Supplemental Specifications to the August 2001 Standard Specifications
(Revised November 24, 2014)

Division 100 – General Provisions (11/24/2014)

Remove Division 100 – General Provisions in its entirety and all previously posted Supplemental Specifications for same and replace with the following:

General Information, Definitions, and Terms

Division 100 - **General Provisions**

Section 101 - General Information, Definitions, and Terms
Section 102 - Bidding Requirements and Conditions
Section 103 - Award and Execution of Contract
Section 104 - Scope of Work
Section 105 - Control of Work
Section 106 - Control of Material
Section 107 - Legal Relations and Responsibility to the Public
Section 108 - Prosecution and Progress
Section 109 - Measurement and Payment

101.01 General. The titles and headings of the Sections and subparts of Sections are intended for reference and are not to be used to interpret the Specifications.

When the Contract references a publication, the reference applies to the most recent date of issue as of the date bids are advertised, including interim publications, unless the reference includes a specified date or year.
Portions of these Specifications are written in the imperative mood. In sentences using imperative mood, the subject "the Contractor" is implied. Also implied in the language are "shall" or "shall be" or similar words and phrases. In all instances where "the Contractor" and "shall" or "shall be" are implied, the actions specified are solely the responsibility of the Contractor. In the referenced Material Sections, the subject may also be a vendor, fabricator, manufacturer, or combination thereof, who may be supplying the Material, products, or Equipment for the Project. Prior to the Execution of the Contract, the implied subject of a sentence using the imperative mood is either “the Bidder” or “the prospective Bidder”. The word "will" generally applies to decisions or actions of the Department or Engineer.

In the Contract, the following words: contemplated, required, determined, directed, specified, authorized, ordered, given, designated, indicated, considered necessary, deemed necessary, permitted, reserved, suspended, established, approval, approved, disapproved, acceptable, unacceptable, suitable, satisfactory, unsatisfactory, sufficient, insufficient, rejected, condemned, or words with similar intent; mean by or to the

Department.
In the Contract, the words "or equal", referring to a product, Material, or process, mean "equal as determined by the Engineer".

The Specifications may present numerical values in both U.S. customary units (English) and metric units. The Plans will only use one of the two systems. Work entirely within the system set forth in the Plans and do not convert between the two systems. The relationship between the U.S. customary values and the metric values within these Specifications is neither an exact (hard) conversion nor a completely rationalized (soft) conversion.

101.02 Abbreviations. Wherever the following abbreviations, terms or pronouns are used in the Contract, interpret the intent and meaning as follows:

AA	Aluminum Association
AAN	American Association of Nurserymen
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AED	Associated Equipment Distributors
AGC	Associated General Contractors of America
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ARA	American Railway Association
AREMA	American Railway Engineering and Maintenance of Way Association
ARTBA	American Road and Transportation Builders Association
ASCE	American Society of Civil Engineers
ASLA	American Society of Landscape Architects
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
CFR	Code of Federal Regulations
FHWA	Federal Highway Administration

FSS	Federal Specifications and Standards
MIL	Military Specifications
MUTCD	Delaware Manual on Uniform Traffic Control Devices For Streets and Highways
NEC	National Electrical Code
NIST	National Institute of Standards and Technology
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PTI	Post Tensioning Institute
SAE	Society of Automotive Engineers
SSPC	Steel Structures Painting Council
Temporary Traffic Control (TTC)	Delaware Manual on Uniform Traffic Control, Part 6, Temporary Traffic Control
UL	Underwriters Laboratory, Incorporated

101.03 Definitions – The following definitions apply to the Contract Documents.

Addendum. An Addendum is a Contract revision issued after Advertisement of the Bid Proposal and before the bid opening.

Additional Work or Extra Work. Additional Work or Extra Work is Work that was not included in the Contract, but is necessary in order to satisfactorily perform the Work required by the Contract or Work that is not included in the Contract, but is desired by the Engineer in order to satisfactorily complete the Work.

Adjustment (or Equitable Adjustment). An Adjustment, Contract Adjustment or Equitable Adjustment is a revision to the Project cost or Project Time provided in accordance with Section 109.04 for Project Cost and/or 108.07 for Project Time.

Advertisement. An Advertisement is a public announcement inviting Proposals for Work to be performed or Material to be furnished.

Award. An Award is the Department's acceptance of a Proposal prior to the execution of a formal, written Contract.

Bidder. A Bidder is any individual or legal entity submitting a Proposal.

Bid Documentation. Bid Documentation includes all writings, working papers, computer printouts, charts, and data compilations that contain or reflect information, data, or calculations used by the Bidder to prepare the Bid Proposal submitted to the Department, including, but not limited to, material relating to the determination and application of:

A. Equipment rates
B. Overhead rates and related time schedules
C. Labor rates
D. Efficiency or productivity factors
E. Arithmetic extensions of Unit Prices
F. Subcontractor and Material supplier quotations

Any standard manuals used by the Bidder in determining the contents of the Proposal are also considered Bid Documentation. These manuals may be included by reference in the Bid Documentation. In such cases, show the name and date of the publication and the publisher.

The term "Bid Documentation" does not include documents provided by the Department for the Bidder's use in the preparation of the Proposal.

Bid Proposal; Bid Proposal Form. A Bid Proposal is the Department's specific Invitation to Bid and consists of the following documents and any referenced documents: the General Description; General Notices; Supplemental Specifications; Special Provisions including Utility, Right of Way, Environmental and Railroad Statements; Plans, Addendums and any Appendices or Attachments; and the Bid Proposal Form. A Bid Proposal Form is the approved form on which the Department requires formal bids to be prepared and submitted for the Work. The Department may allow or require Bid Proposal Forms to be in an electronic format.

Bridge. A Bridge is a Structure, including supports, erected over a depression or an obstruction, such as water, highway, or railway; having a track or passageway for carrying traffic or other moving loads; and having an opening over 20 sq. ft. (1.86 m^2).

Calendar Day. A Calendar Day consists of each and every day shown on the calendar, beginning and ending at midnight.

Change Order. A Change Order is a written order issued by the Engineer to the Contractor setting forth any change, reduction of Work, and/or addition of Extra Work required to be undertaken by the Contractor. A Change Order may be issued with or without the consent of the Contractor. The signature line for the Contractor on a Change Order form is for the sole purpose of acknowledging receipt of the Change Order; do write anything on the form other than a signature and do not modify the form on which the Engineer issues the Change Order. Failure to sign the Change Order does not invalidate the Change Order. A Change Order does not invalidate any other portion of the Contract.

Completion. Completion of the Project occurs when the Work has been satisfactorily concluded under the Contract and the Contractor has satisfactorily executed and delivered to the Engineer all documents, certificates, and proofs of compliance required by the Contract.

Contract. The Contract is the written agreement between the Department and the Contractor setting forth the obligation of the parties for the performance of the Work. The written agreement constitutes the entire Contract between the parties.

The Contract may include, but is not limited to, the Advertisement; the Contract form; the Proposal, performance, payment, and other Bonds or guaranties; the Specifications; working drawings; general and detailed Plans; all required notices with respect to any of the foregoing; Change Orders; Supplemental Agreements; all documents incorporated into the Contract by reference; and the Engineer's written directives. Do not modify, alter, or otherwise change the Contract by any oral promise, statement, or representation made either by the Department or Contractor, unless such modification, alteration, or change is reduced to writing in accordance with the Contract.

Contract Item (Pay Item or Item). A Contract Item, Pay Item, or Item is a specifically described item of Work for which a price is provided in the Contract.

Contract Payment and Performance Bond. A Contract Payment and Performance Bond is the security furnished by the Contractor and the Contractor's Surety or Sureties to guarantee payment and performance of all obligations incurred by the Contractor on or because of the Contract.

Contract Time. The Contract Time is the number of Working Days or number of Calendar Days allowed for the Substantial Completion of the Contract. Achieve Substantial Completion on Calendar Day Contracts on or before the last chargeable Calendar Day even when that date is a Saturday, Sunday, or Holiday.

Contractor. The Contractor is the individual or legal entity contracting with the Department for performance of the Work.

Culvert. A Culvert is either a Structure that is not classified as a Bridge and provides an opening that allows water to flow under a roadway, railway, Embankment or trail or is a Bridge classified as a Culvert in DelDOT’s Bridge Inventory.

Days. “Days” means Calendar Days.

Department. Department means Delaware Department of Transportation.

Differing Site Conditions. Differing Site Conditions are subsurface or latent physical conditions encountered at the site that, 1) differ materially from those indicated in the Contract, or are 2) unknown physical conditions of an unusual nature, differing materially from those conditions ordinarily encountered and generally recognized as inherent in the Work provided for in the Contract. If the Contract contains a definition of Differing Site Conditions in the General Notices, the definition in this Section does not apply and is replaced by the definition found in the General Notices.

District. A District is the subdivision of the Department that is administering the Contract.

District Engineer. The District Engineer is the department head of the District administering the Contract. The chain of command on a Project will be expressly identified at the preconstruction meeting for the Project.

Embankment. An Embankment is a Structure constructed of Material meeting the requirements of Section 209, as described in Section 202.

Engineer. The Engineer is the Chief Engineer of the Department, acting directly or through an assistant or other authorized representative. The Engineer is responsible for engineering and administrative supervision of the Contract.

Equipment. Equipment is all machinery, tools, and apparatus, and the fuels, lubricants, batteries and other supplies and parts needed to use, operate, and maintain these items for use in constructing and completing the Work.

Extra Work. See "Additional Work" for the definition of "Extra Work".

Falsework. Falsework is any temporary construction Work used to support the weight of a permanent structural element until such element becomes self-supporting. Falsework includes, but is not limited to, steel or timber beams, girders, columns, piles and foundations, and any proprietary Equipment including modular shoring frames, post shores, and adjustable horizontal shoring.

Force Account. Force Account is a method of payment for Work performed by the Contractor at the Engineer's direction, calculated as specified in Section 109.04.

Formwork. Formwork is a temporary Structure or mold used to retain plastic or fluid Material in a designated shape until the Material hardens. Formwork must have enough strength to resist the fluid pressure exerted by the plastic Material during placement and any additional pressure generated by vibration of the Material.

Final Inspection. A Final Inspection is the inspection conducted by the Engineer to determine if the Project, or any substantial portion thereof, has been satisfactorily completed in accordance with Contract requirements.

General Description. The General Description is the information that appears in the Bid Proposal before the General Notices that consists of specific Project related information that may include, but is not limited to; Location, Description, Completion Date, anticipated Notices to Proceed, Special Notices, Bidding Criteria, Construction Sequence Notes, Road User Costs, modifications to Liquidated Damages, Addenda issued, Questions and Answers published, Prebid Meeting Transcripts, Construction Items Units of Measure and Table of Contents.

General Notices. General Notices are federal and State regulations contained in the Bid Proposal that govern the Contract. The General Notices do not list every State or federal regulation that may affect the Contract.

Holidays. The following Days shall are Holidays in the State of Delaware.

A. New Years Day
B. Martin Luther King's Birthday
C. Good Friday
D. Memorial Day
E. Independence Day
F. Labor Day
G. General Election Day (biennial)
H. Return Day (Sussex County only after 12:00 Noon)
I. Veteran's Day
J. Thanksgiving Day
K. Friday after Thanksgiving
L. Christmas Day

If any Holiday falls on Sunday, the Monday following shall be the Holiday. If any Holiday falls on Saturday, the Friday preceding shall be the Holiday. If any additional Days are designated as legal Holidays for State employees by Executive Order of the Governor, and the Contractor chooses to honor the Days by not working, the State will extend the Contract Time accordingly.

Contractors must receive approval from the Engineer in order to perform Work on a Holiday. The Contractor is not entitled to an extension of Contract Time if the Engineer prohibits Work on a Holiday. Holidays count as Calendar Days on Calendar Day Contracts whether or not the Contractor receives approval to perform Work on those Days.

Inspector. An Inspector is an authorized representative of the Engineer whose duties and authority is defined in Section 105.02.

Invitation for Bids. The Invitation for Bids is the Advertisement of Proposals for Work and/or Materials on which Bid Proposals are requested. The Advertisement will indicate with reasonable accuracy the quantity and location of the Work to be performed and the time and place of the opening of Proposals.

Limits of Construction. The Limits of Construction are boundaries that define the area where the Contractor may perform Work. The Contractor may not bring labor, Equipment or Materials outside of the LOC within the Project limits without written permission from the Engineer. When not specifically identified on the Plans or in any other part of the Contract, the Limits of Construction shall be the outer boundary of the State’s Rights-of-Way and easements within the Project’s limits.

Liquidated Damages. Liquidated Damages are an amount due and payable to the Department by the Contractor for additional costs incurred by the Department resulting

from the Contractor's failure to complete the Work within the Contract Time as set forth in Section 108.08.

Major and Minor Contract Items. A Major Item is any Contract Item whose total bid value equals or exceeds 10% of the total price bid for the Contract. All other Items are Minor Items.

Materials. Materials are any substances, other than Equipment, used in the construction of the Project.

Notice of Award. A Notice of Award is the written notice to the selected Bidder stating that the Bidder's Bid Proposal has been accepted by the Department and that the selected Bidder is required to execute the Contract Agreement and furnish Performance and Payment Bonds that are satisfactory to the Department.

Notice to Proceed. A Notice to Proceed is a written notice to the Contractor to begin the Contract Work and includes the date on which Contract Time will begin to accrue.

Pavement Structure. A Pavement Structure is the combination of sub-base, base course, and surface course placed on a sub-grade to support a traffic load.

1. Sub-grade. A sub-grade is the top surface of the roadbed upon which the Pavement Structure is constructed.

2. Sub-grade Treatment. A sub-grade treatment is the Modification of roadbed Material by stabilization.

3. Sub-base. The sub-base is one or more layers of specified material thickness placed on a sub-grade to support a base course (or in the case of rigid pavement, the Portland cement concrete slab).

4. Base Course. The base course is the layer or layers of specified or selected Material of designated thickness placed on a sub-base or a sub-grade to support a surface course.

5. Surface Course. A surface course is the Layer(s) of a Pavement Structure designed to accommodate the traffic load, the top layer of which resists skidding, traffic abrasion, and the disintegrating effects of climate. The top layer is sometimes called the "Wearing Course".

Plans. Plans are the Contract drawings, typical sections, and supplemental drawings, or exact reproductions thereof, which show the location, character, dimension, and details of the Work to be done, and which are considered to be a part of the Contract.

Profile Grade. A Profile Grade is the elevation of the trace of a vertical plane intersecting the top surface of the finished grade, usually along the longitudinal centerline of the Surface Course.

Project. A Project refers to a specific section of highway or other public improvement together with all appurtenances and construction to be performed thereon under the Contract. The Project may include work performed by others under other contracts.

Proposal. A Proposal is a written offer by a Bidder on Bid Proposal Forms furnished by the Department to perform the Work. The Proposal includes the Bid Proposal Form and all documents submitted by the Bidder, and incorporates by reference all of the documents in the Bid Proposal.

Proposal Guaranty. A Proposal Guaranty is the security furnished with a Proposal to ensure that the Bidder will enter into the Contract if the Contract is Awarded.

Responsive Bid. A Responsive Bid is a Proposal that complies with all requirements of the Initiation to Bid.

Responsible Bidder. A Responsible Bidder is a Bidder determined by the Department to possess the potential to perform the Work.

Right-Of-Way. "Right-of-Way" is a general term denoting land, property, or an interest therein possessed by the Department or other entity that was acquired for or devoted to transportation purposes. Rights-of-Way identified in the Contract documents are presumed to belong to the Department unless the Contract documents identify such Rights-of-Way as belonging to another entity.

Schedule of Items. The Schedule of Items is the list of Contract Items of Work contained in the Bid Proposal on which Bidders submit their bid prices.

Schedule of Work. The Schedule of Work refers to the approved progress Schedule submitted by the Contractor containing dates of commencement and Completion of the various items of Work within the Contract Time.

Secretary. The Secretary is the Secretary of the Department of Transportation of the State of Delaware.

Section. When referring to the Specifications, a numbered article or group of related articles forming a part of the Specifications is considered a Section.

Specifications. Specifications are those parts of the Contract that are the compilation of provisions and requirements for the performance of the prescribed Work.

1. Standard Specifications are a book of specifications approved for general application and repetitive use.

2. Supplemental Specifications are approved additions and revisions to the Standard Specifications that are published by the Department and are part of the Bid Proposal.

3. Special Provisions are special directions, provisions, or requirements particular to the Project not otherwise detailed in the Standard or Supplemental Specifications.

Standard Construction Details. Standard Construction Details are drawings of standard details of construction that have been adopted by the Department for miscellaneous items of Work and are a part of the Bid Proposal.

State. State refers to The State of Delaware.

Structures. Structures are Bridges, Culverts, Embankments, storm sewer appurtenances, slope and retaining walls, sign support Structures, buildings and other similar items.

