in approved fill areas of the project.

**110.18 Waste Water.** Water containing pollutants such as raw sewage, bitumens, fuels, lubricants, paint, or other harmful materials, is strictly regulated under State and Federal statutes and as such shall not be discharged into waters of the State as defined in Chapter 60, Title 7 of the Delaware Code or into natural or manmade channels or storm drain systems leading to waters of the State.

The Contractor is responsible for obtaining all permits required from the appropriate issuing authority for the discharge of waste waters from the Project site. The Contractor shall pay costs associated with waste water permit acquisition. The Contractor shall submit copies of all permit approvals to the Engineer for the Engineer's records.

**110.19 Water Pollution Violations.** If a water pollution control violation exists on the Project which in the Engineer's judgment poses a public health or safety risk, such as a fuel or chemical spill or release of raw sewage, the Engineer shall refer the violation to the DNREC for immediate action. The cost of clean up shall be the sole responsibility of the Contractor if the DNREC investigation reveals the Contractor's actions caused the violation.

**110.20 Maintenance.** Erosion and sediment control items shall be maintained continuously throughout the duration of the project, including periods when the project is inactive or suspended. The Contractor shall repair, replace, or maintain any erosion and sediment control item promptly as noted on the E&S Report or as directed by the Site Reviewer or the Engineer. Any eroded surface shall be stabilized, and any accumulated sediment not trapped by a control measure shall be removed and disposed of in an approved stockpile area or hauled off-site. Access shall be maintained to all sediment control devices until construction phasing and stabilization allow the removal of those controls that are no longer required.

Costs associated with repairing, replacing, and maintaining the erosion and sediment control items are incidental to the initial construction of each item. Sediment removal will be paid for separately under Section 250.

**110.21 Erosion and Sediment Control Reports.** DelDOT will provide standard Erosion and Sediment Control Report forms and Stormwater Management Facility Construction Checklists to the Contractor to be used for all E&S Reports. The reports will itemize work required to maintain compliance with the Contract. The Contractor

shall complete the items of work listed on or before the completion dates indicated on the reports.

#### **110.22 Failure to Implement and Maintain Erosion and Sediment Control**

**Measures.** Controlling erosion and sedimentation is the Contractor's responsibility under the Contract. If the Contractor fails at any time to implement and maintain the required erosion and sediment control provisions of the Contract, fails to supply a Site Reviewer, or fails to routinely perform E&S inspections, complete the E & S Reports and correct deficiencies identified in the E & S Reports, the Engineer will notify the Contractor, orally or in writing, to comply with the required erosion and sediment control provisions. If the Contractor fails to perform the work as directed orally or in writing from the Engineer, the Engineer shall take any or all of the following actions listed below to gain compliance.

- A. *Limited Suspension of Activity.* The Engineer will order a "Limited Suspension of Activity" for the specific land disturbing activities that are not in compliance. Activities necessary to bring the site into compliance will be permitted. The Engineer will establish completion dates for the erosion and sediment control work. Time charges will continue during a Limited Suspension of Activity.
- B. *Withhold Progress Payment.* The Engineer may withhold monthly estimate and payment for all contract items.
- C. *Stop Work Order.* The Engineer may suspend the performance of all construction, as noted in Subsection 105.02, until all items of work on the E & S Reports are complete and accepted.

Time charges will continue during this "Shut-Down" period and no claims for additional time or money shall be considered due to "Shut-Downs" resulting from the Contractor's failure to implement and maintain the required erosion and sediment control items.

- D. *Deduct Cost of Work Completed By Others.* The Engineer may proceed with adequate forces and equipment of its own or a third party contractor to implement or maintain the erosion and sediment control items necessary to bring the Project into compliance with the Contract documents.

The entire cost to engage either a third party contractor or the Department's Maintenance personnel, including administration costs, will be deducted from monies due the Contractor.

- E. *Default of Contract.* More than one "Shut-Down" for erosion and sediment control noncompliance may be considered as a failure to perform the terms of the Contract and will be grounds for finding the Contractor in default of the Contract in accordance with Subsection 108.10. If the Contractor defaults on the erosion and sediment control provisions of the Contract, the Project will be referred to the DNREC for enforcement action.

**110.23 Contractor Payment.** Payment will be made at the unit prices bid for the quantities of the various erosion and sediment control items provided in the Contract that are installed by the Contractor and accepted by the Engineer. Approved changes to the Erosion and Sediment Control Plans shall be paid at the applicable unit bid prices. Any additional work or corrections brought about as a result of errors by the Contractor, such as nonconformance with the Contract documents and the construction phasing, staging, or sequencing will be made at the Contractor's expense.

**110.24 Fines Resulting from Non-Compliance.** If the Department receives any fines from DNREC, the Army Corps of Engineers or the EPA as a direct result of the Contractor's refusal to implement and maintain the required erosion and sediment control, fails to supply a Site Reviewer, or fails to routinely perform E&S inspections, complete the E & S Reports and correct deficiencies identified in the E & S Reports, the Contractor will be responsible to pay the fines or the money will be deducted from monies due the contractor

## **SECTION 111 – DEWATERING OPERATIONS (6/23/2008)**

Delete Section 110.13 in its entirety and add Section 111 as follows:

**111.01 Permit Required.** The State of Delaware, through the Department of Natural Resources and Environmental Control, Division of Water Resources, Water Supply Section regulates the pumping of ground water at depths, rates, and durations that have the potential to affect water supplies, and the pumping of surface water at rates and durations that have the potential to affect water supplies and aquatic environments.

A permit is required when the work described in the Plans requires the deliberate drawdown of the water table using well points, sump pits, or other similar dewatering devices to lower the water table below the work area.

A permit is required when the work described in the Plans requires pumping of water from an excavation and pumping at a rate exceeding 50,000 gallons per day.

**111.02 Statewide Permitted Activities.** A Statewide General Permit for Dewatering Activities on DeIDOT projects has been approved via a memorandum of understanding between DNREC and DeIDOT. The effective date of this general permit is June 1, 2008.

No individual dewatering permit shall be required when there is no withdrawal of ground water and pumping rates are less than 50,000 gallons per day.

For individual dewatering permits and Statewide General Permits pumping shall be metered using an instantaneous and totalizing flow meter accurate to within +/- 5%

For Statewide General Permits, DeIDOT shall notify the Water Supply Section at (302) 739-9945 at the commencement of dewatering operations. For individual dewatering permits, the Contractor shall notify the Water Supply Section at (302) 739-9945, 48 hours in advance of starting dewatering operations.

The Contractor shall be aware that other State and Federal permits will be required for any entry into streams or wetlands. This Statewide General Permit for Dewatering Activities does not constitute approval, exemption or waiver from any other law, rule or regulation that may apply to the work shown in the Plans or the activities necessary to complete the work because of the Contractor's chosen means and methods of construction. The Contractor shall at all times employ sound sediment control methods to any water pumped from the project site ensuring all discharges are directed to sediment trapping or filtering devices prior to release to surface water bodies or the storm drain system. The Contractor shall not discharge saline water into a fresh water

system nor discharge fresh water into a saline water system. The Contractor shall not cause dewatering of wetlands or other surface water bodies.

The Contractor shall notify the DNREC Wetlands and Subaqueous Lands Section prior to any dewatering adjacent to wetlands or if discharge water is proposed to be directed to any wetlands.

Examples of work that may be accomplished under the Statewide General Permit include but are not limited to: dewatering shallow localized depressions, such as mud puddles in the work area, pumping out the roadway pavement box, dewatering for the conversion of temporary sediment basins to permanent stormwater management ponds, dewatering for the maintenance clean out of permanent stormwater management ponds, dewatering of ponded rain water from excavations, dewatering of pipe trenches, dewatering of temporary cofferdams facilitating the excavation of shallow bridge and culvert foundations using sump pits and in-stream bypasses for work areas such as in bridge and culvert replacements.

**111.03 Licensing Requirement.** When a permit is required, the Contractor shall be responsible for acquiring any and all licenses needed to install or operate the dewatering equipment or shall employ the services of properly licensed subcontractors, such as a licensed well driller.

**111.04 Permit Acquisition.** Unless covered in the Statewide General Permit for Dewatering Activities, the Contractor shall obtain all necessary permits for dewatering and disposal of pumped water as required to construct and complete the Work. The Contractor shall not commence any dewatering operation without having first obtained the necessary dewatering permit from the Delaware Department of Natural Resources and Environmental Control (DNREC), Water Resources Division, Water Supply Section.