Subcontractor. A Subcontractor is an individual or legal entity contracting with the Contractor or another Subcontractor to perform any part of an Item of Work of the Contractor's Contract with the Department. Subcontractors are subject to the requirements of Section 108.01.

Exceptions to this definition are suppliers limited to delivering and depositing, but not incorporating, Material; suppliers of services that transport Material; and Work performed which does not physically advance the Completion of the Contract and is not considered as an Item of Work.

Substantial Completion. Substantial Completion is the point at which all Contract Items are complete as deemed by the Department excluding any warranties or vegetation growth.

Substructure, Bridge. The Substructure of a Bridge is all of the structure below the bearings of simple and continuous spans, skewbacks of arches, and tops of footings of rigid frames, including backwalls and wingwalls.

Superintendent. A Superintendant is the Contractor's authorized representative in responsible charge of the Work.

Superstructure, Bridge. The Superstructure of a Bridge includes the approach slabs and the entire Structure except the Substructure.

Supplemental Agreement. A Supplemental Agreement is a written agreement signed by the Department and the Contractor for the performance of Work which is beyond the scope of the original Contract, but which the Department elects to perform in conjunction with the existing Contract.

Surety. A Surety is the legal entity or individual other than the Contractor, authorized to do business in the State, executing a Bond furnished by the Contractor.

Unbalanced Bid, Materially. A Materially Unbalanced Bid is a Proposal that generates a reasonable doubt that Award to the Bidder submitting a Mathematically Unbalanced Bid will result in the lowest ultimate cost to the Department.

Unbalanced Bid, Mathematically. A Mathematically Unbalanced Bid is a Proposal containing Contract Items that do not reflect the Bidder's reasonable actual costs plus a reasonable proportionate share of the Bidder's anticipated profit, overhead costs, and other indirect costs.

Unit Price. A Unit Price is the price provided by the Contractor in the Proposal for a Contract item.

Work. Work is the furnishing of all labor, Materials, Equipment, and other incidentals necessary to complete the Contract.

Working Day. A Working Day is any Calendar Day, except: 1) Saturdays, Sundays, and Holidays; 2) Calendar Days where conditions identified in the Contract require the Contractor to suspend construction operations; 3) Calendar Days with inclement weather that prevent prosecution of the scheduled Work; and 4) Calendar Days from December 16 to March 15 inclusive. On inclement weather Days that result in partial prosecution of the Work, partial Working Days will be charged as determined by the Engineer. Partial Working Days will be charged in one-quarter day increments. If the Contractor receives permission from the Engineer to perform Work on any Saturday, Sunday or Holiday, full Working Days will be charged, weather permitting. Should the Contractor prepare to begin Work on any Day on which inclement weather prevents the Work from beginning at the usual starting time and the crew is dismissed as a result, the Contractor will not be charged for a Working Day whether or not conditions change during the day and the rest of the day becomes suitable for construction operations.

Working Drawings. Working Drawings include stress sheets, shop drawings, erection plans, Falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

Section 102 - Bidding Requirements and Conditions

102.01 Registration of Bidders
102.02 Contents of the Proposal
102.03 Issuance of the Proposal
102.04 Interpretation of Quantities in the Bid Proposal Form
102.05 Examination of Plans, Specifications, Bid Proposal, and Site of Work
102.06 Preparation of the Proposal
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102.10 Withdrawal or Revision of Proposals
102.11 Public Opening of Proposals
102.12 Disqualification of Bidders
102.13 Rejection of Proposal
102.14 Materials Guaranty

102.07 Irregular Proposals
102.08 Proposal Guaranty
102.15 Non-Collusive Bidding Certification

102.01 Registration of Bidders. Obtain registration status prior to submitting a Proposal. In order to obtain registration status, provide the Department with the information requested on the registration form provided by the Department.

Upon receipt of this information, the prospective Bidder will be listed on the Department's registry. Provide the Department on a continuous basis any changes to the information contained in the registry. Failure to provide current information may result in the loss of bidding privileges.

102.02 Contents of the Bid Proposal. The Bid Proposal will state the location and description of the contemplated Work, show the estimate of the various Pay Item quantities, and show the kinds of Work to be performed and/or Materials to be furnished. A Schedule of Items for which Unit Prices are invited will be included along with the specified Time in which the Work must be completed, amount of the Proposal Guaranty, and the date, time, and place of the opening of Bid Proposals. If the basis of Bid Proposal comparisons by the Department is to be other than total cost, the comparison basis to be used will be defined. The Bid Proposal will also include or designate any Addenda, Supplemental Specifications, Special Provisions, and any other specifications or requirements that vary from or are not contained in the Standard Specifications.

All papers bound with or attached to the Bid Proposal are part of the Proposal. The Plans, Specifications, and other documents incorporated by reference in the Bid Proposal are part of the Proposal whether attached or not.

102.03 Issuance of the Bid Proposal. Potential Bidders must contact the Department in order to receive a CD that contains the Bid Proposal. The Department does not provide printed Bid Proposals; bidders are able to print from the CD. The Bid Proposal is also available on the internet at the state's Bid Solicitation Directory; however, the Website Bid Proposal is not valid for submitting bids and the Website documents are marked as such. The Department does provide a printed set of plans and specifications for viewing in the Bidder's Room at the DelDOT Administration Building in Dover. The Department will furnish a Bid Proposal to each prospective bidder. The Department reserves the right to refuse to issue a Proposal to a Bidder for any of the reasons stated in Section 102.12. Pay the Department a non-refundable sum stated in the Advertisement for each copy of the Bid Proposal.

All addenda are posted on the internet at the State's Bid Solicitation Directory and are included by reference in the Bid Proposal. The Bidder is responsible to check the website as needed to ensure that the Bidder is aware of addenda that are included in the Contract. If Addenda are issued, the final Addendum will be posted no later than the end of the day two working days prior to the bid date. Each Addendum number and date must be entered on the submitted Certification Form.

102.04 Interpretation of Quantities in the Bid Proposal Form. The quantities appearing in the Bid Proposal Form are estimates used for the bid comparison. Payment to the Contractor will be made for the actual quantities of Work performed and accepted, or for Materials furnished in accordance with the Contract. The estimated quantities of Work to be performed and Materials to be furnished may be increased, decreased, or eliminated in their entirety.

102.05 Examination of Plans, Specifications, Bid Proposal, and Site of Work. Examine the site of the proposed Work, the Bid Proposal, and all Items designated in the Bid Proposal before submitting a Proposal. The Bidder assumes responsibility for all site conditions that should have been discovered had a reasonable site investigation been performed, whether or not the Bidder actually performed the investigation. The submission of a Proposal will be considered conclusive evidence that the Bidder is aware of and accepts the conditions to be encountered in performing the Work and the requirements of the proposed Contract.

Boring logs and other records of subsurface investigations, when such investigations have been performed, are available for inspection by Bidders. It is understood that such information was obtained and used for Department design and estimating purposes only. The information is made available to Bidders so that all Bidders have access to subsurface information identical to that available to the Department and to other Bidders, and such information is not intended as a substitute for the personal investigation, interpretations, and judgment of the Bidders.

The Department will not be bound by any statements or representations concerning site conditions or descriptions of the Work unless they are included or designated in the Bid Proposal. Oral explanations or instructions given before the bid of the Contract by Department employees or agents will not be binding.

Submit any request for explanation of the meaning or interpretation of the Bid Proposal or Items designated in the Bid Proposal in writing to the Department's e-mail address listed in the Bid Proposal no less than six business Days prior to the Proposal opening date. Interpretations or explanations made by the Department in response to questions asked by prospective Bidders will be dated and posted periodically on Delaware's Bid Solicitation Directory Website. The final questions and answers document will be posted on the Website no later than the end of the day two business Days prior to the bid date. The final posted date must be entered on the submitted Certification Form. All questions and answers posted by the Department on the Website are included in the Contract by reference and become part of the Bid Proposal. The Bidder to whom the Contract is Awarded will receive a hard copy of the final posted questions and answers.

102.06 Preparation of the Proposal. Submit the Proposal either upon the Bid Proposal Forms, or upon approved electronic media as directed by the Contract Documents. When using approved electronic media to submit bids, provide both the electronic copy and a hard copy of the bid unless otherwise directed by the Proposal. Detach the Bid

Proposal Forms from the Bid Proposal. Specify a Unit Price in figures for each Contract Item for which a quantity is given and show the product of the respective Unit Price and quantities typewritten or electronically printed in figures in the column provided. The total amount of the Proposal is to be obtained by adding the amounts of the several Contract Items. Type or print the figures onto the form. In case of a discrepancy between the typewritten Unit Prices and the typewritten or electronically printed bid amount, the Department will use the typewritten or electronically printed Unit Prices. In case of a discrepancy between the Unit Prices contained on the approved electronic media and the Unit Prices on the hard copy generated by the electronic medium, the Department will use the hard copy Unit Prices.

Execute last minute handwritten substitutions of the typewritten or electronically printed Unit Prices on the typewritten Bid Proposal Forms or hard copy generated by the approved electronic media by striking a single line through the figure being substituted and legibly writing the new Unit Price in ink. Initial each last minute substitution. Legibility of the substitution will be solely determined by the Department.

Acknowledge all Department addenda to the Bid Proposal, including questions and answers, in the certification form provided by the Department and submit the form with the modified Bid Proposal Forms. The Proposal submitted must be signed in ink by a representative of the Bidder authorized to execute Proposals. Provide the name and address of the individual signing the Proposal as well as the following names and addresses as applicable:

Type of Bidder	***Names and Office Addresses Required***
Individual	Individual
Partnership	Each member of the partnership
Joint Venture	Each member or officer of firms represented in the joint venture
Corporation	Corporation officer, corporate name, and corporate address

Bid Proposals, Bid Proposal Forms and approved electronic media are serially numbered and are not transferable. Unless otherwise provided in the Proposal, joint ventures may submit a Proposal for a joint venture of Bidders qualified for that Project on a Bid Proposal issued to the joint venture or on a Bid Proposal issued to any one of the joint participants. The Proposal must be signed by each covenant followed by the title "Joint Venturer".

102.07 Irregular Proposals. Proposals will be considered irregular and will be rejected as non-Responsive for any of the following reasons:

A. The Proposal is on a form (or in a format if computer generated) other than that approved by the Department, or if the form is altered or any part detached or incomplete.

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

C. The Bidder adds provisions reserving the right to accept or reject an Award, or to enter into a Contract pursuant to an Award.

D. If the Bidder specifies a Unit Price of zero or fails to provide a Unit Price for every Pay Item indicated.

E. The Proposal does not include the Bid Documentation in a sealed container and the affidavit of Bid Documentation if required by the Contract.

F. The Proposal is Materially Unbalanced.

G. If any last minute hand written substitution of any Unit Price is illegible, as determined by the Department, or is not initialed by the Bidder authorizing the substitution.

H. The Bidder fails to provide a Proposal Guaranty.

I. The Bidder fails to sign the non-collusive bidding certification.

J. The Proposal fails to comply with any other material requirements of the Invitation for Bids.

K. A bid will be held to be non-Responsive and not considered if specific DBE information is not provided at the time of bid: failure to present written and notarized assurance that the goals on the Contract will be met or failure to include Good Faith Effort Documentation in place of assurance; or, failure to present written copies of all DBE subcontracts within the prescribed number of Calendar Days after the bid opening.

102.08 Proposal Guaranty. All bids shall be accompanied by a deposit of either a good and sufficient Bond to the State for the benefit of the agency involved, with a corporate Surety authorized to do business in this State, or a security of the Bidder assigned to the Department. The form of the Bond and the Surety to be used must be approved by the Department. The Department will provide a Bond form that complies with the requirements of 29 Del.Code Sec. 6962(d)(8)(a). The sum of the Proposal Guaranty must be equal to at least 10% of the bid. The Bid Bond need not be for a specific sum, but may be stated to be for a sum equal to 10% of the bid to which it relates and not to exceed a certain stated sum, if said sum is equal to at least 10% of the bid. "Securities" include certified checks, cashier's checks, treasurer's check, and other negotiable or transferable instruments evidencing an unconditional debt to the State or Department.

102.09 Delivery of the Proposal. Place the Proposal in a sealed envelope and plainly mark the envelop to indicate its contents, including the Contract designation and the name and address of the Bidder. Deliver Proposals prior to the time and to the place specified in the Advertisement. The Bidder bears the risk of delays in delivery.

Proposals received after the specified time will be returned to the Bidder unopened. Proposals must be delivered to:

Contract Administration
DelDOT Administration Building
800 Bay Road
Dover, DE 19903

102.10 Withdrawal or Revision of Proposals. A Bidder may withdraw or revise a Proposal after it has been delivered to the Department, provided the request for withdrawal or revision is received by the Department in writing or in person with proper identifications before the time set for receipt of Proposals. When the Proposals have been read, any low Bidder may withdraw any other unopened Proposal which it may have submitted for another Contract.

Any Bidder exercising the privilege of so withdrawing its Bid or Bids waives all claims that may arise should it be found that its opened Proposal is irregular or, for any reason, is unacceptable to the Department.

102.11 Public Opening of Proposals. Proposals will be opened and read publicly at the place and time set for the opening of the Proposal by the Department.

102.12 Disqualification of Bidders. The Department may disqualify a Bidder and reject future submissions of Proposals from that Bidder until the Bidder is reinstated as a registered Bidder for the following reasons:

1. The Bidder has defaulted on previous Contract(s).

2. Unsatisfactory past performance evaluations(s) as determined and documented by the Department.

3. Failure to submit required Contract release documents, such as Certification of Payment (CN-91), Release of Contractor (CN-102), Release of Subcontractors (CN-103), or failure to sign a Contract final Change Order for a completed Contract.

The Department requires all releases within 90 Calendar Days after the date of the final Change Order or date of the acceptance of the Contract, or within 30 Calendar Days following the resolution of any Contract claims, whichever is later.

102.13 Rejection of Proposal. The Department may reject a Proposal for any of the following reasons:

1. The bidder has submitted more than one Proposal for the same Work from an individual, firm, or corporation under the same or different name.

2. Participants have colluded with other Bidders.

3. Work by the Bidder remains uncompleted which, in the judgment of the Department, might hinder or prevent the timely Completion of further Work if Awarded.

4. Failure of a Bidder to pay or satisfactorily settle all bills due for labor and Materials on Contracts current at the time of bidding.

102.14 Materials Guaranty. The successful Bidder may be required to furnish a complete statement of the origin, composition, and manufacture of Materials used in the construction of the Work, together with a sample to be tested for conformance with the Contract provisions.

102.15 Non-Collusive Bidding Certification. Every Proposal submitted to the Department shall contain a Non-Collusive Bidding Certification subscribed to and affirmed by the Bidder as true under the penalties of Law. Sign the certification, and submit with the Bid Documents.
A Bid Proposal will not be considered for Award nor will any Award be made without a valid certification as provided above.
If the Bidder cannot make the foregoing certification, furnish with the Proposal a signed statement which sets forth in detail the reasons why the certification cannot be made. Where the Bidder has not complied with the provisions of the certification, the Department will neither consider the Proposal for Award nor Award the Proposal unless the Department determines that such disclosure was not made for the purpose of restricting competition.
The fact that a Bidder has 1) published price lists, rates, or tariffs covering items being procured, 2) informed prospective customers of proposed or pending publication of new or revised price lists for such items, or 3) sold the same items to other customers at the same prices being bid does not constitute a disclosure within the meaning of the certification above.

Section 103 - Award and Execution of the Contract; Escrow of Bid Documentation

103.01	Consideration of Bids	**103.06**	Withdrawal of a Bid
103.02	Award of the Contract	**103.07**	Execution and Approval of the Contract, Proof of Insurance
103.03	Cancellation of an Award	**103.08**	Failure to Execute the Contract
103.04	Return of the Proposal Security		
103.05	Performance and Payment Bonds	**103.09**	Escrow of Bid Documentation

103.01 Consideration of Bids. After the Proposals are opened and read, the Department will compare the Proposals on the basis of the summation of the products of the quantities and the Unit Prices unless otherwise defined in the Bid Proposal. The results of the comparison will be available to the public upon Award of the Contract. In the event of a discrepancy between Unit Prices and extensions, the Unit Prices govern. The Department reserves the right to reject Proposals, waive technicalities, proceed to perform the Work otherwise, or advertise for new Proposals. Unit Bid Prices may also be affected by maximum price provisions noted elsewhere in the Contract Documents.

In such cases, upon discovery of a discrepancy, the Department will adjust the Unit Bid Price to conform to the maximum permissible Bid Price.

103.02 Award of the Contract. The Award of the Contract will be made within 30 Days after the opening of the Proposals to the Responsible Bidder who submits the lowest Responsive Proposal. The successful Bidder will be notified by letter or electronic means of the acceptance of the Proposal and the Award of the Contract. By mutual consent, the Department and the lowest Responsible Bidder can agree to extend the time within which the Department may make an Award.

103.03 Cancellation of an Award. The Department reserves the right to cancel the Award of any Contract before execution without liability.

103.04 Return of the Proposal Security. Proposal securities, except that of the lowest Bidder, will be returned upon Award of the Contract, but in no event, later than 30 Days after opening of the Bid Proposals. The retained Proposal Guaranty of the lowest Bidder will be returned after the satisfactory Contract performance and Payment Bond has been furnished and the Contract has been executed. A Contractor will not be released from the obligations to provide a satisfactory performance bond and execute the Contract because of an alleged error in the preparation of the Proposal unless the Department retains the Proposal Guaranty.

103.05 Performance and Payment Bonds. Simultaneous with the execution of the Contract, furnish a Surety Bond or Bonds in a sum equal to 100% of the Contract price to the State. The Bond shall be for the benefit of the Department, as well as for the use and benefit of the Division of Revenue of the State in the case of claims under this Bond for any and all taxes due to the State. The Bond shall be issued by a corporate Surety authorized to do business in this State.

On a form provided by the Department, obtain a release from the Division of Revenue indicating that all tax obligations for the Division of Revenue have been satisfied. Present this form to the Department as a condition for the release of Bond.

The Bond shall be conditioned upon the faithful compliance and performance by the successful Bidder of each and every term and condition of the Contract, at the time and in the manner prescribed by the Contract, including the payment in full to every person furnishing Material or performing labor or services in the performance of the Contract, and of all sums of money due the furnishor for such labor, services, or Material. The Bond shall also contain the successful Bidder's guarantee to indemnify and save harmless the State, the Department and the Department’s employees from all costs, damages, and expenses growing out of or by reason of the successful Bidder's failure to comply with applicable laws and regulations and failure to perform the Work and complete the Contract in accordance with the terms and conditions of the Contract.

The Bond shall provide that every person furnishing Materials or performing labor for the successful Bidder under the Contract may maintain an action on the Bond for its

own use in the name of the State in any court of competent jurisdiction, for recovery of such sum or sums of money as may be due the person from the successful Bidder.

The form of such Bond will be provided by the Department. The Surety must also be acceptable to the Department.

103.06 Withdrawal of a Bid. If, at any time after the acceptance of bids by the Department and before full execution of the Contract, the low Bidder determines a need to withdraw its bid, put the request in writing to the Department's representative stating its reason(s) for such withdrawal. The Department reserves the right to accept/reject the Bidder's request to withdraw upon review of the merits. The Department reserves the right to retain the Bid Bond or certified check in full or in part as liquidated damages. The Department may then proceed to the next lowest Responsive Bidder, or reject all Proposals and re-advertise for new Proposals.

103.07 Execution and Approval of the Contract; Proof of Insurance. Return the signed Contract and Contract Bond to the Department within 20 Days after the notice that the Contract has been Awarded. If the Contract is not executed by the Department within 15 Days following receipt of the signed Contracts and Bonds, the Bidder has the right to withdraw the bid without penalty or liability. The Contract will not be considered effective until it has been fully executed by all parties to the Contract.

If the successful Bidder is a non-resident corporation, provide proof of compliance with the requirements of Subchapter XIV of Title 8 of the Delaware Code, and as further amended at the time of bid.

Maintain insurance in compliance with the requirements of Sections 2502 and 2503, Title 30 of the Delaware Code. Provide a certificate of insurance to the Department prior to the Execution of the Contract. If the Contract requires the Contractor to provide coverage for additional insureds, provide proof of additional insureds. The Department will not execute the Contract until an acceptable proof of insurance is provided.

103.08 Failure to Execute a Contract. Failure by the successful Bidder to execute the Contract and file an acceptable Bond within 20 Days after the Notice of Award will be considered a revocation of the Notice of Award and a forfeiture of the Proposal Guaranty to the Department. Contract Award may then be made to the next lowest Responsible and Responsive Bidder or the Work may be re-Advertised.

103.09 Escrow of Bid Documentation. If required by the General Notices, Special Provisions, or other language in the Bid Proposal that is specific to a particular Contract, submit to the Department legible copies of the Bid Documentation as set forth in this Section.

A. *Scope and Purpose*. The purpose of escrowing Bid Documents is to preserve all of the Contractor's Bid Documents for joint use by the Contractor and the Engineer in

the resolution of any disputes, claims, arbitration proceeding, litigation or negotiation arising from this Contract.

B. *Submittal, Escrow and Return of Bid Documentation*. Prior to the execution of the Contract, submit the Bid Documentation in a sealed container to the Department. Clearly mark the container "Bid Documentation" and show on the face of the container the Contractor's name, address, date of submittal, the Contract number and the Project designation. The Department and the Contractor will jointly deliver the sealed container and an affidavit per Section C. below to a banking institution or other bonded document storage facility selected by the Department for placement in a safety deposit box, vault or other secure accommodation. The escrowed bid documents will remain in escrow subject to the terms of this Section until all of the following have occurred:

a. One hundred eighty Days have elapsed from Final Acceptance;

b. All disputes between the Department and the Contractor arising from or related to this Contract have been settled or resolved; and

c. Final payment is made by the Department and accepted by the Contractor.

C. *Affidavit*. Submit an affidavit on a form provided by the Department, signed under oath by a representative of the Contractor authorized to execute bidding Proposals, listing each bid document submitted by author, date, nature and subject matter. Attest that (1) the affiant has personally examined the Bid Documentation, 2) the affidavit lists all of the documents relied upon by the Contractor in preparing the Proposal for the Project, and (3) all such Bid Documentation is included in the sealed container submitted to the Department. Include the signed affidavit with the sealed container submitted to the Department per Section B.

D. *Representation of Accuracy by the Contractor*. The Contractor represents and warrants that the escrowed bid documents provided with the Proposal constitute all of the information used in the preparation of its Proposal and agrees that no other Proposal preparation information will be considered in resolving disputes or claims. The Contractor also agrees that the escrowed bid documents are not part of the Contract and that nothing in the escrowed bid documents shall change or modify the Contract.

E. *Contents and Form of the Escrowed Documents*. Clearly itemize in the escrowed bid documents the estimated costs of performing each aspect of the Work required by the Contract Documents. Separate all Work into sub-items as required to present a complete and detailed estimate of all costs. Detail all crews, Equipment, quantities and rates of production. Further divide estimates of costs into the Contractor's usual cost categories such as direct labor, repair labor, Equipment ownership and operation, expendable Material, permanent Material, and subcontract costs. Clearly identify allocations of plant and Equipment, indirect costs, contingencies, markup, and other items to each direct cost item. Include all assumptions, quantity takeoffs, rates of production and progress calculations, quotes from Subcontractors and

suppliers, memoranda, narratives and all other information used by the Contractor to arrive at the Bid Price for the Contract.

Submit the escrowed bid documents in the format actually used by the Contractor in preparing the Proposal. The Department does not intend for the Contractor to perform any extraordinary Work in the preparation of these documents prior to the Proposal due date. However, the Contractor represents and warrants that the escrowed bid documents related to the Proposal have been personally examined prior to delivery to escrow by an authorized officer of the Contractor and that such documents meet the requirements of this Section.

F. *Changes to the Contract*. The Department may require all documentary information used in preparation of the quotation of prices for Additional or Extra Work performed on the Contract. If required, the Engineer will request the documents in writing and the Contractor and Engineer will place the additional documents in the sealed container held in escrow. Documents supporting new prices will be subject to all of the requirements of this specification.

G. *Availability for Review*. The escrowed bid documents shall be available for joint review by the Department and the Contractor for the resolution of disputes and the negotiations of changes to the Contract. The Department will be entitled to review all or any part of the escrowed bid documents in order to determine the applicability of the individual documents to the matter at issue. The Department will be entitled to make and retain copies of such documents as it deems appropriate in connection with any such matters, provided that the Department has executed and delivered to the Contractor a confidentiality agreement specifying that all proprietary information contained in such documents will be kept confidential; that copies of such documents will not be distributed to any third parties other than the Department's agents, attorneys, auditors, and experts who are aiding the Department in resolving the issue at hand; and that all documents and copies of documents will be returned to the depository upon resolution of the issue. The Contractor agrees to waive the right to use any Bid Documentation other than that placed in escrow to resolve all disputes arising out of the Contract. The foregoing shall in no way be deemed a limitation on the Department's discovery rights with respect to such documents.

H. *Confidentiality of Bid Documentation*. The escrowed bid documents are and shall always remain the property of the Contractor subject to the Department's right to review them as provided herein. The Department acknowledges that the Contractor may consider that the escrowed bid documents constitute trade secrets or proprietary information. The Department further acknowledges that the Contractor expended money in developing the information included in the escrowed bid documents and that it would be difficult for a competitor to replicate the information contained therein. The Department acknowledges that the escrowed bid documents and the information contained therein are being provided to the Department only because it is an express prerequisite to execute this Contract. Thus, the escrowed bid documents will at all times be treated as proprietary and confidential information and will be used only for the purposes described herein. At the Contractor's request, confidentiality agreements will

be executed and delivered to the Contractor by the Department's employees or agents who review or have access to the escrowed bid documents.

I. *Refusal or Failure to Provide Bid Documentation and Review by the Department*. Failure to provide Bid Documentation will render the Proposal non-Responsive and the Contractor shall forfeit the Proposal Guaranty in accordance with Section 103.08. The Department may, at any time, conduct a review of the Escrowed Proposal Documents to determine whether they are complete. In the event the Department determines that any data is missing, provide such data within three Working Days of the request and at that time it will be date stamped, labeled to identify it as supplementary material, and added to the escrowed bid documents. The Contractor shall have no right to add documents to the escrowed bid documents except upon the Department's request.

J. *Cost and Escrow Instructions*. The costs for complying with this Section are incidental to the Contract. The cost of the storage of bid documents will be borne by the Department. The Department will provide escrow instructions to the document depository consistent with this Section.

Section 104 – The Contractor's Responsibility for the Work; Changes to the Contract; Suspension of Work; The Use of Bridges During Construction

104.01 Intent of the Contract
104.02 Existing Signs
104.03 Bus Stops
104.04 Accident Notification
104.05 Contract Revisions, Changes in the Character of Work, and Major and Minor Items
104.06 Differing Site Conditions
104.07 Suspension of Work
104.08 Notification Requirements for Differing Site Conditions, Changes in the Character of the Work and Extra Work
104.09 Maintaining Traffic
104.10 Rights In and Use of Materials Found on the Work
104.11 Additional Utility Relocations Required by the Department; Restoration of Surfaces Opened by Permit
104.12 Value Engineering Proposals (VEP) by the Contractor
104.13 Final Cleaning of Project Site; Maintenance and Cleanup of Staging areas
104.14 Contractor's Responsibility for the Work
104.15 Required Notifications for Disturbing Property and Using Bridges

104.01 Intent of the Contract. Cooperate with the Engineer to complete the Work described in a manner that is safe and poses the least practicable impact to the flow of vehicular and pedestrian traffic. Furnish all labor, Materials, Equipment, tools, transportation, and supplies required to complete the Work in accordance with the

Contract. Perform all alterations to the Contract or requests for Extra Work from the Engineer in accordance with the terms of the Contract.

104.02 Existing Signs. Inventory all existing signs (i.e., Traffic, Bus Stops, Street Names, etc.) within the limits of the Contract with the Engineer prior to commencing the Work. Maintain necessary traffic signs as directed by the Engineer during construction, and properly store all other signs. Return all stored signs to the Engineer at the end of the Project. The Contractor is responsible for any loss of, or damage to, stored signs throughout the duration of the Project.

104.03 Bus Stops. Maintain bus stops as prescribed in Section 743.

104.04 Accident Notification. Immediately notify DelDOT's Transportation Management Center (TMC) at 302-659-4600 and the Engineer's site representative of any incidents resulting in damage to property or personal injury occurring within the limits of the Project.

104.05 Contract Revisions, Changes in the Character of the Work and Major and Minor Items. The Department reserves the right at any time prior to the Completion of the Contract to issue plan revisions, make adjustments in Contract Item quantities, or make such other alterations considered necessary to satisfactorily complete the Contract. Perform the revised Work immediately upon receiving direction from the Engineer to do so. The Engineer will pay for the revised Work at the Contract Unit Prices unless the revision results in a change to the character of the Work as defined below. In the case of a change to the character of the Work, the Engineer may revise the Contract as specified in Section 109.04. If the determination that the character of the Work has changed is based solely upon Section 104.05A(2), the change to the Unit Price applies only to that portion in excess of 125% of the original Contract Quantity, or in the case of a decrease below 75%, to the actual amount of Work performed under the Item.

Payment for Contract revisions or changes in the character of the Work will exclude any amount for loss of anticipated profits alleged to result from the change. Changes to the Contract do not invalidate the Contract or release the Contract Surety. If, as a result of such changes, the Contractor requires additional time to complete the Work, request an extension of Contract Time. The Engineer will evaluate such a request and will grant an extension of Contract Time if the request is justifiable in accordance with Section 108.07. All Contract revisions will be issued in writing by the Engineer.

A. If the Engineer alters Contract quantities, the Work, or both as necessary to satisfactorily complete the Project, such an alteration changes the character of the Work if:

(1) The alteration requires the Contractor's means and methods in performing the Work to differ materially in kind or nature from that involved or included in the original Contract; or

(2) The alteration causes the quantity of a Major Item, as defined in Section 101.46, to increase in excess of 125 percent or decrease below 75 percent of the original Contract Quantity.

104.06 Differing Site Conditions. If Differing Site Conditions, as defined by Section 101.26, are encountered at the Project site, promptly notify the Engineer as specified in Section 104.08. Stop Work in the affected area and preserve the evidence of the alleged Differing Site Conditions so that the Engineer can investigate whether the conditions differ materially from those that the Contractor reasonably should have expected as defined in Section 101.26. Do not proceed with the Work in the affected area until the Engineer provides written notification to continue.

If the Engineer determines that the conditions differ materially from those that the Contractor should have reasonably expected as defined by Section 101.26, and such Differing Site Conditions caused an increase or decrease in the cost or time required for the Contractor to perform the Work, a written Adjustment will be made to the Contract by the Engineer. Adjustments in the Contract price for Differing Site Conditions will be made under Section 109.04, and Adjustments in Contract Time for Differing Site Conditions will be made under Section 108.07. No Adjustments in Contract Price will include loss of anticipated profits. The Engineer will notify the Contractor whether or not an Adjustment of the Contract is warranted.

No Contract Adjustment resulting in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice as specified in Section 104.08 and has afforded the Engineer an opportunity to investigate the alleged Differing Site Conditions before further disturbing the affected area.

104.07 Suspension of Work. The Engineer may suspend the Work in whole or in part by written order to the Contractor for any reason or condition that would be in the best interest of the Department. Immediately comply with the written order of the Engineer to suspend the Work in whole or in part.

If the delay resulting from the written suspension order is unreasonable, submit a written request for a Contract Adjustment to the Engineer within seven Calendar Days of the Engineer's order to resume Work providing the reasons and justification for the Adjustment. If:

1) an increase in the Contract performance cost or time results from an unreasonable delay caused by the suspension; and
2) the suspension was caused by conditions beyond the control and not the fault of the Contractor or those parties for whom the Contractor is responsible, then:

Adjustments in the Contract price, excluding profit, will be made according to Section 109.04 and Adjustments to Contract Time will be made according to Section 108.07. The Engineer will not adjust the Contract Time or price if the Work performance would have been suspended or delayed by any other cause under any other terms or conditions of the Contract or if the Contractor fails to submit a request for an Adjustment to the Contract within the allowable time prescribed above.

The Engineer may suspend the Work when the Contractor fails to perform any provisions of the Contract. In such a case, the Engineer will neither adjust the Contract Time nor Price nor will the Engineer pay for traffic control devices or maintenance of traffic during the suspension period. The Engineer will order the Work to resume when conditions are favorable as determined by the Engineer.

104.08 Notification Requirements for Differing Site Conditions, Changes in the Character of the Work and Extra Work. Immediately notify the Engineer of alleged changes to the Contract due to Differing Site Conditions; Extra Work; altered Work beyond the scope of the Contract; any delay that is compensable under the terms and conditions of the Contract; and/or action(s) or lack of action(s) taken by the Department that have allegedly changed the Contract terms and conditions.

A. No further Work is to be performed or Contract costs incurred on the change after the date the change occurs unless directed otherwise by the Engineer.

B. Within seven Days of the initial notification, provide the following information to the Engineer in writing:

1. The date of occurrence and the nature and circumstances of the occurrence that constituted the alleged change.

2. The name, title, and activity of each Department representative knowledgeable of the alleged change.

3. Copies or descriptions of any documents and the substance of any oral communications involved in the alleged change and the basis for an allegation of accelerated Schedule performance, if applicable.