**111.05 Permit Acquisition Time.** Withdrawal of water at a rate exceeding 50,000 gallons per day will require public notice and possibly a public hearing prior to the issuance of a permit by DNREC. The Contractor shall account for this permit acquisition time in the project schedule. No time extensions will be considered by the Department for the Contractor's failure to account for this time in the project schedule.

**111.06 Permit Costs.** The Contractor shall pay all costs associated with a dewatering permit acquisition.

**111.07 Submission of Approved Permits.** The Contractor shall submit copies of all permit approvals to the Engineer for the Engineer's records.

**111.08 Submittals.** When a permit is required, the Contractor shall submit working drawings of the proposed dewatering system for review and acceptance in accordance with Section 105 of the Standard Specifications.

**111.09 Dewatering.** The Contractor shall provide for dewatering of the work area using any combination of pumps, sumps, suction and discharge lines and other dewatering system components necessary to remove surface water and, if necessary, ground water in order to facilitate the work described in the Plans or as ordered by the Engineer. The Contractor shall provide back-up equipment and replacement as necessary in order to ensure the continuous dewatering of the work area. Surface and ground water shall not

be allowed to rise around the proposed work. Dewatering shall be continued until such time as the work has been brought to finished lines and grades, and accepted by the Engineer. None of the proposed work shown on the Plans shall be laid in water, unless otherwise indicated on the Plans or directed by the Engineer.

**111.10 Dewatering Discharge.** The Contractor shall assure that no soil particles are present in the discharge from the dewatering system. All pumped water from open excavations shall be directed to an approved sediment trapping device such as a dewatering bag, dewatering basin, portable sediment tank, sediment trap or sediment basin, prior to release to ditches, storm drain systems, streams or surface water bodies of any type.

**111.11 Dewatering of Temporary Cofferdams for Bridge Construction.** Upon completion of driving of temporary sheet pile in streams, or erection of a temporary dike to create a temporary cofferdam, the sediment-laden water impounded within the cofferdam shall be allowed to rest undisturbed for a 12-hour period in order to induce physical settling of suspended soil particles. Prior to pumping to remove water from temporary cofferdams, the Contractor shall attach the suction line of the pumping equipment to a flotation device, immersing the intake end no more than 6" (150 mm) below the water surface. In this manner, water shall be "skimmed" off the surface. Once the water level has been pumped down, further dewatering shall be accomplished in conjunction with a sump pit constructed in conformance with Department standards.

**111.12 Protection of Work Area.** The Contractor shall install clean water diversions outside excavation limits to prevent the flow of surface water from undisturbed areas into open excavations using any combination of berms, pipes, dikes, pumps, etc. in order to establish a clean water diversion. The Contractor shall comply with applicable sediment control measures.

**111.13 Protection of Adjacent Property.** The Contractor shall dispose of pumped water into a suitable conveyance system without flooding or damage to adjacent property, buildings, structures, utilities, and other work. The Contractor shall protect adjacent structures and property from any damage that may occur as a result of settlement or other effects related to the removal of ground water and lowering of the water table. No dewatering discharge shall be drained into work completed or under construction without prior consent of the Engineer. Water shall be disposed of in such a manner as not to be a menace to the Public Health. No discharge to the sanitary sewer system shall be allowed.

**111.14 Well Impacts.** In the event the Contractor's dewatering operations affect any public or private potable water supplies or wells within the project area, the Contractor shall take whatever steps are necessary to provide uninterrupted water service to those so affected.

**Subsection 201.03 Trees and Roadside Amenities Designated to Remain.**  
**(5/15/2006)**

Modify the subsection title as shown above and modify the paragraph as follows:

The Engineer shall designate such trees, shrubbery, plants and roadside amenities, such as signs, light posts, or other improvements, which are not to be removed, and the Contractor shall protect them from any damage. If any such shrubbery, plants or roadside

amenities are damaged, they shall be replaced or repaired. Any trees that are designated to remain that are damaged shall be evaluated by a certified tree surgeon and the contractor shall follow their recommendations to repair or for replacement of the trees. Branches of trees overhanging the roadbed shall be properly trimmed to maintain a clearance height of 20' (6 m), unless otherwise directed. All pruning shall be performed in accordance with the International Society of Arboriculture's Current Tree Pruning Guidelines, Publication ISBN 1-881956-07-5, and as illustrated on the Standard Construction Details.

**Subsection 201.10 Basis of Payment. (5/15/2006)**

Modify the 1<sup>st</sup> paragraph as follows:

The quantity of clearing and grubbing will be paid for at the Contract lump sum. Price and payment will constitute full compensation for replacement of suitable material below required depth that was cleared and grubbed; for furnishing and compacting approved material to fill all depressions; for protecting trees, shrubbery, plants and other roadside amenities that are designated to remain, for replacement or repair of damaged trees, shrubbery, plants or other roadside amenities that are designated to remain; for disposal; and for all labor, equipment, tools, and incidentals required to complete the work.

**Subsection 202.04 Removal of Existing Pipe. (9/4/2009)**

Modify the third sentence in the paragraph as follows:

All existing pipes, regardless of depth, shall be removed with reasonable care.

**Subsection 207.03 Excavation. (1/3/2008)**

Add the following paragraph:

Shoring shall be provided for any excavation exceeding 5'-0" in height. The cost of shoring shall be incidental to item 207000 - Excavation and Backfill for Structures. In lieu of shoring, the contractor may cut slope back as allowed by soil conditions or other obstructions. No payment shall be made for additional excavation or fill outside of limits.

**Subsection 208.03 Excavation. (1/3/2008)**

Add the following paragraph:

Shoring shall be provided for any excavation exceeding 5'-0" in height. In lieu of shoring, the contractor may cut slope back as allowed by soil conditions or other obstructions. No payment shall be made for additional excavation or fill outside of limits.

**Subsection 209.02 General Requirements. (1/3/2008)**

Modify the 1<sup>st</sup> paragraph as follows:

The uses, classifications, characteristics, and definitions of terms for borrow materials shall be in accordance with the requirements of AASHTO M 57, Modified; M 145, Modified; and M 146 and M 147, Modified.

Unless otherwise directed, all materials having the following properties shall be excluded from use:

- (a) Material with a maximum dry weight less than 90lb/ft<sup>3</sup> (1440 kg/m<sup>3</sup>)
- (b) Material with a liquid limit greater than 40 or a plasticity index greater than 10.
- (c) Material containing any percentage of frozen material, rubbish, boulders in excess of 6" (150mm) in any direction, or an organic matter percentage greater than 2% (including leaves, roots, grass or sewage).

**Subsection 209.09 Method of Measurement. (1/3/2008)**

Modify the 3<sup>rd</sup> paragraph as follows:

Where the Engineer determines it to be impracticable to obtain weight-volume conversion factors for the borrow types specified, 3050 lbs of borrow will be considered equivalent to 1 yd<sup>3</sup>.

**Section 251-SILT FENCE (01/15/2010)**

Section 251 of the Standard Specifications is replaced with the following ( In accordance with Section 101.01 of the 2001 Standard Specifications)

**251000 – SILT FENCE**

**.01 Description:**

Furnish, construct, install, and maintain silt fence to control sedimentation as shown on the details in the Plans, at the locations shown on the Plans, and as directed by the Engineer. Remove silt fence at the appropriate time.

**.02 Materials:**

A. Provide materials as specified in:

Seed	Section 734
Mulch	Section 735
Geotextile	Section 827

B. *General.* Submit all materials to Materials and Research for approval prior to use.

C. *Posts.* Oak timber or steel a minimum of 36" long.

1. *Oak Timber Posts.* Straight with a minimum nominal cross-section of 2" x 2" (50 mm x 50 mm).

2. *Steel Posts.* 2 1/2" (63 mm) diameter Schedule 40 pipe or be standard steel "T" or "U" section of 1.3-lb/ft (.6 kg/300 mm) minimum.

- D. *Reinforcing Strip*. Wooden lath, plastic strip or other approved equivalent.
- E. *Fasteners and Attachment*. Either 5/8" (16 mm) long brass or copper staples, or 17 gage galvanized or aluminized steel tie wires long enough to securely attach the fabric to the posts.
- F. *Prefabricated Silt Fence*. Prefabricated silt fence may used if constructed with the materials specified in this Section and approved by the Engineer.