4. The basis for an allegation that the Work is not required by the Contract, if applicable.

5. The particular elements of Contract performance for which additional compensation may be sought under this Section including:

a. Contract Item(s) that have been or may be affected by the alleged change.

b. Materials that were/will be added, deleted, or wasted by the alleged change and a list of Equipment that was/will be idled or required by the alleged change.

c. Labor that was/will be forced to remain idle on the jobsite as a result of the alleged change

d. Delay and disruption to the manner and sequence of performance that has been or will be caused by the alleged change.

e. Estimated Adjustments to Contract price(s), delivery schedule(s), staging, and Contract Time necessary due to the alleged change.

f. Estimate of the time within which the Department must respond to the notice to minimize cost, delay, or disruption of performance.

g. The failure of the Contractor to provide required notice in accordance with this Section shall constitute a waiver of any and all entitlement to Adjustments in the Contract Price or Time as a result of the alleged change.

C. Within ten Days after the receipt of notice, the Engineer will respond in writing to the Contractor to:

1. Confirm that a change occurred and, when necessary, direct the method and manner of further performance; or

2. Deny that a change occurred and, when necessary, direct the method and manner of further performance; or

3. Advise the Contractor that additional time is required to evaluate the allegation or that adequate information has not been submitted to decide whether 1. or 2. above applies, and indicate the needed information and date it is to be received by the Engineer for further review.

Any Adjustments made to the Contract will not include increased costs or time extensions for delays resulting from the Contractor's failure to provide requested additional information in accordance with this Section.

104.09 Maintaining Traffic. Keep all roads, driveways, entrances, sidewalks, trails and paths open to all vehicular, bicycle and pedestrian traffic during the construction unless otherwise specified in the Contract Documents. Submit a temporary traffic control plan for the Work at the preconstruction meeting. All temporary traffic control and temporary traffic control devices shall comply with the Contract Documents and with the latest edition of the Delaware Manual on Uniform Traffic Control Devices (MUTCD), including all revisions as of the date of the Advertisement of the Contract. The MUTCD is available for download at www.mutcd.deldot.gov.

104.10 Rights In and Use of Materials Found on the Work. The Engineer may authorize the Contractor's use of Materials found in the excavation. Payment will be made both for the excavation of such Materials at the corresponding Contract Unit Price and for the Contract Item for which the excavated Materials are used.

Replace the removed Material if necessary with acceptable Material at no cost to the

Department. Do not excavate or remove any Material from that is not within grading limits without written authorization from the Engineer.

104.11 Additional Utility Relocations Required by the Department; Restoration of Surfaces Opened by Permit. The right to construct or reconstruct any utility service in the highway or street or to grant permits to construct or reconstruct is, at any time during construction, hereby expressly reserved by the Department. The Contractor shall not be entitled to any damages for unauthorized digging or any delay occasioned thereby.

Any individual, firm, or corporation wishing to make an opening in the highway must secure a permit from the Department. Allow parties bearing such permits and only those parties, to make openings in the highway. When ordered, make all necessary repairs due to such openings and such necessary Work will be paid for as Extra Work or as provided in the Contract and will be subject to the same Contract conditions as the original Work performed.

104.12 Value Engineering Proposals by the Contractor. A Contractor may submit a request to modify the Contract Documents for the purpose of reducing the total cost and/or duration of Construction without reducing design capacity or the quality of the finished product. This request is called a Value Engineering Proposal (VEP). Any cost savings generated to the Contract as a result of a VEP offered by the Contractor and approved by the Department will be shared by the Contractor and the Department on a 50-50 basis. The purpose of a VEP is to encourage the use of the Contractor's ingenuity and experience in recommending approaches and methods differing from existing Contract Specifications that will reduce the overall cost and/or time of the Project.

Do not base Bid Prices on the anticipated approval of a VEP. If a VEP is rejected, complete the Work at the original Contract Bid Prices.

If the Department determines that the time for response indicated in the submittal under B.5. below is insufficient for review, the Contractor will be promptly notified. Based on the additional time needed by the Department for review and the effect on the Contractor's Schedule occasioned by the added time, the Department will evaluate the need for a time extension to the Contract. The Contractor shall have no claim against the Department for delays to the Contract based on the failure to respond within the time indicated in B.5. below if additional information is needed to complete the review. Until the proposal is accepted by the Department, remain obligated to the terms and conditions of the existing Contract.

A. **General Requirements.** The Department will only consider VEP's that could produce a savings in cost and/or time to the Department without impairing essential functions and characteristics of the facility, including but not limited to, service life, economy of operation, ease of maintenance, desired appearance, and safety.

B. **Submittal of a VEP.** Submit the following materials and information with each VEP:

1. A statement that the proposal is submitted as a VEP.

2. A description of the difference between the existing Contract and the proposed change, and the cooperative advantages and disadvantages of each, including effects on service life, economy of operations, ease of maintenance, desired appearance, and safety.

3. A complete set of the Plans and Specifications showing the proposed revisions relative to the original Contract features and requirements.

4. A complete analysis indicating the final estimated costs and quantities to be replaced by the VEP compared to the new costs and quantities generated by the VEP.

5. A statement specifying the date by which a Change Order adopting the VEP must be executed to obtain the maximum cost reduction during the remainder of the Contract.

6. A statement detailing the effect the VEP will have on the time for completing the Contract.

7. A description of any previous use or testing of the VEP and the conditions and results. If the VEP was previously submitted on another Department project, indicate the date, Contract number, and the action taken by the Department.

C. **Conditions.** A VEP will be considered only when all of the following requirements are met:

1. The VEP, whether approved or not approved by the Department, applies only to the ongoing Contract(s) referenced in the VEP and becomes the property of the Department. Include no restrictions imposed by the Contractor on the use or disclosure of the VEP or information within the VEP by the Department. The Department retains the right to use any VEP or part thereof on other projects without obligation to the Contractor. This provision is not intended to deny rights provided by law with respect to patented materials or processes.

2. If the Department is already considering certain revisions to the Contract or has approved certain changes in the Contract for general use that are subsequently incorporated in a VEP, the Department will reject the VEP and may proceed without obligation to the Contractor.

3. Have no claim against the Department for costs or delays due to the Department's rejection of a VEP, including but not limited to, development costs, loss of anticipated profits, increased material or labor costs.

4. The Engineer will be the sole judge as to whether a VEP qualifies for consideration and evaluation. It may reject any VEP for any reason, including, but not limited to, that the VEP requires excessive time or costs to review, evaluate, or investigate, or that the VEP is not consistent with the Department's design policies and criteria for the Project.

5. The Department will reject all or any portion of Work performed under an approved VEP if unsatisfactory results are obtained. The Department may direct the removal of such rejected Work and require the Contractor to proceed in accordance with the original Contract requirements without reimbursement for Work performed under the VEP, or for its removal. Where modifications to the VEP are approved to adjust to field conditions or other conditions, reimbursement will be limited to the total amount payable for the Work at the Contract Bid Prices as if it were constructed under the original Contract requirements or, in the case of a time-only VEP, the total amount of the VEP. The rejection of unsatisfactory VEP Work or limitation of reimbursement for such Work shall not constitute the basis of any claim against the Department for delays, delay costs, or for any other costs. Any changed conditions arising as a result of the acceptance of a VEP will not be considered as the basis for any claim for additional compensation.

6. Propose no Work containing experimental features; propose only proven features that have been used under similar or acceptable conditions on other projects or locations acceptable to the Department.

7. A VEP will not be considered if equivalent options are already provided in the Contract. The VEP must be sufficient to warrant a review and processing.

8. A VEP proposing to change the type or thickness of the Pavement Structure will not be considered.

9. Additional information needed to evaluate VEP will be provided in a timely manner. Untimely submittal of additional information will result in rejection of the VEP. Where design changes are proposed, the additional information could include results of field investigations and surveys, design computations, and field change sheets.

D. **Payment.** If the VEP is accepted, the changes and payment will be authorized by a Change Order. Reimbursement will be made as follows:

1. The changes will be incorporated into the Contract by changes in quantities of Unit Bid Items, and/or new agreed price Items, as appropriate, under the Contract.

2. The cost of the Value Engineering Work as determined from the changes will be paid directly. In addition, the Department will pay the Contractor 50% of the savings to the Department as reflected by the difference between the cost of the revised Work and the cost of the related construction required by the original Contract computed at Contract bid prices. If the VEP provides only a savings in time to the Department, there will be no sharing of savings between the Department and the Contractor.

3. The Contractor's costs for development, design, and implementation of the VEP are not eligible for reimbursement.

4. The Contractor may submit a VEP for an approved Subcontractor. Subcontractors may not submit a VEP except through the Contractor.

104.13 Final Cleaning of Project Site; Maintenance and Cleanup of Staging Areas. Before the Final Inspection of the Project, clean all rubbish, excess Materials, temporary Structures and Equipment from the Project, any publicly owned borrow source used to complete the Work, and all areas affected by the Contractor in connection with the Work within the Right-Of-Way. Trim all surfaces and slopes, whether old or new, to the cross-section. Cut all grass and weeds that are taller than 6" (150 mm), and leave all parts of the Work in an acceptable condition. The cost of the final cleanup is incidental to the Contract and no separate payment will be made.

Install erosion and sediment control measures that comply with stormwater regulations for all staging areas to the satisfaction of the Engineer. Restore all areas used for staging operations upon Completion of the Work. Restore paved staging areas to their original condition. Restore unpaved staging areas by re-grading and placing topsoil, seed and mulch to the satisfaction of the Engineer. Perform all restoration Work in accordance with Sections 202, 732, 734, and 735 of these Standard Specifications. All costs associated with restoration of staging areas and establishing an acceptable stand of grass are incidental to the Contract.

104.14 Contractor's Responsibility for the Work. Until the Contractor has achieved Substantial Completion, retain sole and absolute responsibility for the Work and provide for the protection and safety of all agents and employees of state and federal agencies, , Contractors, Subcontractors, suppliers, and members of the general public. In no case, including but not limited to, supervisory acts or administration of the Contract by the Engineer, will the Contractor be relieved of the responsibility to indemnify the Department pursuant to the provisions of the Contract.

Rebuild, repair, restore, and make good all losses, injuries, or damage to any portion of the Work under the control of the Contractor and/or due to his/her fault or inactivity, at no cost to the Department. Rebuild, repair, restore, and make good all losses, injuries, or damage to any portion of the Work, not under the control of the Contractor, under agreed Unit Prices or as Extra Work under Section 109.04. "Items not under the control of the Contractor" shall be defined for purposes of this Section as Acts of God such as earthquakes, tidal waves, tornadoes, or hurricanes; catastrophic conditions such as hazardous waste materials spills, explosions, etc., or acts of the public enemy or of governmental authorities.

In case of the suspension of Work, maintain responsibility for the Project and take such precautions as may be necessary to prevent damage to the Project, provide for normal drainage and normal traffic operations, and erect any necessary temporary Bridges, signs, or other facilities. During such period of suspension of Work, properly and continuously maintain in an acceptable growing condition all living Material in newly established plantings, seedings, and soddings furnished under the Contract, and take adequate precautions to protect new tree growth and other vegetative growth against injury.

104.15 Required Notifications for Disturbing Property and using Bridges. Give two weeks notice to property owners when any fixture, shrub, or other object must be removed from a Right-of-Way or easement area. If the owner does not attempt to salvage this property within the two week period, remove it without further obligation.

Before starting any Work that will change the loadings on an existing or proposed Bridge, inform the Engineer of the proposed loadings (axle spacing, axial loads, stockpiling and Equipment locations) including quantity of and type of construction Equipment and vehicles proposed for use. The loading that the Contractor's Equipment will apply to the Bridge will be subject to the approval of the Engineer. The Engineer's approval does not relieve the Contractor of its responsibility for the safe performance of the Work or from carrying out the Work in full accordance with the Plans and the requirements of the Specifications. If at any time the Contractor's upcoming operations would result in a change to the loading and / or the location of the loading on a Bridge, submit the proposed loadings for approval by the Engineer prior to changing the loading. Perform no Work that will change the loadings on any Bridge within the Contract limits until the Engineer's approval has been obtained. Review time will be in accordance with Section 105.04.

Section 105 – Responsibilities of the Department; Interpretation of the Contract Documents; Maintenance During Construction; Claims; Project Acceptance

105.01 Authority of the Engineer
105.02 Authority and Duties of Inspectors
105.09 Utilities within the Project Limits; Miss Utility One-Calls
105.10 Construction Stakes, Lines & Grades Provided by the Engineer

105.03 Inspection of the Work
105.04 Plans and Working Drawings
105.05 Conformity with the Plans and Specifications
105.06 Coordination of the Contract Documents; Duty to Report Errors to the Engineer; Use of Dimensions over Scaled Measurements
105.07 Copies of the Plans; Contractor's Supervision
105.08 Cooperation Between Contractors
105.11 Removal of Defective and Unauthorized Work
105.12 Load Restrictions
105.13 Maintenance During Construction
105.14 Opening Sections of the Project to Traffic
105.15 Claims for Adjustments and Resolution of Disputes
105.16 Project Acceptance; Partial Acceptance

105.01 Authority of the Engineer. The Engineer is the administrator of the Contract and not a supervisor of the Work. Perform all Work to the satisfaction of the Engineer, but maintain complete responsibility for the Work. The Engineer will decide all questions which may arise as to the quality and acceptability of Materials furnished and Work performed and as to the manner of performance and rate of progress of the Work; all questions which may arise as to the interpretation of the Plans and Specifications; all questions as to the acceptable fulfillment of the Contract on the part of the Contractor; all disputes and mutual rights between contractors; and all questions as to compensation. At the preconstruction meeting, the Engineer will determine and communicate to the Contractor the chain of command and the extent of authority Department personnel will have to make changes to the Contract during the life of the Contract.

The Engineer has the authority to suspend the Work, wholly or in part, due to the failure of the Contractor to correct conditions unsafe for the general public; for failure to carry out provisions of the Contract; for failure to carry out orders; for such periods as may be deemed necessary due to conditions the Engineer considered unsuitable for the prosecution of the Work; or for any other condition or reason deemed to be in the public interest.

The Engineer's authority to impose any Contract sanction, including suspension of the Work, withholding payments, or the like, will not relieve the Contractor of sole and absolute responsibility for the Project, performance of the Work, and the safety of workers and the general public. The Contractor saves the Department harmless pursuant to Section 107.10 for any violation, breach, or omission of the above Contract provision.

105.02 Authority and Duties of Inspectors. Inspectors acting under the authority of the Engineer are administrators of the Contract and not supervisors of the Work. Inspectors employed by or designated by the Department are authorized to inspect all Work performed and all Material furnished by the Contractor. Such inspection may

extend to all or any part of the Work and to the preparation, fabrication, or manufacture of the Materials to be used. The Inspector is not authorized to revoke, alter, or waive any requirements of the Plans or Specifications. The Inspector may call the attention of the Contractor to any failure of the Work or Materials to conform to the requirements of the Contract and will have the authority to reject Materials or suspend the Work until any questions at issue can be referred to and decided by the Engineer. Such inspection will not relieve the Contractor from the obligation to perform the Work in accordance with the requirements of the Contract.

The Inspector will in no case act as foreman or perform other duties for the Contractor, nor interfere with the management of the Work by the Contractor. Any advice which the Inspector may give the Contractor shall in no way be construed as binding the Engineer in any way or releasing the Contractor from fulfilling all of the terms of the Contract.

The Engineer may issue a written order to the Contractor to stop Work giving the reason for shutting down the Work. After placing the order in the hands of the Contractor's representative in charge at the Project Site or sending an electronic copy of such an order to a responsible party in the Contractor's organization, the Inspector will immediately leave the job, and in such cases Work performed by the Contractor during the absence of the Inspector will not be paid for and may not be accepted. The Engineer will identify the person(s) within the Department who have the authority to issue a stop work order at the preconstruction meeting for the Contract.

105.03 Inspection of the Work. Allow the Engineer access to all parts of the Work at all times for inspection. Furnish information and assist the Engineer as required to make complete and detailed inspections. Inspection may include mill, plant, or shop inspection; and/or any Material furnished under these Specifications. If the Engineer fails to reject defective Work or Materials, whether from lack of discovery of such defect or for any other reason, such initial failure to reject in no way prevents the later rejection of the Materials or Work when such defect is discovered, or obligates the Engineer to final acceptance. The Engineer is not responsible for losses suffered by the Contractor due to removals or repairs of such defects.

Remove or uncover portions of the finished Work as directed at any time before acceptance of the Work. After examination, restore those portions of the Work to the standard required by the Contract. If the exposed Work proves to be acceptable, the uncovering or removal and restoration will be paid as Extra Work. If the exposed Work proves to be unacceptable, the uncovering or removal and restoration shall be at the Contractor's expense.

Any Work performed or Materials used without supervision or inspection by the Department representative may be ordered removed and replaced at the Contractor's expense.

When any unit of government or political subdivision, utility company, or any railroad corporation pays a portion of the cost of the Work performed on this Contract, its

respective representatives have the right to inspect the Work. Such inspection shall not make any unit of government or political subdivision, utility company, or any railroad corporation a party to this Contract, and shall in no way interfere with the rights of either party hereunder.