### **.03 Construction Methods:**

#### **A. *Construction of Silt Fence***

1. Excavate the trench along the upstream side of the post line as shown on the Standard Construction Details.
2. Install posts along the established fence line on the downstream edge of the trench.
3. Securely attach the geotextile material to the upstream side of the posts with staples, nails, ties or other appropriate means.
4. Install a reinforcement strip or other means of reinforcing the attachment of the geotextile material to the post to prevent wind damage.
5. Overlap the geotextile roll ends a minimum of 6" at post locations.
6. Embed the geotextile in the excavated trench.
7. Backfill and compact the trench over the geotextile to prevent water flow under the geotextile.
8. On slopes, turn the terminal ends of silt fence upslope a sufficient distance to eliminate flow around the ends of the silt fence.
9. Do not construct the silt fence across any ditch, swale, or any area of concentrated water flow.

#### **B. *Construction of Reinforced Silt Fence***

1. Construct according to Subsection 251.03.
2. Fasten wire mesh to the posts between the geotextile and the posts at the required spacing.

#### **C. *Maintenance of Silt Fence***

1. Repair or replace to the satisfaction of the Engineer all geotextile damaged at anytime during the life of the Contract.
2. Replace all deteriorated or clogged geotextile.
3. Periodically remove accumulated trash.
  - a. Do not allow trash to accumulate to the height of the fence.

#### **D. *Sediment Removal***

1. Remove trapped sediment, when it has reach 50% of the exposed height of the fabric.
  - a. After every heavy rainfall, check for and remove excessive buildup of sediment.
2. Clean the geotextile of trapped sediment by tapping the geotextile when dry.

#### **E. *Removal of Silt Fence***

1. Remove the silt fence and all materials incidental to the silt fence construction when the Engineer determines that it is no longer required.
2. Restore all areas affected by the construction of the silt fence to the original or plan contours.
3. Stabilize all areas affected by the construction of the silt fence with seed and mulch.

**.04 Method of Measurement:**

The Engineer will measure the quantity of work acceptably completed. Silt fence will be measured by the linear feet of silt fence placed and accepted exclusive of overlap(s). Sediment removal will be measured according to Section 250.

**.05 Basis of Payment:**

The quantity of silt fence and reinforced silt fence will be paid for at the Contract unit price per linear foot for each type of fence.

Price and payment constitutes full compensation for furnishing all materials; for excavating and backfilling associated with the construction of the silt fence; for maintaining the silt fence during the Project construction period; for removing the silt fence with all related hardware at the completion of the Project; for restoring the site; for seeding and mulching; and for all labor, equipment, tools and incidentals required to complete the work.

The quantity of sediment removal will be paid for according to Section 250.

No payment will be made for required maintenance of the silt fence or the reinforced silt fence.

**Section 302 – Graded Aggregate Base Course (1/15/2010)**

Add the following to Section 302 ( In accordance with Section 101.01 of the 2001 Standard Specifications):

**302009 - DEL. NO. 1 STONE**  
**302010 - DEL. NO. 2 STONE**  
**302011 - DEL. NO. 3 STONE**  
**302012 - DEL. NO. 57 STONE**  
**302013 - DEL. NO. 67 STONE**  
**302014 - DEL. NO. 8 STONE**  
**302015 - DEL. NO. 10 STONE**

**.01 Description:**

Furnish, haul, place, and compact stone, in accordance with the details and notes shown on the Plans and/or as directed by the Engineer.

**.02 Materials:**

- A. Provide materials as specified in:  
Stone Section 805 and 813

**.03 Construction Methods:**

- A. Construct using methods conforming to the requirements of notes on the Plans and/or as directed by the Engineer.
- B. Remove and dispose of stone used in a temporary situation as directed by the Engineer.

**.04 Method of Measurement:**

The quantity of stone will be measured as the actual number of tons (metric tons) for stone placed and accepted. The weight will be determined according to Subsection 109.01.

**.05 Basis of Payment:**

The quantity of stone will be paid for at the Contract unit price per ton (metric ton). Price and payment will constitute full compensation for furnishing, hauling, and placing all materials, and for all labor, equipment, tools, and incidentals required to complete the work.

**Subsection 302.02 Materials. (5/15/2006)**

Modify the paragraph as follows:

The material used to construct graded aggregate base course shall conform to the requirements of Section 821. Crushed portland cement concrete may be used as graded aggregate base course, Type B, provided it conforms to the requirements of Section 821.

**Subsection 302.04 Placement. Subpart (c) Performance. (5/15/2006)**

Delete the first sentence in the 2<sup>nd</sup> paragraph as follows:

Compaction of graded aggregate Type B shall continue until each layer is thoroughly and uniformly compacted to 98% or more of the laboratory maximum density obtained on a sample of the same material. If the material is too coarse to use the test methods listed below, compaction shall continue until there is no movement of the material under the compaction equipment.

**Subsection 401.08 Placing Bituminous Mixtures. (1/3/2008)**

Add the following to the 2<sup>nd</sup> paragraph:

Type B Hot-Mix shall be placed in single individual lifts from 2.25" to 3" in depth.  
Type C Hot-Mix shall be placed in single individual lifts from 1.25" to 2" in depth.

**Subsection 401.09 Deep Lift Base Course. (1/3/2008)**

Modify paragraph (a) as follows:

The base course shall be placed with an approved paver or spreader in approximately equal layers of not less than 3" and not to exceed 6" in depth after compaction.

Add the following to paragraph (a):

When the contractor requests to use Type B Hot-Mix in lieu of BCBC, the Contractor shall request approval from the Engineer for this change. If approved by the Engineer, the Type B Hot-Mix may be placed in lifts of not less than 3" and not to exceed 6" in depth after compaction.

The Type B Hot-Mix placed in lieu of BCBC will be paid at the unit price for BCBC and the asphalt cement cost adjustment will be based on the virgin asphalt of BCBC, not the Type B Hot-Mix.

Modify paragraph (b) as follows:

Base course placed in irregular shaped areas of pavement, such as transitions, crossovers, and entrances, may be placed using a grader.

**Subsection 601.07 Hardware. (3/18/2004)**

Modify the first paragraph as follows:

Machine bolts, drift pins, dowels, nuts, washers, lag screws, and nails shall conform to the requirements of ASTM A307 Grade A.

Modify the first sentence of the second paragraph as follows:

Machine bolts shall have a hex head and nut, unless otherwise specified and shall conform to the requirements of ASTM A307, Grade A.

**Subsection 602.17 Finishing Concrete Surfaces, (b) Ordinary Surface Finish. (5/15/2006)**

Modify the 2<sup>nd</sup> sentence as follows:

On all surfaces, the cavities produced by form ties and all other holes, honeycomb spots, broken corners or edges, and other defects shall be thoroughly cleaned, saturated with water, and carefully pointed and trued with mortar mixed in the proportion of one part portland cement to three parts fine aggregate.

**Subsection 602.26 Method of Measurement.** (Concrete Structures) (1/3/2008)

Add the following sentence:

Haunches will be computed using the lesser of the designed dimensions or as-built dimensions.

**Subsection 612.05 Excavation.** (3/18/2004)

Delete the entire paragraph and insert the following:

The trench in which the pipe is laid shall be excavated to the required depth in accordance with Section 208 and the Standard Construction Details.

**Subsection 612.06 Bedding of Pipe.** (3/18/2004)

Delete the entire paragraph and insert the following:

Unless noted otherwise, all pipes shall receive a Class C bedding as shown on the Standard Construction Details.

**Subsection 612.11 Basis of Payment.** (3/18/2004)

Modify the second sentence of the first paragraph as follows:

Price and payment will constitute full compensation for furnishing, hauling, and installing pipe; for all cribbing or foundation treatment (Class C bedding) necessary to prevent settlement; for all shoring and sheeting; for the replacement of any pipe which is not true in alignment or which shows any settlement after laying; and for all material, labor, equipment, tools, and incidentals required to complete the work.

Modify the first sentence of the second paragraph as follows:

For round pipe under 24" (600 mm) nominal inside diameter, and elliptical pipe under 24" (600 mm) nominal inside horizontal dimension, the excavation (excluding rock), Class C bedding, backfill, and backfilling will be included in the price for this work.

Modify the last paragraph as follows:

Payment for excavation and replacement of unsuitable material encountered below the Class C bedding will be provided for under Section 208.

**Subsection 614.11 Basis of Payment. (3/18/2004)**

Modify the second sentence of the first paragraph as follows:

Price and payment will constitute full compensation for furnishing, hauling, and installing pipe; for all cribbing or foundation treatment (Class C bedding) necessary to prevent settlement; for all shoring and sheeting; for the replacement of any pipe which is not in true alignment or which shows any detrimental settlement after laying; for coating if required; and for all material, labor, equipment, tools, and incidentals required to complete the work.

Modify the first sentence of the second paragraph as follows:

For pipe under 24" (600 mm) nominal inside diameter and arch pipe under 24" (600 mm) nominal inside horizontal dimension, the excavation (excluding rock), Class C bedding, backfill, and backfilling will be included in the price of this work.

Modify the last paragraph as follows:

Payment for excavation and replacement of unsuitable material encountered below the Class C bedding will be provided for under Section 208.

**Subsection 617.02 Materials. (5/15/2006)**

Add the following sentence:

Reinforced concrete flared end sections shall be Class III for all types and class of pipes unless otherwise noted in the Plans.

**Subsection 619.11 Test Piles. (3/18/2004)**

In paragraph (a) (7) modify the second sentence as follows:

However, in no case shall the pile be driven to exceed 240 blows per 12" (300 mm) or 20 blows per 1" (25 mm) of driving for 3 consecutive inches (75 mm).

**Subsection 619.12 Driving Production Piles. (3/18/2004)**

In paragraph (5) modify the first sentence as follows:

In no case shall production piles be driven to exceed 240 blows per 12 inches (300 mm) or 20 blows per 1" (25 mm) for 3 consecutive inches (75 mm).

**Subsection 623.07 Non-Shrink Grout. (3/18/2004)**

Delete the entire paragraph and replace with the following:

Non-shrink grout shall conform to ASTM C1107, Grade C with one modification. The minimum 24-hour strength shall be increased to 5.0 KSI. The sampling and testing procedures of ASTM C1107 need not be changed.

### **Subsection 623.11 Design Criteria. (1/3/2008)**

Modify the first paragraph as follows:

The design of the prestressed, precast, reinforced concrete members shall meet the requirements of the AASHTO LRFD Specifications for Highway Bridges.

The design load shall be HL 93.

### **Section 701 - Curb and Integral Curb and Gutter (5/15/2006)**

Section 701 of the Standard Specifications is replaced with the following:

**701.01 Description.** This work consists of constructing curbs and integral curbs and gutters on a prepared foundation using either fixed forms or slip forms.

#### **MATERIALS.**

**701.02 Portland Cement Concrete.** Portland cement concrete shall conform to the requirements of Section 812, Class B for either fixed-form work or slip-form work.

**701.03 Liquid Membrane Curing Compounds.** Liquid membrane curing compound shall comply with Subsection 812.02 (i), (1) Curing Materials.

**701.04 Preformed Expansion Joint Material.** Preformed cork expansion joint material shall be 1/2" (13 mm) nominal thickness and conform to the requirements of Subsection 808.06.

**701.05 Bituminous Joint Sealant.** Bituminous joint sealant when needed for longitudinal joints as noted on C-1 and P-2 of the Standard Construction Details shall conform to the requirements of Subsection 808.04 (c).

#### **CONSTRUCTION METHODS.**

**701.06 Preparation of Foundation.** The foundation shall be prepared at the required grade to accommodate the elevations, dimensions, and details shown on the Plans. Grades shall be checked to ensure the drainage is adequate to prevent ponding. Existing subgrade shall be compacted until the surface is firm and unyielding. All unsuitable material shall be removed and replaced with approved material. Graded Aggregate Base Course Type B, (GABC) meeting the requirements of Subsection 302.02 shall be used unless otherwise directed. GABC shall be compacted with water as required in Subsection 302.04 except no spreader box will be required. Where rock is encountered, the grade shall be excavated to 6" (150 mm) below the bottom of the curb and integral curb and gutter and backfilled with GABC.

**701.07 Fixed Forms.** Fixed forms shall be of wood or metal and shall extend the full depth of the concrete. Composite material forms may be used for radii work. Forms shall be straight, free from warp greater than 1/8" in 10' (3 mm in 3 m), and of sufficient strength to resist the pressure of the concrete, and shall not displace more than 1/4" in 10' (3 mm in 3 m) from the vertical or horizontal plane. Forms shall remain in both horizontal and vertical alignment until their removal. Forms shall be clean and coated with an approved form release agent before concrete is placed. Divider plates shall be 1/8" thick metal.

**701.08 Slip-Forming.** Slip forming may be used provided that only approved equipment is used and the surface adjacent to the curb is firm and unyielding to support the weight of the machine.

**701.09 Placing Concrete.** The concrete shall be placed on a moist foundation, wetting the foundation if necessary. The concrete shall then be consolidated to eliminate air voids and worked sufficiently to bring mortar to the surface. The surface shall be struck off to the required contour and finished smooth and even with an approved float.

Limitations on placing concrete during hot or cold weather shall be as specified in Subsection 501.04.

**701.10 Joints.** Expansion joints shall be formed using templates or saw cut at no greater than 160' (49 m) intervals. Joints must be cut or formed vertically to the full depth of the curb to allow full contact of the expansion material with the entire surface. Additional expansion joints shall be constructed at each end of radii and at both sides of all structures or obstructions.

Contraction joints shall be constructed at 10' (3m) intervals. If not templated, all surfaces, front, top and back shall be tooled or saw cut to a minimum depth of 1" (25 mm) and a minimum width of 1/8" (3 mm). Saw cutting shall be done as soon as the concrete has sufficiently set or no more than 16 hours from the time of placement of the concrete to avoid shrinkage cracking. Any curb showing shrinkage cracks shall be removed and replaced at no cost to the Department.

When constructed adjacent to concrete pavement, joints shall coincide with joints in the pavement. When sidewalk is behind the curb all joints shall be in alignment and the expansion joints in the curb shall coincide with expansion joints in the sidewalk.

When curb is placed adjacent to Portland Cement Concrete pavement the curb or pavement shall be formed or tooled to allow sealing as shown in the Standard Construction Details C-1 and P-2.

**701.11 Finishing.** A wood or magnesium float shall be used to rub the surface smooth while the concrete is still green. Front and back edges of the curb shall be rounded to a 1/4" (6 mm) radius. A steel trowel finish shall next be applied, and finally a soft dampened brush shall be used longitudinally along the surface. Finishing shall be performed to a depth of 2" (50 mm) below the proposed pavement surface elevation.

Before the concrete is given the final finish, the flow line of the gutter shall be checked to ensure positive drainage. Vertical alignment shall match adjacent surfaces such as curbs and drainage inlets. Any deviations in the flow line of more than 1/8" in 10' (3 mm in 3 m) shall be corrected. Irregularities in grade or alignment of the front and back edges of the curb shall not exceed 1/4" in 10' (6 mm in 3 m).

The ends of all curbs shall be transitioned to be flush with the pavement at a ratio of twelve to one (12:1). All approach and exit ends of median island and curb shall also be transitioned flush with the pavement at a ratio of twelve to one (12:1). Triangular (pork chop) island curb shall have all corners transitioned flush with pavement at a slope of four to one (4:1).

**701.12 Removal of Forms.** Forms may be removed as soon as concrete has hardened sufficiently. Fill all defects with mortar mixed in the proportion of one part portland cement to three parts fine aggregate.

**701.13 Curing.** Within 30 minutes of the completion of finishing to any portion of the concrete work and prior to any dehydration of the concrete surface, all exposed concrete surfaces shall be cured according to Section 501 for a period of no less than five days. The curb may be opened to traffic prior to the expiration of the five-day cure period if compressive strengths of the representative cores taken by the Department indicate that the strength of the concrete exceeds 2000 psi (14 Mpa). Any additional surfaces exposed prior to the expiration of the five-day cure period, by removing forms for example, shall be immediately cured to the same requirements for the remainder of the five-day period. Formwork that is allowed to remain in place and eliminate the need to cure the respective surfaces must remain tight against the surface to prevent drying of the concrete surface.

The application rate shall be not more than 200 ft<sup>2</sup>/gal (4.9 m<sup>2</sup>/L). During the curing period, pedestrian and vehicular traffic shall not disturb newly completed curb or integral curb and gutter other than as noted above.

**701.14 Method of Measurement.** The quantity of portland cement concrete curb and integral curb and gutter will be measured as the number of linear feet (linear meters) along the front face of the finished curb. Any curb showing cracks shall be replaced in sections that have a minimum length of 10' (3 m), at no cost to the Department.

**701.15 Basis of Payment.** The quantity of portland cement concrete curb and integral curb and gutter will be paid for at the Contract price per linear foot (linear meter). Price and payment will constitute full compensation for excavating (unless it is included in the excavation for the roadway box and paid for under Section 202), furnishing, and placing all materials; for forming, placing, finishing, and curing concrete; for backfilling, compacting, and disposing of surplus materials; for rounding curb edges, for sealing joints; and for all labor, equipment, tools, and incidentals required to complete the work. Grade Aggregate Base Course will be measured and paid for under Section 302. Isolated rock removal shall be paid for under Section 206 unless already removed and included within Section 205.