105.04 Plans and Working Drawings. The Department will furnish Plans of sufficient detail to convey a comprehensive understanding of the Work specified. Furnish working drawings as required by the Engineer. Do not incorporate any changes from the requirements of the Contract in the working drawings unless the changes are specifically denoted, together with justification, and approved in writing by the Engineer. Any change from the requirements of the Contract shall be signed and sealed by a Professional Engineer registered in Delaware. Identify working drawings and submittals by the Contract number. Identify Items or component Materials by the specific Contract Item Number and Specification reference in the Contract.

The Contractor is responsible for the preparation of all working drawings. However, drawings submitted directly by the supplier or the Contractor's representative will be accepted by the Department, if the letter of submittal indicates that the Contractor has been notified of the submission.

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

Provide such details on working drawings as are required for successful prosecution of the Work. Include plans for items such as falsework, bracing, sheeting, shoring, cofferdams, formwork, masonry layout diagrams, and bending diagrams for reinforcing steel.

Submit copies of the manufacturer’s catalog cuts, drawings, wiring diagrams, etc. with working drawings for electrical and mechanical equipment. After all items of a particular system have been reviewed, prepare an "Instruction Book" especially for the system. Include in the "Instruction Book" an equipment list, a complete description of the equipment, the sequence of operation including inter-locking and protective features, the use of by-pass switches, and a detailed description of all wiring circuits. Also include in the book a recommended spare parts list, renewal parts bulletins, and instruction bulletins for the equipment furnished. Use diagrams and drawings of reduced size suitable for binding. Include a proper index listing all items. Properly fasten and bind in a suitable leather or heavy plastic cover book with a title clearly shown.

Prior to Final Inspection, supply five copies of the book to the Engineer. The books must be available during the period when electrical and mechanical systems are being connected and energized, and the final bound copies must reflect any changes or Adjustments made during this period.

Submit electronic copies of working drawings to the Engineer following the procedure

set forth at the preconstruction meeting. Should any questions arise as to the proper procedure for submitting working drawings, contact the Engineer for clarification. Returned drawings will be stamped as follows:

A. **"Returned for Resubmission".** In this case, revisions or corrections must be made, and the drawings resubmitted for review.

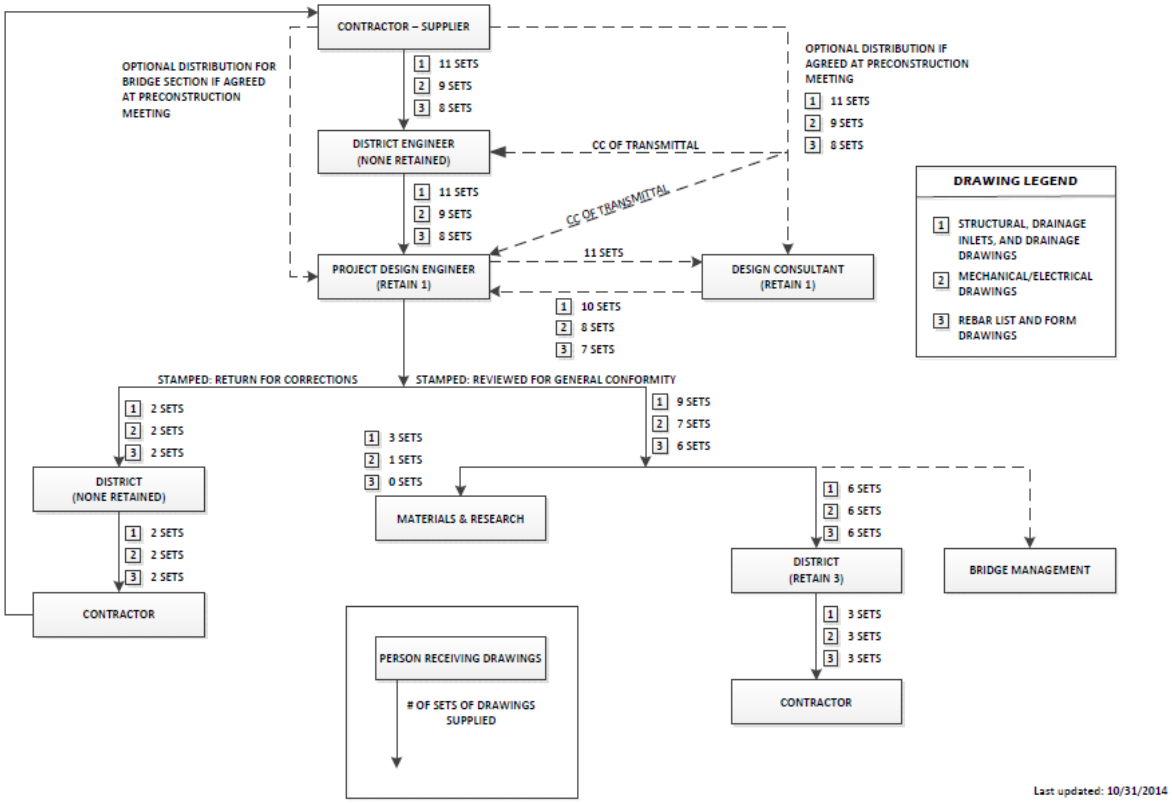
B. **"Reviewed for General Conformity with Plans and Specifications".** In this case, if the Contractor agrees with the comments, incorporate the comments and do not resubmit the drawings. If the Contractor does not agree with the comments, state the reason for disagreeing with the comments in writing and submit the reasons to the Department within ten Working Days after receipt of the Department's comments.

The Department does not review every detail of every working drawing or other submittal made by the Contractor. Consequently, responsibility for the completeness, accuracy, and conformance to Contract requirements of all submittals rests with the Contractor. The Department accepts no responsibility for the completeness and accuracy of approved submittals or the failure of approved submittals to conform to the requirements of the Contract.

Reviewed working drawings, submittals, or resubmittals will be transmitted to the Contractor within 45 Days from the date of receipt by the Department. If a railroad, the U.S. Coast Guard, Municipality, or other entity as specified in the Contract is required to review the working drawings, the reviewed working drawings will be returned within 60 Days from the date of receipt by the Department. If the working drawings are not returned by the time specified, no additional compensation will be allowed except that an extension of time in accordance with Section 108.07 will be considered.

The Department generally follows the submittal flowchart provided on the following page in reviewing and approving working drawings.

WORKING DRAWING SUBMITTAL PROCESS



Last updated: 10/31/2014

105.05 Conformity with the Plans and Specifications. Perform all Work and furnish all Materials in reasonably close conformity with the lines, grades, cross-section, dimensions, and Material requirements, including tolerances, shown on the Plans or indicated in the Specifications.

If the Engineer finds that the Materials or the finished product in which the Materials used are not within reasonably close conformity with the Plans and Specifications, but that reasonably acceptable Work has been produced, the Engineer will then make a determination if the Work will be accepted and remain in place. In this event, the Engineer will document the basis of acceptance which will provide for an appropriate Adjustment in the Contract price for such Work or Materials if deemed necessary by the Engineer.

In the event the Engineer finds the Materials or the finished product in which the Materials are used or the Work performed are not in reasonably close conformity with the Plans and Specifications, and the result is an inferior or unsatisfactory product, remove and replace or otherwise correct the Work or Materials at the expense of the Contractor. If provisions are included in the Contract for the acceptance of Materials or Work that are not in full compliance with the minimum requirements stated, adjust the pay per those provisions.

105.06 Coordination of the Contract Documents; Duty to Report Errors to the Engineer; Use of Dimensions over Scaled Measurements. Each individual Contract Document is an essential part of the Contract and a requirement occurring in one is binding as though occurring in all. All of the Contract Documents are intended to be complementary and to describe and provide for a complete Contract. In the case of a discrepancy between the Contract Documents the governing ranking will be:

1. General Description
2. General Notices
3. Plans
4. Special Provisions
5. Supplemental Specifications
6. Standard Construction Details
7. Standard Specifications

Do not take advantage of any apparent error or omission in the Contract. If the Contractor discovers an error or omission, promptly notify the Engineer. The Engineer will make corrections and interpretations as necessary to fulfill the intent of the Contract. Do not use scaled measurements when the dimensions on the Plans are given or can be computed from the information given.

105.07 Copies of the Plans; Contractor's Supervision. The Contractor will be supplied with two copies of the Plans and the Bid Proposal. Keep one copy at the Project site at all times. Give the Work the constant attention necessary to facilitate

progress and cooperate with the Engineer in every way possible.

Furnish (a) a competent Superintendent or supervisor who is employed by the firm, has full authority to direct performance of the Work in accordance with the Contract requirements, and is in charge of all construction operations, regardless of who performs the Work and (b) such other organizational resources, including supervision, management and engineering services, as the Engineer determines is necessary to assure the performance of the Contract. The Superintendent or supervisor must be present on site while Work is being performed and must be competent, capable of reading and understanding the Contract and experienced in the type of Work being performed. The Superintendent or supervisor shall be the point of contact for the Engineer, be authorized to act for the Contractor, and have full authority to execute orders or the directions of the Engineer without delay.

105.08 Cooperation between Contractors. The Department reserves the right to contract for and perform other or Additional Work on or near the Limits of Construction covered by the Contract.

Contractors performing work on the same Project shall coordinate their Work and cooperate with each other. In case of a dispute, the Engineer will be the referee, and the Engineer's decision will be final and binding on all. When separate Contracts are let within the limits of any one Project, each Contractor shall conduct the Work without interfering or hindering the progress or Completion of the Work by other Contractors.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with its respective Contract. Each Contractor shall protect and save harmless the Department from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors Working within the Limits of Construction of the same Project.

Coordinate and sequence the Work with other contractors. Arrange, place, and dispose of Materials without interfering with the operations of other contractors on the same Project.

105.09 Utilities within the Project Limits; Miss Utility One-Calls. Bidders are hereby notified that within the limits of the Work under this Contract, several utility facilities and/or appurtenances may be encountered. The locations of all utilities shown on the Plans or mentioned in the Contract Documents are approximate locations only.

The Department will notify all utility companies, pipeline owners, railroads, or other parties known to be affected by the Work, and endeavor to have all necessary Adjustments of the public or private utility fixtures, pipelines, and other facilities and appurtenances within or adjacent to the Limits of Construction made as soon as practicable. Notwithstanding any other provision of this Contract, do not proceed with the Work before conferring with the Engineer, the utility companies, and the municipal or county authorities in an effort to secure the most accurate and most recent

information as to utility locations. As required by Chapter 8, Title 26 of the Delaware Code, do not begin any construction around or adjacent to utilities without notifying the Utilities Service Protection (Miss Utility) of Delmarva, Inc. at least two Working Days, but not more than ten Working Days in advance of starting the Work. Miss Utility is a report center system that enables the public, contractors, utilities, and other excavators to notify participating member utilities of planned digging activities by making one call.

Water lines, gas lines, wire lines, services connections, water and gas meter boxes, water and gas valve boxes, light standards, cable ways, signals, and all other utility facilities and appurtenances within the limits of the proposed construction that require moving, including the Work involved in relocating or otherwise altering such utilities, are to be moved by others at no expense to the Contractor, except as otherwise provided in the Contract. Allow utility contractors performing Work within the limits of the Contract to use the Contractor's maintenance of traffic (MOT) devices that are already in place as a result of the Work, such as "Road Work Ahead" signs and MOT related to the Project's construction phasing. Utility contractors performing Work within the workzone shall use their own MOT devices at their own expense for daily construction activities such as lane and shoulder closures. Utility contractors shall provide their own flaggers. The Engineer reserves the right to order the Contractor to provide MOT for utility companies working within the Workzone. When the Engineer issues such an order, the Engineer will pay for the work under the Unit Prices in the Contract. If Unit Prices for MOT ordered by the Engineer do not exist on the Contract, the Contractor and the Engineer shall negotiate a new price for the work or follow the Force Account procedure for reimbursement. If the Contractor provides MOT at the request of a utility company, the Engineer will not make payments under the Contract. The Utility company will pay the Contractor.

The Engineer will not pay for any relocation or rearrangement of utility facilities or appurtenances made for the Contractor's sole convenience.

Consider in the bid all the permanent and temporary utility appurtenances in their present or relocated positions as shown on the Plans or as readily discernible. No additional compensation will be allowed for any delays, inconvenience, or damage due to any interference from such utility facilities and appurtenances or the operation of moving them, except that the Contractor may be granted an extension of Contract Time.

The relocation of existing utilities that will interfere with the proposed construction, the construction of new utility facilities, and/or the reconstruction of existing utility facilities may also be in operation simultaneously with the Work to be performed under this Contract.

Any damage to utility services caused by the Contractor must be repaired at the Contractor's expense. Repair such damage immediately.

Prior to performing any Work on the Project, Contact all utility companies, pipeline owners, railroads, or other known parties affected and "Miss Utility" of DELMARVA in

order to ensure that all such utilities have received notice and in order that all utility adjustments may be made.

The following Utilities are members of Utilities Service Protection Center of DELMARVA (USPCD):

24/7 Mid-Atlantic Network, LLC
AboveNet Communications
Aero Energy
AIRCO
Angola Crest, LLC
Artesian Water Company
AT&T of Delaware
Atlantic Broadband
Bethel Township Sewer Dept

Camden-Wyoming Sewer & Water
Cavalier Telephone

Chesapeake Utilities
Choptank Electric
City of Delaware City
City of Dover
City of Harrington
City of Lewes Public Works
City of Milford
City of Newark
City of New Castle
City of Pocomoke
City of Rehoboth Beach
City of Seaford
City of Wilmington
Colonial Pipeline Co.
Columbia Gas Transmission
Comcast Cable Communications
Connexion Technologies
County Propane of Delaware
Dept.of Transportation
Delaware Electric Cooperative
Delaware Pipeline Company
Delaware State Highway
Delaware Storage and Pipeline Com
Delmarva Power
Direct Propane
Eastern Shore Gas

MCI
Mediacomm of Lower MD/DE
Moore Grant Sanitation

Municipal Utility Commission
Neon Optica, Inc
New Castle County Special ServicesNUI Elkton Gas
Paradee Gas Co.
Pep-Up, Inc.
Peninsula Oil and Propane
P.F. Net Network Corporation
Poores Propane

Qwest Communications
Savannah's Landing HOA
Schagrin Gas Company

Sharp Energy
Steeplechase Waterworks
Sunoco Pipeline, LP

Sussex County Engineering Dept.
Sussex Shores Water Co.
Texas Eastern Transmission, LP

Tidewater Utilities
Town of Bethany beach
Town of Blades
Town of Bridgeville
Town of Chesapeake City
Town of Clayton
Town of Dagsboro
Town of Felton
Town of Georgetown
Town of Laurel

Eastern Shore Natural Gas
Eastern Utilities Commission
G4S Technology, LLC
Gull Point Condominium Association

Kent County Public Works (Engineering)
Kent County Sanitary District
Kitts Hummock Improvement Association
Level 3 Communications
Long Neck Water Co.
Magellan Midstream Partners, L.P.
Magellan Terminals Holding, LP

Town of Middletown
Town of Millsboro
Town of Milton
Town of Selbyville
Town of Smyrna

Tunnel Companies, Inc.
United Water
United Water
University of Delaware

Verizon Communications
Wastewater Utilities, Inc.

Williams Gas Transmission
W.L. Gore & Associates, Inc.
XO Communications
YMG Corporation

The report center is essentially a message center, to which all participating parties are connected by a private line teletype network. The work location report is called in over two primary numbers, toll free, 1-800-441-8355 and 1-800-282-8555 in Delaware only. The area covered is the entire DELMARVA Peninsula.

A minimum of two but not more than ten Working Days advance notice of starting time is required. The Day of the call is not counted as one of these Days. This assures the person calling of having the underground facility located prior to excavation.

The party reporting a digging operation is asked a standard format of questions to provide the utilities with the necessary information required to ensure an adequate location of the activity. The caller is given a ticket number for reference purposes. The center specifically locates reported areas of activity on a master map and determines the spot by grid coordinates. This information is then transmitted to the participating parties via high speed teletype network. The ticket life is for 10 business Days after the call.

Messages received are sent out immediately during normal work hours (7:00 AM to 5:00 PM, Monday through Friday). Messages received after normal working hours, Saturdays, Sundays, or Holidays are taken, logged, and transmitted within one hour the next normal Work Day.

The Work location report is received by the participating utility which immediately locates the Work area by the information transmitted from the message center. The utility must then respond to the person originating the call by 1) stating it has no underground facilities at the designated location or 2) stating there are facilities in the area and dispatching a locating crew to the site and marking their underground facility

with stakes, flags, and/or paint horizontally over the ground.

APWA recommended safety color codes will be used: White for proposed excavation, pink for temporary survey marking, orange for communications, red for electric, blue for potable water, green for sewer and drain lines, yellow for gas and petroleum products, purple for reclaimed water. This will enable the reporting party to visually see if the utility has responded.

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 20' of any high voltage overhead line.