## **Section 705 – Portland Cement Concrete Sidewalk (1/15/2010)**

Add the following to Section 705 ( In accordance with Section 101.01 of the 2001 Standard Specifications)

### **705007 - SIDEWALK SURFACE DETECTABLE WARNING SYSTEM**

#### **.01 Description:**

Furnish and install a detectable warning surface system that complies with the Americans with Disabilities Act (ADA) of 1990, as amended, for outdoor facilities, in accordance with the Plans, the Standard Construction Details and as directed by the Engineer.

#### **.02 Materials:**

G. Provide materials as specified in:

Portland Cement Concrete	Section 801
Fine Aggregate	Section 818
Water	Section 803
Hydrated Lime	Section 802

H. Submit samples of the proposed system to the Engineer for approval prior to the start of work.

I. Submit mortar mix formula for concrete sidewalk applications to the Engineer for approval prior to the start of work.

J. Utilize the dome pattern shown in the Standard Construction Details.

K. Use one of the following material systems:

1. Precast concrete, or fired clay brick, paver units: manufactured with the truncated dome pattern, set on the concrete sidewalk surface.

a. Use mortar for adhesion to the sidewalk surface and for joint filling.

2. Cast iron plates: manufactured with the truncated dome pattern, set on the concrete sidewalk surface.

a. Anchor the plates down according to manufacturer's recommendations.

3. Stamping systems, applied membranes, or ceramic tiles are not acceptable for new work.

a. Applied membranes may only be used if placing on an existing curb ramp which meets ADA standards upon approval by the Engineer.

L. Submit test results certifying that the surface of the system is slip resistant using one of the following standard methods:

- ASTM C1028 B Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method
- ASTM D2047 B Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
- ASTM D5859 B Determining the Traction of Footwear on Painted Surfaces Using the Variable Incidence Tester
- ASTM E303 B Measuring Surface Frictional Properties Using the British Pendulum Tester
- VOSI V41.21-98 B Universal Specification / Test Method for Slip Resistant Walkways, in the Field and Laboratory, as measured by a Drag Type Friction Tester (Voices of Safety International (VOSI): [www.voicesofsafety.com](http://www.voicesofsafety.com))

M. The color of the final surface of the system must conform to the table below or as specified on the Plans.

Sidewalk Surface	Detectable Warning System Color
Brick	white, federal yellow, pale yellow
Hot-mix	white, light gray, federal yellow, pale yellow
Concrete	brown, dark gray, red, brick red, black

The Engineer will determine the color, with a light to dark contrast, for sidewalk surfaces not listed above if not already specified on the Plans.

### **.03 Construction Methods:**

A. *P.C.C. sidewalk*: Use precast concrete or fired brick paver units.

1. Construct the base material of the sidewalk section receiving the detectable warning surface at a lower elevation to allow the thickness of the concrete under the detectable warning system to be the same as the sidewalk (minimum of 4" (100 mm)).
2. Install paver units to achieve a flush surface with the surrounding ramp/sidewalk surfaces.
3. *Mortar*:
  - a. Mix portland cement mortar in the following proportion: one part portland cement to three parts fine aggregate, add hydrated lime not to exceed 10% of the cement by weight.
  - b. Dry mix the fine aggregate, portland cement, and lime until the mixture assumes a uniform color.
  - c. Add water as the mixing continues until the mortar attains a consistency that can be easily handled and spread with a trowel.
  - d. Mortar that is not used within 30 minutes after water has been added cannot be used.
  - e. Retempering of mortar will not be permitted.
4. Place the mortar to form a firm bond.
5. Set paver units in a bed of mortar and mortar the joints.

- a. Maintain 1/4 in. (6 mm) wide joints, no larger than 3/8 in. (9 mm)  
Plastic spacers may be used.
  - b. Keep joints uniform and straight in all both directions.
  6. Maintain clean surfaces and joints prior to applying grout.
  7. Bevel edges of the system with grade changes in between 0.25 and 0.50 inch (6 and 13 mm) with a slope no steeper than 2 to 1.
  8. Grade changes up to 0.25 inch (6 mm) may be vertical.
- B. *Brick sidewalks:* Use precast concrete panels or fired brick paver units.
1. Place units on the same base material and lift thickness as used under the brick sidewalk.
  2. Place units to achieve a flush surface with the surrounding ramp/sidewalk surfaces.

#### **.04 Method of Measurement:**

The quantity of sidewalk surface detectable warning system will be measured as the actual number of square feet (square meters) installed and accepted. The sidewalk is measured and paid for separately.

#### **.05 Basis of Payment:**

The quantity of sidewalk surface detectable warning system will be paid for at the Contract unit price per square foot (square meter). Price and payment will constitute full compensation for furnishing all materials, installing a truncated dome patterned surface system, and for all labor, equipment, tools, and incidentals required to complete the work.

#### **Subsection 705.09 Curing. (5/15/2006)**

Modify the sentence as follows:

Concrete shall be cured according to Section 501 for a period of 72 hours. The sidewalk shall not be opened to pedestrian traffic for 72 hours. Vehicular traffic shall not be permitted until after 5 days.

#### **Subsection 705.12 Basis of Payment. (5/15/2006)**

Add the following sentence:

Curb ramps constructed along the new P.C.C. sidewalk shall be incidental to the sidewalk item in this Section 705-Portland Cement Concrete Sidewalk.

### **Subsection 708.05 – Frames. (3/18/2004)**

Add the following paragraph:

Frames for drainage grates fabricated from structural steel that meets or exceeds requirements of AASHTO M 270 Grade 36 or ASTM A 36 will also be acceptable. Such frames shall be fabricated from ½" (minimum thickness) stock, provide a 1 ¼" lip for support of the grate, have a 2" depth to accommodate a 2" thick grate, and have a bottom width of 4". Tolerances shall be + 1/8", -0". All cutting and welding shall be done in accordance with applicable portions of Subsection 826.12 by certified welders. The fabricated frame shall be hot dip galvanized in accordance with AASHTO M 111 (ASTM A 123) with a minimum of 2 ounces per square foot of zinc coating.

### **Subsection 708.06 Gratings. (3/18/2004)**

Add the following paragraph:

Gratings for drainage inlets fabricated from structural steel that meets or exceed requirements of AASHTO M 270 or ASTM A 36 capable of HS-25 load rating will also be acceptable. Grates shall be of the Type 1, 2, or 3 style as shown in the Standard Construction Details. Type 1 shall have 1" x 2" perimeter bars. Type 2 and 3 shall have ¾" x 2" perimeter bars. Type 1, 2, and 3 shall have ½" x 2" internal bars. Grating spacers shall be flush with the top surface of the grate. Tolerances shall be + 1/8", -0". All cutting and welding shall be done in accordance with applicable portions of Subsection 812.12 by certified welders. The fabricated grate shall be hot dip galvanized in accordance with AASHTO M 111 (ASTM A 123) with a minimum of 2 ounces per square foot of zinc coating.

### **Subsection 708.10 Precast and Cast-In-Place Drainage Inlets and Manholes. (5/15/2006)**

Modify the subsection title as shown above and modify the 1<sup>st</sup> paragraph as follows:

Precast and Cast-In-Place drainage inlets and manholes shall be constructed as shown on the Standard Construction Details. Cast-In-Place construction shall be used for drainage structures that tie into existing pipes and structures unless the Engineer approves the use of Precast. Shop drawings are not required for drainage inlets and manholes that match the Standard Construction Details. Shop drawing and design calculations, signed and sealed by a professional engineer, registered in the State of Delaware, shall be submitted for approval for all drainage structures that differ from the Standard Construction Details.

### **Subsection 708.13 Inlet and Outlet Pipes. (5/15/2006)**

Modify the third sentence as follows:

Any space between the pipe and the walls of the drainage inlet shall be filled with non-shrink grout conforming to the requirements of ASTM C1107 with a strength of 5000 psi.

**Subsection 713.02 Stabilization. (1/3/2008)**

Modify the sentence as follows:

Geotextile for stabilization shall conform to the requirements of AASHTO M 288, Class 1, and Table 4.

**Subsection 713.03 Separation. (1/3/2008)**

Modify the sentence as follows:

Geotextile for separation shall conform to the requirements of AASHTO M 288 Class 2, and Table 3.

**Subsection 713.04 Erosion Control. (Modify title) (1/3/2008)**

Modify the sentence as follows:

Geotextile, woven monofilament for erosion control, shall conform to the requirements of AASHTO M 288, Class 2, and Table 5. All other non- woven geotextiles for erosion control, shall conform to AASHTO M 288 Class 1 and Table 5.

**Subsection 715.03 Perforated, Corrugated Polyethylene Tubing (CPT). (5/15/2006)**

Delete the entire paragraph and replace with the following:

Perforated, CPT shall conform to the requirements of AASHTO M252.

**Subsection 715.04 Stone. (3/18/2004)**

Modify the first sentence as follows:

Stone for backfill shall conform to the requirements of Section 813, Delaware No. 57.

**Subsection 715.05 Geotextile. (Modify Title) (1/3/2008)**

Modify the sentence as follows:

Geotextile shall conform to the requirements of AASHTO M 288 Class 2 or 3 and Table 2.

### **Subsection 715.07 – Video Inspection. (3/18/2004)**

Delete the first sentence. Insert the following two sentences:

The entire underdrain system shall be videoed prior to the Project's final inspection. The Contractor may video the underdrain system prior to the placement of the final surface course over the area of the underdrain. If guardrail is placed within 3' (.9 m) from the underdrain, that section shall be videoed after installation of the guardrail.

### **Section 720 Galvanized Steel Beam Guardrail. (5/15/2006)**

Change "Reflectorized Washers" to "Guardrail Reflectors".

### **Subsection 720.05 Basis of Payment. (5/15/2006)**

After the third sentence, add the following sentences:

When specified in the Plans to place/replace or salvage individual elements of guardrail, and an item is listed for those items, then those individual components will be measured/paid as the number of each component under their respective bid item. When installing new guardrail, paid by the linear foot, these items are incidental to guardrail.

### **Section 725 Guardrail-to-Barrier Connection (Approach and Exit Types). (5/15/2006)**

Change "Reflectorized Washers" to "Guardrail Reflectors".

### **Section 726 Guardrail End Treatment. (5/15/2006)**

Change "Reflectorized Washers" to "Guardrail Reflectors".

### **Section 732 – Topsoil (1/15/2010)**

Section 732 of the Standard Specifications is replaced with the following:

**732.01 Description.** This work consists of furnishing and placing topsoil for planting.

**732.02 Materials.** Topsoil shall be original surface friable loam topsoil of uniform quality and free from heavy clay, frozen clods, lumps, plants, roots, sticks, and foreign materials harmful to plant growth, such as fragments of hot-mix, concrete pavement, and surface treatment.

**Topsoil shall be reasonably free of noxious perennial weeds or wood vegetation -and completely void of Johnsongrass (Sorghum halapense) as determined through prior inspection by an authorized representative of the Department.**

Topsoil shall have an acidity range of pH 5.8 to pH 6.7, and a target of 6.25 and, if necessary, lime or sulfur shall be applied, and incorporated into the topsoil prior to the time of seeding.

**Topsoil shall contain not less than 2% nor more than 30% organic matter as determined by AASHTO T 194.**

The method of testing topsoil shall be AASHTO T 88, Modified; AASHTO T 89, Method B; and AASHTO T 90. Topsoil shall meet the following gradation requirements:

<b>Gradation Requirements</b>	
<b>Minimum Percent Passing</b>	
<i>Sieve Size</i>	<i>by Weight</i>
2" (50 mm)	100
No. 4 (4.75 mm)	90
No. 10 (2.00 mm)	80

	<i>Minimum Percent</i>	<i>Maximum Percent</i>
Passing No. 10 (2.00 mm) and retained on No. 200 (75 µm) sieve		
Sand	15	65
Passing No. 200 (75 µm) sieve		
Silt	10	60
Clay	5	40

Topsoil shall not be delivered until samples have been approved by the Engineer.

**732.03 Areas From Which Obtained.** Topsoil shall be secured from areas from which topsoil has not been previously removed either by erosion or mechanical methods, and it shall not be removed to a depth in excess of the depth approved.

**The area or areas from which topsoil is secured shall possess such uniformity of material depth, color, texture, drainage, and other characteristics as to offer assurance that when removed in commercial quantities, the product is homogeneous in nature and conforms to the requirements of this Section.**

#### **CONSTRUCTION METHODS.**

**732.04 Clearing the Area.** All areas from which topsoil is to be secured shall be cleaned of all brush, sticks, weeds, stones, bricks, ashes, and other refuse which may hinder or prevent growth.

**732.05 Approval of Materials.** In securing topsoil from an approved source, should strata or seams of materials be encountered that do not qualify as topsoil, said materials shall be removed from the topsoil or, if required, the source shall be abandoned.

**732.06 Placing.** Before placing or depositing topsoil upon any section as shown on the Plans, the foundation upon which the topsoil is to be placed shall be approved. Topsoil shall be thoroughly loosened within 72 hours prior of seeding.

Topsoil shall be spread on these areas to a depth sufficiently greater than that specified on the Plans, so that after natural settlement has taken place the work shall conform to the elevations on the Plans.

**732.07 Maintaining the Topsoil.** The Contractor shall maintain the topsoil until final completion and acceptance of the Contract. Maintenance shall consist of preserving, protecting, replacing, and such other work as may be necessary to keep the topsoil in a

satisfactory condition. No additional payment will be made to replace and/or regrade any topsoil damaged by excessive run off, erosion, storm damage, etc.

**732.08 Final Cleaning.** Upon the completion of this work, final cleaning shall be done within the limits of the Project and shall consist of completely cleaning the Project of excess material, sweeping pavements and structures of dirt and rubbish, and removing of any unused material which may mar the appearance of the Project.

**732.09 Method of Measurement.** The quantity of topsoil will be measured as the number of Square Yards (Square Meters) or Tons (Metric Tons), of topsoil furnished, placed, and accepted only in the areas shown on the Plans or where directed. Measurements will be made along the surfaces of the completed topsoiled areas.

**732.10 Basis of Payment.** The quantity of topsoil will be paid for at the Contract unit price per Square Yard (Square Meter) or Ton (Metric Ton). Price and payment will constitute full compensation for preparing the grade; for furnishing, hauling, and placing all materials, including necessary quantities of lime or sulfur; for maintaining topsoil; for loosening of the topsoil and subgrade to 6 inches (150 mm) and for all labor, equipment, tools, and incidentals required to complete the work.

### **Section 733 – TOPSOILING (1/15/2010)**

Section 733 of the Standard Specifications is replaced with the following:

**733.01 Description.** This work consists of placing topsoil which has been salvaged and stockpiled under Section 202.

**733.02 Materials.** Topsoil shall be salvaged and stockpiled under Section 202.

**733.03 Construction Methods.** The placement of topsoil shall conform to the requirements of Section 732. Within 72 hours prior to seeding, the topsoil shall be thoroughly loosened. Topsoil shall be maintained in accordance with 732.07.

**733.04 Method of Measurement.** The quantity of topsoiling will be measured as the number of square yards (square meters) or Tons (Metric Tons) of topsoil placed and accepted only in the areas shown on the Plans or where directed. Measurements will be made along the surfaces of the completed topsoiling areas.

**733.05 Basis of Payment.** The quantity of topsoiling will be paid for at the Contract unit price per Square Yard (Square Meter) or Ton (Metric Ton). Price and payment will constitute full compensation for preparing the grade; for hauling and placing all topsoil salvaged under Section 202; for maintaining topsoil; loosening of the topsoil and subgrade, and for all labor, equipment, tools, and incidentals required to complete the work.

## **Section 743 – ARROW BOARDS (1/15/2010)**

Add the following to Section 743:

### **743004 - FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN**

#### **Description:**

The item shall consist of furnishing, placing, relocating, operating and maintaining trailer mounted portable changeable message sign(s) as shown on plans or as directed by the Engineer.

The portable changeable message sign (PCMS) must be approved by the Department prior to use.

#### **Operation and Maintenance:**

The design, operation and placement of the PCMS shall comply with Part 6 of the Delaware Manual on Uniform Traffic Control Devices (DEMUTCD) and with the Portable Changeable Message Signs memorandum. PCMS shall be placed and relocated at locations specified in the Contract documents or as directed by the Engineer. PCMS shall be placed as far from the travel lane as practical so as not to contribute to a roadside hazard. The PCMS memorandum can be found on the DeIDOT website at the following link:

[http://www.deldot.gov/information/pubs\\_forms/manuals/de\\_mutcd/pdf/Portable Changeable Message Signs.pdf](http://www.deldot.gov/information/pubs_forms/manuals/de_mutcd/pdf/Portable_Changeable_Message_Signs.pdf)

Prior to use, a Portable Changeable Message Sign Approval Form shall be submitted for each PCMS location. The approval form shall be submitted to the District Safety Officer by the Engineer prior to placement of the PCMS. The approval form can be found on the DeIDOT website at the following link:

[http://www.deldot.gov/information/pubs\\_forms/manuals/de\\_mutcd/pdf/PCMS Approval Form.doc](http://www.deldot.gov/information/pubs_forms/manuals/de_mutcd/pdf/PCMS_Approval_Form.doc)

PCMS identified within the rights-of-way of the State of Delaware that are not approved shall be removed by DeIDOT forces from the right-of-way immediately. PCMS that have been approved for use but are not being used consistent with the approval or those devices that do not have adequate traffic control devices in their support shall require corrective actions by the applicant as deemed necessary by the Engineer. Corrective action shall be completed as soon as possible, but no more than 24 hours after notification. Failure to perform the corrective action will result in removal of the message board as describe previously.