105.10 Construction Stakes, Lines, and Grades Provided by the Engineer. The Engineer will furnish and set control points and construction stakes unless otherwise specified in the Contract Documents.

The Engineer will establish Right-Of-Way lines, Limits of Construction, and easements if needed, and will provide and set construction stakes establishing Right-Of-Way lines, easement lines, slopes, Profile Grades, centerline or off-set lines, and benchmarks. The Department may furnish the Contractor with information relating the lines, slopes, and grades. The Engineer will establish Structure working points, elevations, and all the necessary points and off-sets to complete the Structure. Use these stakes and marks as the field control to establish other necessary controls and perform the Work. Before beginning the Work, determine the meaning of all stakes, indicated measurements, and marks provided by the Department.

The Engineer will also perform preliminary and final cross-sections of borrow pit sites and cross-sections for bedrock and undercut excavation.

Protect and preserve of all stakes and marks. The labor cost of the survey crew replacing disturbed stakes and marks will be deducted from the payment due for the Work.

The Department is responsible for the accuracy of lines, slopes, grades, and other engineering work set forth under this Section. The Department will not be responsible for staking delays unless the Contractor provides the Engineer ten Calendar Days notice prior to beginning Work for which layout is needed and thereafter gives at least two business Days notice that stakes are needed.

105.11 Removal of Defective and Unauthorized Work. All Work that fails to meet the Contract requirements will be deemed unacceptable by the Engineer. Removed and disposed of all unacceptable Work at the Contractor's expense immediately upon rejection by the Engineer. Work performed without adequate layout, Work performed beyond the lines and grades shown on the Plans, or any Extra Work performed without written direction by the Engineer will be considered unauthorized Work and will not be

measured or paid by the Department. The Engineer may direct the Contractor to remove and replace unauthorized Work at the Contractor's expense.

Failure of the Contractor to remove and properly dispose of rejected Work immediately after receiving written notice to do so from the Engineer shall be sufficient cause for the termination of the Contract. Furthermore, the Engineer will have the authority to cause unacceptable Work to be remedied or removed and replaced, and unauthorized Work to be removed. The costs incurred by the Engineer for correcting unacceptable or unauthorized Work will be deducted from the amount due or to become due the Contractor.

105.12 Load Restrictions. Comply with all legal and Contractual load restrictions in the hauling of Materials or Equipment on public roads. A hauling permit or other special permit will not relieve the Contractor of liability for damage to public or private property that may result from the movement of such loads or Equipment.

Vehicles transporting construction Materials to Department Projects shall not exceed the gross vehicle weight (GVW) or licensed weight, if less, as specified in the Delaware Code. Materials inspection weigh tickets will not be issued by Department personnel for GVWs in excess of the allowable maximum. The allowable GVW for the delivery truck must be shown on each material ticket submitted to the Engineer.

Payment for Materials delivered to the Project will not exceed the allowable GVW minus the truck tare weight. An average tare weight may be established on a basis approved by the Engineer so that empty weighing is not necessary before every load. No payment will be made for any excess Material weight.

Notify Subcontractors, vendors, and suppliers of this requirement.

The maximum GVW for different vehicle axle configurations is as follows; provided that in the case of three-axle vehicles the extra weight fee has been paid and is so noted on the registration card:

Customary Values

Single Unit Values	***GVW, Maximum***
2-axle vehicle (e.g., 2-axle dump truck)	40,000 lb.
3-axle vehicle (e.g., 3-axle dump truck)	65,000 lb.
	*70,000 lb.
4-axle vehicle (e.g., 4-axle dump truck)	73,280 lb.
Tractor-Semi-Trailer Combinations	

3-axle combination unit	60,000 lb.
4-axle combination unit	70,000 lb.
5-axle combination unit	80,000 lb.

* When extra weight fee has been paid and is so noted on registration card.

Metric Values

Single Unit Values	***GVW, Maximum***
2-axle vehicle (e.g., 2-axle dump truck)	18 144 kg
3-axle vehicle (e.g., 3-axle dump truck)	29 484 kg
	*31 752 kg
4-axle vehicle (e.g., 4-axle dump truck)	33 240 kg
Tractor-Semi-Trailer Combinations	
3-axle combination unit	27 216 kg
4-axle combination unit	31 752 kg
5-axle combination unit	36 288 kg

* When extra weight fee has been paid and is so noted on registration card.

Assume responsibility for all damage caused by hauling Equipment, whether the damage occurs within or outside of the Project limits.

105.13 Maintenance during Construction. Maintain the Work during construction and until the Project is accepted. Perform this maintenance every Day in a continuous and effective manner with adequate Equipment and forces to keep the roadway and Structures in a satisfactory condition. All snow removal will be performed by DelDOT Maintenance, unless the Contract Documents specifically assign these responsibilities to the Contractor. All mowing of grass outside of the LOC will be performed by DelDOT Maintenance.

The Engineer will notify the Contractor if there is a failure to comply with these provisions. If the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of the notice, the Engineer may proceed to maintain the Project. The entire cost of this maintenance will be deducted from monies due or to become due the Contractor. Failure to adequately and safely maintain the Project will be sufficient cause to terminate the Contract for default.

If the Contract involves the placement of Material on or the use of a previously constructed subgrade, base course, pavement or Structure, maintain the previously constructed Work during construction operations.

The cost of maintenance Work during construction and before the completion of the Final Inspection punchlist is incidental to the Contract, unless otherwise stated in the Contract Documents. The cost of maintenance Work occurring after the Final Inspection punch list is complete will be paid by the Engineer, except that the cost of maintenance Work required for landscaping and vegetative growth shall be borne by the Contractor until Final Acceptance.

In the event that the Contractor's Work is ordered shut down for failure to comply with the provisions of the Contract, maintain traffic, protect and maintain the roadway and Structures, and provide ingress and egress for local residents as may be necessary during the period of suspended Work or until the Contract has been declared in default.

Mow all grass and weeds within the Limits of Construction, as directed by the Engineer, to a height in compliance with Section 107.01. If the Engineer directs the Contractor to mow grass more than 4 times in a calendar year, the Engineer will pay for all mowing beyond the fourth mowing operation.

105.14 Opening Sections of the Project to Traffic. The Engineer may order certain sections of the Work to be opened to traffic or other use prior to Completion or acceptance of the Work. Opening these sections will not constitute acceptance of the Work or waiver of any Contract provisions. For sections of the Work that are open to traffic, the cost of repairing damage to the Work caused by vehicular traffic will be paid by the Engineer unless such section of roadway is open due to the fault or inactivity of the Contractor or the Contractor caused the damage. All other maintenance costs including, but not limited to, mowing grass, general cleanup and/or the repair of Work damaged by vandalism shall be borne by the Contractor until the Final Inspection punch list is complete, except that maintenance costs for Work involving landscaping and vegetative growth shall be borne by the Contractor until Final Acceptance. Prior to opening a section of the Work to Traffic, confer with the Engineer to ensure that all traffic control devices are in place and functioning. Do not open any section of roadway to Traffic without the approval of the Engineer.

105.15 Claims for Adjustments and Resolution of Disputes. All disputes between the Contractor and the Engineer arising under or related to this Contract that are not resolved by mutual agreement shall be resolved by following the Claim procedure established in this Section. “Claim” means a written demand or assertion by the Contractor or the Department seeking, as a legal or equitable right: payment of money, Adjustment or interpretation of Contract terms, or other relief.

***A. Contractor Notification of Claims*.**

Notify the Engineer orally or in writing of the intention to make a Claim for relief before beginning the affected Work. Within five Working Days of declaring the intention to make a Claim, provide written notification of the Claim to the Engineer that includes the following:

1. The date of the occurrence and the nature and circumstances of the occurrence that constitute a change to the Contract or the need for an interpretation of the Contract's terms;

2. The name and title of Department representatives knowledgeable of the conditions on which the Claim is based; and

3. The particular elements of Contract performance for which relief is sought under this Section.

When a Claim is based solely upon the need for a Contract interpretation, provide written notice of the intent to Claim as prescribed above within five Working Days of the discovery by the Contractor of the alleged misinterpretation of the Contract by the Engineer.

If the Contractor's written notification is not given to the Engineer within five Working Days as prescribed above or the Engineer is not afforded proper facilities by the Contractor for keeping strict account of the actual costs incurred by the Contractor as a result of the alleged change or alleged misinterpretation of the Contract, then the Contractor waives the Claim. Such notice by the Contractor, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the Claim. Nothing contained in this Section shall be construed as establishing any Claim contrary to the terms of Section 104.05 or any other provision of the Contract Documents.

B. Engineer's Response to the Contractor's Notice.

Within ten Calendar Days after receipt of the Contractor's written notice of a Claim, the Engineer will respond in writing to the Contractor to:

1. Confirm that a change has occurred and that relief is due as provided herein; or

2. Confirm that the Engineer agrees with the Contractor's interpretation of the Contract and that relief is due as provided herein; or

3. Deny that relief is due and direct the Contractor to follow the formal Claim submittal procedure as described below; or

4. Advise the Contractor that adequate information has not been submitted to decide whether B.1., B.2. or B.3. above applies, and indicate the need for more information for further review. The Department will respond to such additional information within ten Calendar Days of receipt from the Contractor; or

5. Advise the Contractor that the District will review the Claim after obtaining the formal Claim submittal as described below.

Any Adjustments made to the Contract will not include increased costs or time extensions for delay resulting from the Contractor's failure to provide requested additional information in accordance with this Section.

C. Claim Submittal.

Submit a formal Claim in writing within 60 Calendar Days after Work on the Item Claimed has been completed. The Contractor can only recover, and the formal Claim shall only consist of, those items allowed under Section 105.15(H). The formal Claim submittal must contain:

1. A description of the precise nature and basis for the Claim;
2. Each fact upon which the Contractor relies to support the claim;
3. The precise reason the Contractor believes that relief should be granted;
4. The language in the Contract upon which the Contractor relies in support of the Claim;
5. The amount of money or nature and extent of relief to which the Contractor believes it is entitled; and
6. Any other factors which the Contractor believes support the Claim.

When requesting a time extension or relief due to a constructive acceleration, include an as-built Project Schedule that conforms to the requirements of the Contract. Failure to submit such a Schedule constitutes a waiver of the Contractor's right to receive a time extension or other relief due to a delay or a constructive acceleration.

In complying with the Claim submittal requirements listed above, the Contractor must certify the Claim using the following form:

The undersigned is duly authorized to certify this claim on behalf of (the Contractor).

(The Contractor) certifies that this claim is made in good faith, that the supporting data are accurate and complete to the best of the Contractor's knowledge and belief, and that the amount requested accurately reflects the Contract Adjustment for which (the Contractor) believes that the Department is liable.

(THE CONTRACTOR)

By: _____

(Name)
(Title)

Date of Execution:_____

The Contractor agrees to follow the procedure described in this Section for all Claims. The Contractor further agrees that any claimed dollar amount and/or relief sought that is not made pursuant to this Section and within the time limits prescribed by this Section shall be forever waived and not raised at any subsequent meeting or hearing dealing with the Claim. The Department will establish a claims procedure to be followed that is consistent with these Specifications and provides the means and methods by which the Contractor and the Department shall process the Contractor's formal Claim.

D. District Review.

Formal Claims submitted in accordance with this Section will be reviewed fully at the District level. Within 30 Calendar Days after receiving the formal Claim submittal, the District Engineer will respond, in writing, with the District's decision. If additional time is required by the District to review the Claim, the District Engineer will notify the Contractor. Upon mutual agreement, the parties may engage in non-binding alternate dispute resolution proceedings in order to try and induce a settlement of the dispute prior to the District's decision. These proceedings may include, but are not limited to, non-binding arbitration or mediation.

E. Contractor's Appeal to the Claims Committee.

The Contractor may appeal the District's decision to DelDOT's Claims Committee for review. Give notice of the appeal to the District in writing within ten Calendar Days of the District's Decision. Failure to provide timely notice of an appeal constitutes a waiver of the Contractor's right to appeal.

The Claims Committee will conduct a claim review meeting attended by representatives of the Contractor and the District. The Claims Committee will conduct the Claim Review Meeting within 60 Calendar Days after the District receives the Contractor's notice of appeal. The proceedings of the Claim Review Meeting will be recorded by a Court Reporter. The cost associated with the Court Reporter will be shared equally by the Department and the Contractor. A copy of the record of the Claim Review Meeting will be made available to the Contractor. Within 15 Calendar Days of the Claim Review Meeting, the Committee's Chairperson will notify the Contractor, in writing, of the Committee's decision.

F. Decision of the Secretary.

Either party may appeal the Claims Committee's decision to the Secretary requesting to proceed with the arbitration process as outlined in Section 105.15(G). The appellant

shall give notice of the appeal to the Claims Committee's Chairperson, in writing, within ten Calendar Days after receiving the Claims Committee's decision. Failure by either party to provide timely notice of an appeal constitutes a waiver of that party's right to appeal. After receiving the written notification, the Secretary or the Secretary's designee (usually the Chief Engineer) will notify the parties, in writing, within 30 Calendar Days of the receipt of the notice regarding the Claim. The Secretary or the Secretary's designee will review the record and may schedule a meeting or hearing with the parties to discuss the Claim. The Secretary or the Secretary's designee will then issue a written decision that will serve as the final decision of the Department concerning the Claim.

G. Arbitration.

Any Claim, properly presented and processed through the Claim procedure outlined above, and finally decided by the Secretary or the Secretary's designee pursuant to Section 105.15(F), in the absence of agreement by the Contractor and the Department as to the resolution thereof, and upon the demand of either party delivered in writing to the other within 30 Calendar Days from the date of the written decision by the Secretary or the Secretary's designee, as provided in Section 105.15(F); shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then in effect; except as otherwise modified by these Specifications. Failure by either party to provide a timely notice of appeal to the other constitutes a waiver of that party's right to appeal.

The arbitration proceeding may involve presentation of facts or such portions thereof as have previously been presented at prior administrative hearings held pursuant to Section 105.15 herein or may be based entirely upon the record, as established therein. The record established at prior administrative hearings pursuant to Section 105.15 shall be specifically admissible at such arbitration proceedings and such facts as have been established shall be specifically binding upon the parties; with the exclusion of opinions and conclusions thereon. Such arbitration shall be specifically based upon the claim presented at prior administrative hearings and no material, information, fact, and/or Claim not presented at such hearings held pursuant to said Section 105.15 shall be admissible at any arbitration conducted pursuant to this Section. The arbitrators shall furnish a written decision to both parties that includes the findings of the panel and an explanation of the basis for the findings. This agreement to arbitrate shall be strictly enforceable as provided under Chapter 57, Title 10 of the Delaware Code, as amended. The Contractor and DelDOT shall each pay half of the arbitration fee and the cost of the court reporter.

H. Recoverable Costs.

The Contractor shall not be entitled to recover any costs in a Claim other than those allowed by this Section. As described below, A. through E. identify all recoverable direct and indirect costs and F. identifies all non-recoverable costs.

A. Labor. In accordance with Section 109.04 D.1.

B. Bond, Insurance, and Tax. In accordance with Section 109.04 D.2.

C. Materials. In accordance with Section 109.04 D.3.

D. Equipment. In accordance with Section 109.04 D.4.

E. Percentage Markups. In accordance with Section 109.04 D.6. and 109.04 D.7.

F. Non-recoverable Damages or Expenses. The expenses listed above as A. through E. shall constitute the sole cost(s) and expense(s) to which the Contractor shall be entitled on any claim submitted for additional compensation or settlement of any claim made under these Specifications, except as further provided in Section 105.15(J). The parties agree that the Department will have no liability for the following items of damage or expense:

1. Profit in excess of that provided herein;
2. Loss of profit;
3. The costs of lost productivity for labor and Equipment either on this Contract or any other;
4. Home office overhead in excess of that provided herein;
5. Consequential damages, including but not limited to loss of Bonding capacity, loss of bidding opportunities and insolvency;
6. Indirect costs or expenses of any nature;
7. Attorneys fees, claim preparation expenses or costs of litigation; and
8. Interest on any claimed amounts.

Submit any Claim on behalf of a Subcontractor according to Section 105.15. Recoverable damages for Claims submitted on behalf of Subcontractors shall be solely limited to the list of all direct or indirect costs permitted by A. through D. above. For Work approved by the Department, the Subcontractor will be allowed a percentage markup as permitted by Section 109.04 D.6. and 109.04 D.7. The Contractor will be allowed an additional percentage markup as permitted by Section 109.04 D.8. to be computed on the final sum total of such Subcontractor cost Claimed under A. through D. above for portions of Subcontractor Work approved by the Department.

I. Liquidated Damages.

A Claim, not for additional costs, but for a waiver by the Department of an assessment of Liquidated Damages, in whole or in part, may also be made by the Contractor as part of this Section. Any Claim submitted shall not affect in any manner the imposition or waiver of Liquidated Damages, except that any Liquidated Damages shall be waived for any delay for which a time extension is granted in accordance with Section 108.07.