The Contractor shall have a qualified and trained PCMS programmer(s) to program desired messages, and mechanic(s) to perform required service on the PCMS unit, available on a 24 hour basis. The Contractor shall maintain and service the PCMS unit throughout the period of its operation on the job.

#### **Basis of Payment:**

The payment for the item shall be made for at the Contract unit price per Each-Day bid for the item "743004 - Furnish and Maintain Portable Changeable Message Sign", which price and payment shall constitute full compensation for furnishing the PCMS with trailer, placing, relocating, operating, programming, final removal when no longer required, and for all labor, tools, equipment, and necessary incidentals to complete the work.

Should an operational problem be reported to the Contractor at any time during use of the unit, the Contractor shall have two hours after receipt of notification to rectify the problem to the satisfaction of the Engineer. If such repair is not made satisfactorily, no payment will be made for the PCMS.

It is the Department's intent to provide a continuously operating Portable Changeable Message Sign whenever the unit is in service. The Contractor is required to make all necessary arrangements to assure continuous operation of the unit. The Contractor shall designate an on-site representative, other than the Project Superintendent, who shall be the Department's contact on all project issues related to the Portable Changeable Message Sign.

## **SECTION 743 – ARROW BOARDS (1/15/2010)**

Add the following to Section 743:

### **743005 - FURNISH AND MAINTAIN PORTABLE LIGHT ASSEMBLY**

#### **Description:**

This work consists of furnishing and satisfactorily placing and operating a portable light assembly unit when required and as directed by the Engineer. Costs for all movement and set-up to another location is incidental to this item. Costs for fuel, maintenance, and all other associated work necessary to provide satisfactory operation of the unit on a daily basis shall be incidental to the item.

#### **Materials and Operation Requirements:**

The design, operation and maintenance of portable light assembly unit(s) shall conform to this specification and with Part 6 of the Delaware Manual on Uniform Traffic Control Devices (DEMUTCD). The portable light assembly unit shall include four, 1000W lights with a fully self-contained power source mounted to a trailer equipped to be towed by a vehicle.

The portable light assembly unit shall not produce a disabling glare condition for approaching road users, flaggers or workers. The height of the light assembly shall be above the eye level of a tractor trailer vehicle.

Portable light assembly units shall be placed as far from the travel lane as practical so as not to contribute to a roadside hazard. When not in use, the portable light assembly units shall be removed from the roadway and stored in the Contractor's staging area. If the units cannot be removed from the roadway, the units shall be delineated with six (6) drums. If a portable light assembly must be staged in the median of a divided roadway and the median is 50 feet or less in width, measured from yellow line to yellow line, the portable light assembly unit shall be delineated with six (6) drums on each side for both directions of travel. Payment for drums shall be incidental to this item.

It is the Department's intent to provide a continuously operating light assembly unit whenever the unit is in service. Should an operational problem be reported to the Contractor at any time during use of the unit, the Contractor shall have 30 minutes after receipt of notification to rectify the problem to the satisfaction of the Engineer. Failure of the Contractor to correct the problem as required shall result in deduction of payment for the day the unit is not satisfactorily operating. The Contractor shall designate an on-site representative, other than the Project Superintendent, to be the Department's contact person on all issues related to the light assembly.

#### **Method of Measurement:**

The quantity of portable light assemblies will be measured as the number of each used per day.

If the light assembly unit in question is satisfactorily operating continuously from dusk to dawn, it will be measured as a full day.

**Basis of Payment:**

The quantity of portable light assemblies will be paid for at the Contract unit price for each per day that they are used on the project as directed by the Engineer. Price and payment will constitute full compensation for furnishing fuel, for maintaining light assemblies, and for all labor, materials, equipment and tools required to complete the work. Delineating drums shall be incidental to this item

**Subsection 746.03 Construction Methods. (3/18/2004)**

Delete the last paragraph. Insert the following two sentences:

The concrete for pole bases shall be placed in accordance with the applicable requirements of Section 602. The bases shall be edged and have a broom finish.

**Subsection 748.09 Application. (5/15/2006)**

Add the following at the end of this subsection:

*(f) Removal of Pavement Markings when they are not properly applied.*

When it is necessary to remove pavement markings the following shall apply:

- (1.) For paint and epoxy resin, shot/abrasive grit blasting or water blasting equipment shall be used.
- (2.) For alkyd thermoplastic, in addition to the removal techniques discussed for paint and epoxy, burning or grinding equipment may be used.

The removal operation shall be performed in a manner that will not damage the pavement surface to a depth more than 1/8 inch. The contractor must satisfactorily demonstrate his/her proposed equipment and method of removal. Alternative equipment and methods will be considered if satisfactory results can be demonstrated.

The contractor shall collect and dispose of all shot/abrasive grit and pavement marking materials removed from the pavement surface. Washing or sweeping such materials to the roadside will not be permitted.

(3.) After removal of striping on bituminous concrete pavement, approved flat black paint or asphalt sealer shall be used to cover any exposed aggregate or embedded paint. Price and payment will also include payment for black paint or asphalt sealer.

**Subsection 760.04 Basis of Payment. (5/15/2006)**

Modify the paragraph as follows:

The quantity of pavement-milling will be paid for at the Contract unit price per square yard per inch of depth (square meter per 25 millimeters of depth) or at the Contract unit price per square yard (square meter). Price and payment will constitute full compensation for milling or planing the existing pavement; for the cleanup of the hot mix or concrete residue wedge left from the milling operation including but not limited to along the curb line, adjacent to speed humps, across intersecting streets, around manholes, and at the beginning and ending points of the milling operation, for removing and disposing of the milled material; and for all labor, tools, equipment, and incidentals required to complete the work.

**Subsection 762.02 Construction Methods. (9/4/2009)**

Modify the last sentence in the paragraph as follows:

When saw cutting portland cement concrete or hot-mix, hot-laid bituminous concrete for removal of pavement, the depth of saw cut shall be the full depth of the pavement.

**Subsection 808.02 Portland Cement Concrete Pavement. (5/15/2006)**

Modify Subpart (a) as follows:

a. *Hot-Poured Joint Sealant.* Hot-poured joint sealant shall conform to AASHTO M 324(Type-IV) or AASHTO M 282.

**Subsection 808.04 Portland Cement Concrete Structures. (5/15/2006)**

Modify Subpart (c) as follows:

c. *Bituminous Joint Sealant.* Bituminous joint sealants may be hot applied conforming to AASHTO M 324 Type-I, or cold applied elastomeric sealant conforming to Federal Specification SS-S-200E (2), Type H.

**Subsection 808.06 Portland Cement Concrete Curb and Integral Curb and Gutter. (5/15/2006)**

Modify the 1<sup>st</sup> Sentence as follows:

Materials for portland cement concrete curb and integral curb and gutter shall be preformed expansion joint material of ½" (13 mm) nominal thickness and shall conform to the requirements of AASHTO M 153, Type II.

**Subsection 812.02 (j) Samples. (9/4/2009)**

Modify the paragraph as follows:

Coarse and fine aggregates for use in Portland cement concrete shall also be evaluated for potential alkali-silica reactivity (ASR) using at least one of the means referenced below along with any field service records available for the materials in question. If a field service record for a particular source includes evidence of deleterious ASR occurring in that source, then that source shall be classified as potentially reactive regardless of any laboratory test result for that source. Test results of the proposed aggregates shall be provided by the Contractor to the Engineer for review at least 30 days prior to the incorporation of the mixture on a Department project.