J. Claims for Delays.

In order to receive an extension of Contract Time or to receive monetary compensation for delays to the Contract Schedule, the Contractor must request an extension of Contract Time in accordance with Section 108.07. Base all requests for extensions of Contract Time on the Contract's progress Schedule. Failure to properly update and maintain the progress Schedule in accordance with the terms of the Contract shall constitute a waiver of the Contractor's rights to claim for a time extension and/or monetary damages due to a delay.

The Department may grant time extensions in the performance of Work for delays caused by acts of God, acts of the public enemy, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or other causes, only when these delays are not the fault or responsibility of the Contractor, are beyond the Contractor's control, and could not have been anticipated by the Contractor. For such delays that are also beyond the control and not the fault of the Department, the Contractor shall be entitled to a time extension, but shall not be entitled to recover any other damages resulting from such delays.

In the event that a delay is not caused by the Contractor's fault or negligence but is caused wholly by actions of the Department, or determined by an arbitrator to be the Department's sole responsibility, an extension of time will be granted in an amount equivalent to the actual critical delay caused by the Department, and the Contractor shall not be entitled to any additional compensation except as allowed herein. In the event that a delay that is the Department's sole responsibility is concurrent with a delay that was not the sole responsibility of the Department, the Contractor shall be entitled to a time extension, but shall not be entitled to recover any other damages resulting from the concurrent delay.

All recoverable direct and indirect costs for compensable delays are identified in A. below, and all non-recoverable costs for compensable delays are identified in B. below. Compensation provided by A. below shall not be duplicative of compensation already provided as part of Section 105.15(H) or 109.04.

A. **Allowable Direct and Indirect Expenses.** Only the additional costs associated with the following items will be recoverable by the Contractor for delay compensation:

   1. Extended Field Overhead. Field overhead costs necessary for the prosecution of the Work during the delay period, as follows:

      a. General Field Supervision. Such costs include but are not limited to general field supervision, assistants, watchman, clerical and other field support staff that are physically located on the jobsite. Compute these labor costs in accordance with Section 109.04 D.1. For salaried personnel, calculate the rate of wage (or scale) actually paid by dividing the weekly salary by seven Days per week.

b. Field Office Facilities and Supplies. Such costs include but are not limited to field office trailers, tool trailers, office equipment rental, temporary toilets, and other incidental facilities and supplies that are physically located on the jobsite. Compute these costs on the basis of the actual added costs incurred by the Contractor to provide these services as a result of the delay.

c. Maintenance of Field Operations. Such costs include but are not limited to expenses for telephone, electric, water, and other similar services that are provided at the jobsite. Compute these costs on the basis of the actual added costs incurred to maintain these services as a result of the delay. These extended field overhead costs are not duplicative of those compensated in Section 109.04 D.7.

2. Labor. For all necessary, non-salaried, idle labor that must remain on the Project during such periods of delay due to collective bargaining contracts or other reasons approved by the Engineer. Compute the labor costs in accordance with Section 109.04 D.1.

3. Bond, Insurance, and Tax. In accordance with Section 109.04 D.2.

4. Equipment. For any idle Equipment other than small tools that must remain on the Project site during delays, the Contractor is to receive compensation at the rate calculated in Section 109.04 D.4. Should it not be necessary for machinery or Equipment to remain on the Project during delays, the Contractor is to receive transportation costs to remove the machinery or Equipment and return it to the Project at the end of the delay period. No compensation is recoverable for idle Equipment unless the Equipment has been held on the Project site on a standby basis at the request of the Engineer and, but for this request, would have left the Project site.

5. Materials. Costs for material escalation due to the delay or the cost of storage of Materials due to the delay are recoverable. Obtain the Engineer's approval prior to storing any Material due to a delay.

6. Percentage Markups. An additional 10% markup of the total of 1., 2., 3., and 4. above will provide full compensation for home office overhead and any other costs attributed to the delay for which no specific allowance is herein provided. This is the sole markup that is recoverable for a compensable delay. Markups from Sections 105.15(H)(E), 109.04 D.6. and 109.04 D.7. shall not apply.

7. Records. Payment will not be made for delays until the Contractor has furnished the Engineer with duplicate itemized statements of the cost as herein above specified and detailed as follows:

a. Name, classification, date, daily hours, total hours, rate, and extension for each worker and foreman.

b. Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and Equipment.

c. Transportation costs.

d. Cost of Bonds, property damage, liability, and workers compensation insurance premiums; unemployment insurance contributions; and social security taxes.

The Engineer will compare the Department's records with those furnished by the Contractor and make any necessary Adjustments. When these records are agreed upon and signed by both parties, the records become the basis of payment for the expenses incurred, but do not preclude subsequent Adjustment based on a later audits or inspections of the Contractor's records by the Department.

The Contractor's cost records pertaining to expenses under this Section shall be open to inspection or audit by representatives of the Department as provided in Section 105.19 K.

B. **Non-Allowable Damages or Expenses.** The expenses listed in A. above shall constitute the sole cost(s) and expense(s) to which the Contractor shall be entitled on any delay Claim submitted for additional compensation or settlement of any Claim made under these Specifications. The parties agree that the Department will have no liability for the items listed in Section 105.15(H) F.1 through F.8.

K. Review of Contractor's Records by the Engineer.

The Contractor agrees to make its accounting records and cost information available at the time of submission of the Claim and such other records as the Department may require in order to determine the validity and amount of each item Claimed. Ensure that such records are open to inspection or audit by representatives of the Department during the life of the Contract and for a period of not less than three years after the Contractor's acceptance of Final Payment as set forth in Section 109.10. Retain such records for that period.

Where payment for Materials, Equipment, or labor is based on the cost of forces other than the Contractor's, make every reasonable effort to ensure that the cost records of such other forces are open to inspection and audit by representatives of the Department on the same terms and conditions as the cost records of the Contractor. Payment for the cost of such forces may be deleted if the records of such third parties are not made available to the Department's representatives.

If an audit or inspection is to be commenced, the Engineer will provide the Contractor with a reasonable notice of the time when such an audit or inspection is to begin. In cases where all or a part of such records are not made available, the Contractor understands and agrees that any items not supported by records because the records are not made available will not be recoverable. If payment

has already been made in such a case, refund to the Department the amount so recovered.

L. Contractor and Subcontractor/Supplier Disputes.

Resolve any dispute arising between the Contractor and its Subcontractor/supplier concerning payments held in trust, as required by Chapter 8, Title 17 of the Delaware Code by arbitration. The Department shall not serve as the arbiter of such disputes, but shall, in the absence of agreement between the parties, designate the American Arbitration Association to resolve the matter.

105.16 Project Acceptance; Partial Acceptance. Final acceptance will not occur until Completion of the Project in accordance with Section 101.16. The Contract Time will be stopped at Substantial Completion as defined in Section 101.79.

When the Contract Time is stopped, expeditiously provide the exempted documents, certificates, or proofs of compliance. Final acceptance and final payment will not be made until all documents, certificates, or proofs of compliance have been executed and delivered to the Engineer.

Upon receiving notice from the Contractor of Substantial Completion, the District will conduct a semi-final inspection. During this inspection, the District will note by stations and in detail all Work or conditions requiring correction. Immediately prosecute the corrective Work. When the noted corrections are completed to the satisfaction of the District, the Department will conduct a Final Inspection to certify that the Project can be used, occupied, or operated for its intended use and that the Work has been satisfactorily completed in accordance with the Contract Documents. The Engineer will note any further corrective measures as deemed necessary. Prosecute corrective measures immediately. When the corrective Work is satisfactorily completed, together with receipt of proper documentation as noted herein, the Engineer will immediately accept the Project and notify the Contractor in writing of the date of acceptance of the Project. If the Contractor fails to complete the corrective Work identified by the Engineer within a reasonable period of time, usually two weeks, after the semi-final and Final Inspections, time charges will resume until such Work is complete. For each and every Calendar Day or Working Day charged beyond Substantial Completion that exceeds the allowable contract time, the Contractor will be assessed Liquidated Damages in the amount of 10% of the value shown in Section 108.09.

When a unit or portion of the Project, such as a Structure, interchange, or section of road or pavement is Substantially Completed, the Contractor may request a Final Inspection of that unit or portion of the Work. If the unit or portion of the Work has been completed in accordance with the Contract, the Engineer may accept it as completed. The decision to make a partial acceptance of a unit of Work is solely at the discretion of the Engineer. Partial acceptance will not void or alter any of the terms of the Contract.

Section 106 – Material Quality and Testing Requirements

106.01 Source of Supply and Quality Requirements
106.02 Samples, Tests, and Referenced Specifications
106.03 Certification of Compliance
106.04 Manufacturing Plant Inspection
106.05 Field Laboratory
106.06 Buy America Contract Requirement
106.07 Storage and Handling of Materials
106.08 Unacceptable Materials
106.09 Disposal of Unacceptable Materials
106.10 Department-Furnished Material

106.01 Source of Supply and Quality Requirements. Use Materials that meet the requirements of the Contract. Use only new Materials for incorporation into the Work unless otherwise specified in the Contract. Promptly notify the Engineer of the proposed sources of Materials to be used in the Work prior to delivery. The Engineer has the option of rejecting Materials at the supply source. If the Engineer determines that Materials met the requirements of the Contract at the supply source, but subsequently do not meet the Contract requirements at the jobsite either before or after incorporation in the Work, remove or correct the Materials to the satisfaction of the Engineer at the Contractor's cost.

106.02 Samples, Tests, and Referenced Specifications. All Materials must be approved by the Department prior to use in the Work. Use of unapproved Materials is at the Contractor's risk and unapproved Materials may be deemed unacceptable by the Engineer. The Engineer reserves the right to inspect and/or test all Materials at any time before or after incorporation into the Work. Remove unacceptable Materials from the Work and replaced solely at the Contractor's expense. Test performed by the Engineer are for quality acceptance purposes only. The Contractor is responsible for Quality Control of the Materials as defined in Section 800 of these Specifications and is responsible for the condition of the Materials until the Project is Accepted.

Unless otherwise designated, Material tests performed by the Department will be performed in accordance with the most recent test methods of the Department, AASHTO, or ASTM in effect on the date of Advertisement for Bid Proposals. When any specification or test is identified in the form of an AASHTO or ASTM number succeeded by "Modified" it refers to an AASHTO or ASTM specification or test as modified by the Department's Materials Manual in effect on the date of Advertisement for Bid Proposals. If there is a difference in the test methods, the order of precedence in the test procedure used will be as follows:

A. Materials Manual
B. AASHTO
C. ASTM

The Engineer will set forth minimum requirements for sampling Materials on each Contract and will provide the Contractor with these requirements upon request. The Engineer must be afforded the opportunity to perform the minimum number of tests; and the Engineer reserves the right to perform more than the minimum number of tests. Material sampling or splitting operations will be performed or observed by the

Department. Materials to be used are also subject to inspection, testing, or rejection prior to or during incorporation into the Work. Copies of any or all test results will be made available to the Contractor upon request.

When in the judgment of the Engineer, inconsequential quantities and use of Materials are required by the Contract, a field inspection report of Materials may be made by the Department in lieu of the Minimum Requirements for sampling Materials.

106.03 Certification of Compliance. The Contract or the Department's Materials and Testing Schedule will designate Materials that can be incorporated in the Work if accompanied by certificates of compliance from the manufacturer. The certificates of compliance shall state that the Materials or assemblies provided fully comply with the specification requirements of the Contract, and shall be signed by the manufacturer. Each lot of certified Materials or assemblies delivered to the Project must be accompanied by a certificate of compliance clearly identifying the Materials delivered and the specification requirement satisfied.

Materials or assemblies used on the basis of certification of compliance may be sampled and tested by the Department and if determined not to be in conformance with Contract requirements will be rejected in accordance with Section 105.03.

The form and distribution of the certificates of compliance shall be as provided in the Contract or the Department's Materials and Testing Schedule requirements.

106.04 Manufacturing Plant Inspection. The Engineer may inspect Materials at the acquisition or manufacturing source. Manufacturing plants may be inspected for compliance with specified manufacturing methods. Material samples will be obtained for testing for compliance with material quality requirements.

In the event plant inspection is undertaken, meet the following conditions:

A. The Engineer will have the cooperation and assistance of the Contractor and producer of the Materials;

B. The Engineer will have full access at any time to all parts of the plant concerning the manufacture or production of the Materials being furnished;

C. Arrange for an approved building for the use of the Inspector with such building to be located conveniently near the plant and conforming to the requirements of Section 106.05;

D. Provide and maintain adequate safety measures; and

E. The Department reserves the right to retest any Materials upon delivery which have previously been tested at the source of supply and to reject all Materials which, when retested, do not meet the Contract requirements.

106.05 Field Laboratory. Provide a field laboratory conforming to Section 812.07 for Concrete and/or 823.06 for bituminous asphalt. Payment for all field laboratories shall be incidental to the Work in the Section for which the laboratory or facility is provided.

106.06 Buy America Contract Requirement. In accordance with Section 165 of the Surface Transportation Assistance Act of 1982, Title 23 of the United States Code, and the FHWA's clarification memo, published in December of 2012, the following applies to all Contracts:

For this Contract, all iron and steel Materials must be produced in the United States, except that (1) a minimal amount of foreign steel or iron Materials may be used, provided the cost of the foreign Materials does not exceed 0.1% of the total Contract cost or $2,500.00, whichever is greater; and (2) manufactured products are not subject to Buy America requirements unless such manufactured products are manufactured predominately with iron or steel. All coatings for iron or steel Materials must be applied in the United States.

A. Certificate of Compliance.

Furnish a Certificate of Compliance to the Department. Sign the Certificate and affirm that the Materials and/or assembled Materials are of domestic origin and will comply in all respects with the requirements of the Contract. Provide Mill test reports verifying that ferrous products are of domestic origin as defined in the Special Provisions. All Materials accepted on the basis of Certificate of Compliance may be sampled by the Department and tested at any time. Use of Material on the basis of Certificate of Compliance shall not relieve the Contractor of responsibility for incorporating Material in the Project conforming to the requirements of the Contract. Any Material not conforming to such requirements will be subject to rejection whether in place or not. The Department reserves the right to refuse to permit the use of Material on the basis of Certificate of Compliance.

B. Domestically Manufactured Material.

Domestically Manufactured Materials are those which are melted, cast-formed, shaped, drawn, extruded, forged, fabricated, coated, or otherwise processed in the United States.

106.07 Storage and Handling of Materials. Store and handle Materials to preserve their fitness for the Work. Store stored Materials in such a manner to facilitate prompt inspection. Stored Materials will be subject to inspection and retesting prior to incorporation in the Work in accordance with Section 106.04.

An approved portion of the Right-Of-Way may be used for the storage of Materials and the Contractor's plant and Equipment. Provide additional storage space that is required at the Contractor's expense and option. Do not use private property for storage purposes without written permission of the owner or lessee. If requested, furnish copies

of such written permission to the Engineer.

Restore storage and plant sites to their original condition by and at the Contractor's expense.

106.08 Unacceptable Materials. Materials not conforming to the requirements of the Contract will be rejected and removed immediately from the Project unless the defects have been corrected by a method approved by the Engineer in accordance with 106.09 at no additional cost to the Department.

106.09 Disposal of Unacceptable Materials. All waste Materials from the Work on the Contract become the property of the Contractor. Remove all waste Materials from the Project unless otherwise specified in the Contract Documents.

1. Procure disposal sites to dispose of all the waste Material generated by the Work on the Contract. Use disposal sites, if any, that are provided by the Contract Documents. Disposal sites that are provided by the Contract Documents may not be large enough to handle all waste Materials from the Contract. The Contractor is responsible to procure additional disposal sites if necessary to complete the Work.
2. Submit disposal sites for approval to the Engineer prior to utilization.
    a. Provide a plan of the disposal area that includes the proposed sediment and erosion control devices, the existing contours and proposed final contours, a list of Materials to be disposed of in the disposal area, and the proposed security measures.
    b. When preparing and utilizing off-site disposal areas, comply with all stormwater and environmental rules, regulations or applicable permits promulgated by the Department of Natural Resources and Environmental Control (DNREC), the U.S. Army Corps of Engineers or any other applicable government agency. Obtain permits, if necessary, in accordance with Section 107.02.
    c. Costs for preparing these plans are incidental to the Contract Item that generates the waste.
3. For disposal sites designated in the Contract Documents, payment will be made separately under applicable Bid Items for all necessary erosion and sediment controls, seeding, and mulching.
4. For Contractor-procured disposal sites, costs for all necessary erosion and sediment controls, seeding, and mulching are incidental to the Contract Items that generate the waste.

106.10 Department-Furnished Material. Material furnished by the Department will be delivered or made available to the Contractor at locations specified in the Contract.

Include the cost of handling and placing Department-furnished Materials after they are delivered to the Contractor in the Contract price for the Item in which they are used. Deductions will be made from any monies due for any shortages, deficiencies, and

damage that may occur to the Material after delivery. Demurrage charges resulting from the Contractor's failure to accept the Materials at the designated time and location of delivery will also be deducted from monies due the Contractor.