<b>Tests and Criteria for Proposed Aggregate</b>		
<b>Procedure</b>	<b>Description</b>	<b>Limit</b>
AASHTO T303	<b><i>Mortar Bar Expansion</i></b>	< 0.08% at 28 days
ASTM C1293	Concrete Prism Expansion	< 0.04% at 1 year

If the proposed concrete mixture design exceeds any of the limits referenced above, or the aggregate has demonstrated deleterious ASR in the field, mitigation steps shall be taken. These mitigation steps shall incorporate one or a combination of the following materials:

- **Low Alkali Cement** having an alkali content of 0.40 or less,

And/or the following supplementary cementitious materials:

- **Blended hydraulic cement** meeting the requirements of ASTM C1157,
- **Ground Granulated Blast Furnace Slag** meeting the requirements of AASHTO M302, Grade 100 or 120,
- **Silica Fume** meeting the requirements of AASHTO M307,
- **Fly Ash** meeting the requirements of Section 822, with a total alkali content less than 3.0%, and a CaO content  $\leq$  8.0%.

And/or the following chemical admixture:

- **Lithium Admixture** at a dosage rate based upon the sodium oxide equivalent (AASHTO M 85) of the Portland cement component of the concrete. For specific details on lithium testing required, see the attached page under Section I – **Mixture Design**.

The exact dosage rates of any of the above referenced products shall be determined by the contractor's testing according to the table below. All mixture design testing shall be performed by a laboratory approved by the Engineer. Test results of the proposed concrete mixture components shall be provided by the Contractor to the Engineer for review at least 30 days prior to the incorporation of the mixture on a Department project.

<b>Tests and Criteria for Proposed Concrete Components</b>		
<b>Procedure</b>	<b>Description</b>	<b>Limit</b>
ASTM C1567 (modified <sup>1,2</sup> )	<b><u>Mortar Bar Expansion</u></b>	< 0.08% at 28 days
<b><u>ASTM C1293 (modified<sup>3</sup>)</u></b>	Concrete Prism Expansion	< 0.04% at 2 years

<sup>1</sup>Low alkali cement cannot be evaluated by either of these test methods. If low alkali cement is used with aggregate shown to be potentially reactive as the only measure to minimize the ASR potential of the concrete, then the total alkali loading of the concrete mix design from the Portland cement shall not exceed 2.5 lb/yd<sup>3</sup>.

<sup>2</sup>When evaluating lithium admixture, alone or in combination with ground granulated blast furnace slag, fly ash, or silica fume, four modifications to ASTM C1567 shall be incorporated in the testing as referenced in the attached sheet under Section II – Footnote.

<sup>3</sup>The modifications to C1293 necessary to meet this table are described in the FHWA publication ‘Guidelines for the Use of Lithium to Mitigate or Prevent Alkali-Silica Reaction’, publication number FHWA-RD-03-047, July 2003, pages 60-62.

## **I – Mixture Design**

If the Portland cement to be used with the lithium admixture is less than 0.60% total alkali, a minimum value of 0.60% total alkali shall be used for calculating the percent of standard dose. The standard lithium dosage is 0.55 gal of 30% lithium nitrate solution per 1 lb of sodium oxide equivalent of the Portland cement. The minimum dosage used shall no less than 25% of the standard dose. Other approved lithium compounds may be used if approved by the Engineer. All lithium salts shall be certified as non-hazardous based on the heavy metal content. Mixing shall be as per manufacturer’s recommendation. The amount of lithium admixture used will be reported as the percent of standard dose.

## **II - Footnote**

1. Use a Portland cement having a total alkali content of 0.9 +/- 0.1%,
2. The amount of lithium admixture to use in the mortar will equal 0.55 gal/lb of total alkali in the Portland cement contained in the mortar batch times the fraction of the standard dose used (i.e., the percent of standard dose divided by 100). (On a mass basis, this would be 0.012 lb of lithium admixture per gram of total alkali in the Portland cement contained in the mortar batch),
3. The soak solution will contain 0.019 gal of lithium admixture, times the fraction of the standard dose used, plus 0.33 lb of NaOH per gal of soak solution. (Note – to make the solution, first dissolve the required amount of NaOH in approximately one half the total final volume, then add the required amount of lithium admixture, then dilute to the final volume.) To maintain the w/c in the mortar specified in the test method, subtract 85% of the lithium admixture volume used in the batch from the required mix water (on a mass basis, subtract 70% of the lithium admixture mass used in the batch from the required mix water). (Note - An Excel spreadsheet is available from the Engineer to calculate material amounts for the C1260 modifications. Amounts of components used in modified

- C1260 tests submitted by the contractor shall match those in this spreadsheet.)
4. Obtain comparator readings of the mortar bars every 3 to 4 days while in the soak solution, culminating in the final reading at 28 days in the soak solution. The reported results shall contain the calculated percent expansions along with a plot of the percent expansions versus days in the soak solution.

**Subsection 812.04 Composition of Mix. (3/18/2004)**

Add the following to the notes under Table 812-A:

Note 13: Concrete (all classes), which fails to reach full 28 day design strength (fc') will be considered defective and will be evaluated in accordance with Subsection 602.25 Defective Work. Payment for the item with low strength concrete will be determined in accordance with Subsection 602.27 Basis of Payment (b) Price Adjustment for Low Strength Concrete.

Modify the statement in the bottom of box of Table 812-A as follows:

Notes 8, 9, 10, 11, and 13 refer to all classes of concrete. Note 12 refer to Class D concrete.

**Section 814 – Timber Preservatives. (3/18/2004)**

Delete Paragraph (a).

**Subsection 821.01 Description. (5/15/2006)**

Modify the paragraph as follows:

This material consists of coarse crushed stone, crushed slag fragments or portland cement concrete fragments. The Contractor shall certify that any recycled material, which is being proposed for use as graded aggregate, is neither hazardous nor toxic.

**Subsection 821.03 Material Details. (c) Gradation. (5/15/2006)**

Remove all references to graded aggregate, Type A (CR-1). Replace all of Subpart (c) Gradation with the following:

<b>WEIGHT PERCENT PASSING</b>	
<b>Sieve Size</b>	<b>% Passing</b>
	<b>Type B</b>
2 ½" (63.0 mm)	---
1 ½" (37.5 mm)	100
1" (25.0 mm)	---
¾" (19.0 mm)	50-95
No. 4 (4.75 mm)	20-50
No. 10 (2.00 mm)	15-40
No. 20 (850 um)	---
No. 100 (150 um)	2-20
No. 200 (75 um)	0-10

**Materials.** The graded aggregate shall meet the following properties:

<b>Property</b>	<b>Range</b>
Liquid Limit (T89) <sup>1</sup>	30 max
Plasticity Index (T90) <sup>1</sup>	4 max
Sand Equivalency <sup>1</sup>	25 min
Bituminous Concrete <sup>2</sup>	5% max
Brick <sup>2</sup>	5% max
Wood <sup>2</sup>	0.1% max
Metals <sup>2</sup>	0.1% max
Plaster <sup>2</sup>	0.1% max
Deleterious materials <sup>2</sup>	0.1% max
Los Angeles Abrasion	45% max

<sup>1</sup>Minus 0.425 mm (No. 40) sieve material

<sup>2</sup>By weight

Once a stockpile of material has been tested and approved, no material shall be added to it until the stockpile is depleted.

**Subsection 827.02 Silt Fence. (1/3/2008)**

Modify the last sentence as follows:

The geotextile shall be inert to commonly encountered chemicals and shall meet the requirements of AASHTO M 288 Table 6.

Delete Table 827-A

**Subsection 827.04 Inlet Sediment Control. (1/3/2008)**

Modify the entire paragraph as follows:

The geotextile for inlet sediment control shall conform to AASHTO M 288 Class 1 or 2 Table 5 for erosion control.

Delete Table 827-B

**Subsection 827.06 Riprap Ditch. (1/3/2008)**

Modify the entire paragraph as follows:

The geotextile for a riprap ditch shall conform to AASHTO M 288 Class 2 or 3 Table-2 for drainage.

**Subsection 827.12 Stabilized Construction Entrance. (1/3/2008)**

Modify the last sentence as follows:

The geotextile shall be inert to commonly encountered chemicals and hydrocarbons, be mildew and rot resistant, and shall conform to AASHTO M288 Class 1 and Table 4 for Traffic < 3 Axles and Class 1 and Table 4 for Traffic > 3 Axles

Delete Table 827-C

**Subsection 828.02 (f) Guardrail Reflectors. (5/15/2006)**

Change "Reflectorized Washers" to "Guardrail Reflectors".

Modify the paragraph as follows:

Guardrail reflectors shall be fabricated from steel sheet plates conforming to the requirements of ASTM A-6, galvanized to ASTM A153. Retroreflectorized sheeting shall be AR-1000 (Type V) Abrasive resistant and shall be applied in accordance with Subsection 720.03.