Section 107 - Legal Relations and Responsibility to the Public

107.01 Laws to be Observed
107.02 Permits, Licenses and Taxes
107.03 Patented Devices, Materials, and Processes
107.04 Contractor's Responsibility to Protect Utility Property and Services
107.05 Federal Aid Participation
107.06 Construction Safety, Health, and Sanitary Standards
107.07 Public Convenience and Safety
107.08 Use of Explosives
107.09 Protection and Restoration of Property
107.10 Responsibility for Damage Claims
107.11 Furnishing Right-Of-Way
107.12 Personal Liability of Public Officials
107.13 Contractor's Responsibility for the Work after Final Acceptance; No Waiver of Legal Rights
107.14 Hazardous Materials Discovered Within the Project Limits

107.01 Laws to be Observed. Investigate and strictly comply with all Federal, State, or county laws and regulations, and city or town ordinances and regulations. Indemnify and save harmless the State of Delaware, the Department of Transportation, its Secretary and all officers, agents, and servants against any claim or liability arising from or based upon the violation of any such laws, ordinances, regulations, orders, or decrees whether by the Contractor as an entity or by the Contractor's employees.

If the Contractor should discover any provisions in the Contract that are contrary to or inconsistent with any law, ordinance, regulation, order, or decree, immediately report it to the Engineer in writing.

107.02 Permits, Licenses and Taxes. Procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the Work.

107.03 Patented Devices, Materials, and Processes. The Contractor and the Surety shall hold and save harmless the State, the Department, their officers or agents, in accordance with the terms of these Specifications, from any and all claims because of the use of any patented design, device, material, or process in connection with the Work agreed to be performed under this Contract. Furnish any patent agreement between patentee and the Contractor to the Department.

107.04 Contractor's Responsibility to Protect Utility Property and Services. At points where the Contractor's operations are adjacent to properties of railway, communications companies, power companies, or other utilities, or are adjacent to other properties, facilities, or appurtenances, damage to which might result in considerable

expense, loss, or inconvenience, do not commence Work until all arrangements necessary for the protection thereof have been made.

In the event of interruption to water or utility services as a result of accidental breakage, or as a result of being exposed or unsupported, promptly notify the proper authority. Cooperate with the proper authority in the restoration of service as promptly as possible. Do not Work around or near fire hydrants until appropriate plans for continued service have been approved by the local fire authority.

Keep fire hydrants on or adjacent to the highway accessible to fire apparatus at all times and do not place any Material or obstruction within 15' (4.5 m) of any such hydrant. Ensure that fire hydrants are entirely accessible at all points to fire apparatus at all times. Whenever any Work is performed 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. Set the breakaway flange at the bottom of a hydrant at 0” to 4” (0 to 100 mm) above the ground.

107.05 Federal Aid Participation. When the United States Government pays all or any portion of the cost of a Project, observe the federal laws authorizing such participation and the rules and regulations made pursuant to such laws; and the Work shall be subject to the inspection of the appropriate Federal agency.

Such inspection shall not make the Federal Government a party to this Contract and will in no way interfere with the rights of either party hereunder.

107.06 Construction Safety, Health, and Sanitary Standards. Do not require any person employed in performance of the Contract to Work in surroundings or under Working conditions which are unsanitary, hazardous, or dangerous to such person's health or safety. Expressly state this requirement in each subcontract agreement.

Provide and maintain in a neat and sanitary condition such accommodations for the use of its employees as may be necessary to comply with the requirements of the State and local Boards of Health, or of other bodies or tribunals having jurisdiction.

107.07 Public Convenience and Safety. In performing the Work, interfere as little as possible with traffic. Provide and maintain ingress and egress for all residences and places of business located along the construction route. Place Materials stored upon the highway in accordance with the MUTCD and, so far as practicable, in a manner that causes as little obstruction to the traveling public as possible. If, as determined by the Engineer, the road or any portion of it must remain open to travel during construction of the Project, perform the Work so that travel through the jobsite is safe and unobstructed. Provide and maintain in an acceptable condition any temporary roadways and Bridges that are necessary to accommodate the traffic using or diverted from the roadway under construction, and provide and maintain in a safe condition temporary approaches to and crossing of intersecting highways. Do not obstruct sidewalks,

gutters, sewers, inlets, and portions of the highway adjoining the roadways under construction more than is absolutely necessary to complete the Work.

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 will be calculated according to Section 109.04(D) for all State personnel involved or third party contractors, including vehicles, Equipment and Materials needed. This cost will be deducted from money due the Contractor under this Contract. The failure of the Contractor to be available and to make emergency repairs is sufficient grounds for the Department to terminate the Contract for default.

107.08 Use of Explosives. When the use of explosives is necessary for the prosecution of the Work, exercise the utmost care not to endanger life or property, including new Work. Assume responsibility for all damage resulting from the use of explosives.

Store all explosives in a secure manner in compliance with all laws and ordinances, and clearly mark all such storage places. Where no local laws or ordinances apply, provide storage satisfactory to the Engineer and not closer than 1000' (300 m) from the road or from any building or camping area or place of human occupancy. Follow the requirements of the MUTCD in storing explosives and flammable liquids.

Notify each public utility company having Structures in proximity to the site of the Work of the intention to use explosives. Give such notice sufficiently in advance of the Work to enable the companies to take such steps as they may deem necessary to protect their property from injury.

The use of explosives will not be permitted within 200' (65 m) of any existing, newly finished, or partly finished Structure on a Project unless authorized in writing by the Engineer. Do not store explosives overnight on the Project.

107.09 Protection and Restoration of Property. Assume responsibility for the preservation of all public and private property, trees, monuments, etc., along and adjacent to the roadway not designated on the Plans for repair, removal, or construction. Take the precautions necessary to prevent damage to pipes, conduits, and other underground Structures, and protect from disturbance or damage all land monuments and property markers until Project Acceptance. Locate and reset any land monument or property markers damaged or disturbed during the Project using a Registered Land Surveyor or a Registered Professional Engineer. Do not injure or destroy trees or shrubs outside the Limits of Construction, nor remove or cut them without proper authority. Where any direct or indirect damage is done to public or private property on account of any act, omission, neglect, or misconduct in the execution or non-execution of the Work on the part of the Contractor, restore such property at the Contractor's expense to a condition similar or equal to that existing

before such damage.

In case of the failure on the part of the Contractor to restore such property or make good such damage, the Engineer may, upon giving 48 hours notice, proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof will be deducted from any monies due to the Contractor under the Contract.

107.10 Responsibility for Damage Claims. Assume the responsibility and liability for, and indemnify and save harmless the Department, its officers, and employees, from and against all suits, actions, claims, and all damages, direct or indirect, of whatever nature, caused to any person(s) or property or resulting to the Work from any act, Work, or plan performed or submitted by the Contractor or upon its behalf; including but not limited to responsibility of the Contractor to provide for the protection and safety of all persons and property. This indemnification and save harmless requirement shall apply, but not be limited to, all suits, actions, claims brought, and all damages resulting from any death, injury, or damage received or sustained by any person(s), third person(s), or property based upon:

1. Operations of the Contractor, including but not limited to Work performed; neglect in safeguarding the Work; use of unacceptable Materials; any act, Work, or plan performed or submitted by the Contractor on its behalf or resulting from performance, nonperformance of the Work, or any omission, neglect, or misconduct occurring during the course of the Contract.

2. Any claim(s) or amount(s) recovered from any infringement(s) of patent, trademark, or copyright.

3. Any claim(s) or amount(s) arising or recovered under the "Workers Compensation Act", for any violation or alleged violation of any law, ordinance, rule, regulation, order, or decree.
   The Department may withhold as retainage for the use of the State to pay any amount claimed or anticipated, as determined by the Engineer, except that such money will not be withheld when the Contractor produces satisfactory evidence that it is adequately protected by public liability and property damage insurance. In any event, the Surety shall be liable to pay any amount recovered as a result of any suit, action, claim, injuries, or damages sustained and until such time as the matter has been settled or otherwise legally resolved.

107.11 Furnishing Right-Of-Way. The Department will be responsible for securing all necessary Rights-Of-Way in advance of construction. Any exceptions will be indicated in the Contract.

107.12 Personal Liability of Public Officials. The Department, Director, Engineer, or their authorized agents will incur no personal liability as a result of carrying out any of the provisions of the Contract, as the result of exercising any power or authority granted

to them thereby, or as the result of any act by the Contractor. In such matters they act as the agents and representatives of the State.

107.13 Contractor's Responsibility for the Work after Final Acceptance; No Waiver of Legal Rights. Upon Completion of the Work, the Department will expeditiously make Final Inspection and notify the Contractor of acceptance. Such final acceptance, however, will not preclude or estop the Department from correcting any measurement, estimate, or certificate made before or after Completion of the Work, nor will the Department be precluded or estopped from recovering from the Contractor or its Surety, or both, such overpayment as it may sustain, or recovering the cost of the failure on the part of the Contractor to fulfill its obligations under the Contract. A waiver on the part of the Department of any breach of any part of the Contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the Contract, shall be liable to the Department after Final Acceptance for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Department's rights under any warranty or guaranty.

107.14 Hazardous Materials Discovered Within the Project Limits. If any condition is encountered or exposed that indicates the presence of a hazardous material or toxic waste, immediately suspend construction operations in the area and notify the Engineer. Continue Work in other areas of the Project unless otherwise directed by the Engineer.

Conditions indicating the presence of a hazardous material or toxic waste include, but are not limited to, the following: presence of barrels, chemical odors, excessively hot earth, smoke, or any other condition that indicates a hazardous material or toxic waste. Treat such conditions with extreme caution.

The Engineer will arrange for disposition of the hazardous material or toxic waste by a third party Contractor.

Section 108 – Subcontracting; NTP; Progress Schedules; Time Extensions; Liquidated Damages; Termination

108.01 Subletting of the Contract

108.02 Preconstruction Meeting; Submitting a Schedule; Notice to Proceed

108.03 Performance and Progress

108.04 Contractor's Resources; Progress Schedules

108.05 Traffic Requirements and Contractor's Operations; Completing

108.07 Extensions of Contract Time; Weather Delays

108.08 Failure to Complete on Time

108.09 Schedule of Liquidated Damages

108.10 Default of the Contract

108.11 Termination of the Contract for Convenience

Work
108.06 Preference for Delaware Labor; Character of Workers and Equipment; Specified Construction Methods
108.12 Termination of the Contractor's Responsibility

108.01 Subletting of the Contract. Perform Work with the Contractor's own organization amounting to not less than **50 %** of total original Contract Price, excluding any specialty Items designated by the Contract. Specialty Items may be performed by subcontract and the amount of any such specialty Items performed may be deducted from the total original Contract Price before computing the amount of Work required to be performed by the Contractor's own organization. The Contract upon which the requirements are computed includes the cost of Material and manufactured products that are to be purchased or produced by the Contractor under the Contract provisions. Adjustments in quantities or additional Items of Work shall not require an Adjustment of the percentage computed as described above.

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

(1) The prime Contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) The prime Contractor remains responsible for the quality of the Work of the leased employees;
(3) The prime Contractor retains all power to accept or exclude individual employees from Work on the Project; and
(4) The prime Contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other federal regulatory requirements.

"Specialty Items" are limited to Work that requires highly specialized knowledge, abilities, or Equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the Contract as a whole and in general are intended to be limited to minor components of the overall Contract. All Specialty Items will be expressly identified in the Contract.

Do not sublet, sell, transfer, assign or otherwise dispose of any portion of the Contract except with the written consent of the Engineer. Such consent, when given, does not relieve the Contractor of any responsibility for the fulfillment of the Contract. Do not purchase Work or Materials from an organization other than its own, or otherwise

dispose of the Contract or Contracts or any portion thereof, or of its right, title or interest therein, without written consent from the Engineer. Written consent will only be given after the Engineer has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime Contract.

If the Contractor proposes to subcontract any part of Work, outline the scope and value of the Work to be performed by the Subcontractor. Outline the cost of Materials to be used by the Subcontractor. Include the cost of Materials to be used by the Subcontractor in the value of the subcontracted Work. A Subcontractor shall not subcontract further a portion of the Work without the express written permission of the Engineer. In granting such permission, the Engineer will 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.

Perform all the traffic control Work and related Items either (1) entirely with labor, Equipment and Materials from the Contractor's own organization; or (2) entirely with labor, Equipment and Materials from a single Subcontractor. Maintenance of the Equipment will not be subject to this requirement.

When the Contractor has sublet a portion of the Contract or a Bid Item to a Subcontractor, the actual payment to the Subcontractor will be applied to fulfill Disadvantaged Business Enterprise (DBE) requirements of the Contract, where applicable. The cost of the portion of the Contract or Bid Item performed by a DBE will be included in the total amount of Work subcontracted by the Contractor in determining whether the Contractor is performing at least 50% of the total Contract Bid Price, as required by this Section.

As a prerequisite to payment for any Work performed by a Subcontractor or on a Subcontractor's behalf and prior to any Work being performed on the Project by any Subcontractor, submit a certified copy of the Contractor-Subcontractor agreement and a copy of the Subcontractor’s Delaware business license. Also include all other contracts with suppliers or any other person, firm, or organization for review and approval by the Engineer. Each subcontract shall be in writing and shall contain and state that all pertinent provisions and requirements of the prime Contract are incorporated into the subcontract. The Contractor is solely responsible to determine that all such provisions are included and such provisions will be implied where not specifically included.

The Contractor may also be required to submit additional information concerning the prospective Subcontractor or supplier, including any additional information required by the terms of this Contract, by the Department or by the FHWA, or other governmental agency, where necessary. Such information may include but may not necessarily be limited to:

A. Evidence that the organization which performs the Work is particularly experienced and equipped for such Work.

B. Assurance by the Contractor that the labor standards provisions set forth in this Contract shall apply to labor performed on all Work encompassed by the Contract.

C. Assurance that all Civil Rights Provisions and DBE requirements have been satisfied.

Include provisions in all subcontracts that indemnify and save harmless the Department from the action of the Subcontractor or supplier; provisions that provide for the binding arbitration of all disputes between the parties to the subcontract agreement; and provisions that save harmless and indemnify the Department for omissions in the subcontract agreement.

Any review performed or permission or approval granted under these Specifications will not operate, nor be interpreted as approval of the Work to be performed by the Subcontractor or Material supplied by a supplier, nor operate to relieve the Contractor of the sole responsibility for satisfactory Completion of the Contract. No contracts, subcontracts, supplier agreements, sales, transfers, leases, assignments, or any other agreements applicable to this Contract will in any case release the Contractor of its sole responsibility and liability under the Contract and Bonds.

The Department, at its discretion, may refuse to pay for or accept all or part of the Work or Materials supplied by an unapproved Subcontractor or Materials supplier and may refuse to consider such Work performed or Materials supplied as part of the subcontracted Work.

108.02 Preconstruction Meeting; Submitting a Schedule; Notice to Proceed. Following the execution of the Contract, the Engineer may schedule a preconstruction meeting. Prior to the preconstruction meeting, submit the progress Schedule per Section 108.04. After the preconstruction meeting, the Engineer will issue to the Contractor a Notice to Proceed which will stipulate the date on or before which the Contractor must begin Work. The date specified in the notice will be at least ten Calendar Days subsequent to the date of issuance of the Notice to Proceed. No Work is to be started before receipt of the Notice to Proceed. The specified Contract Time will begin on the Day the Work actually starts or on the date stipulated in the Notice to Proceed, whichever is earlier.

108.03 Commencement of Work; Counting Contract Time. Begin Work no later than the date stipulated in the Notice to Proceed. Contract Time will be counted using either Calendar Days or Working Days, whichever is indicated in the Bid Proposal.

A. Calendar Day Contracts. Contract Time will begin as specified in Section 108.02 and continue each and every Day shown on the calendar until the Substantial Completion of the Work as determined by the Engineer. No Work will be permitted on Sundays or Holidays unless the Engineer determines that such Work is in the best interest of the Department. If the Contractor wants to perform Work on Sundays and/or Holidays, submit a written

request to the Engineer at least three Working Days prior to the Sunday or holiday for approval to Perform Work on such Sunday or Holiday. Provide notice to the Engineer no later than 12 PM Friday if any Work is to be performed that week on Saturday so that adequate inspection can be provided by the Department.

B. Working Day Contracts. Contract Time will begin as specified in Section 108.02 and continue as specified in Section 101.74 until Substantial Completion of the Work as determined by the Engineer. No Work will be permitted on Sundays or Holidays unless the Engineer determines that such Work is in the best interest of the Department. Submit a written request to the Engineer at least three Working Days prior to the Sunday or holiday for approval to Work on such Sunday or holiday. Provide notice to the Engineer no later than 12 PM Friday if any Work is to be performed that week on Saturday so that adequate inspection can be provided by the Department.

108.04 Contractor's Resources; Progress Schedules. Provide sufficient Materials, Equipment, and labor to complete the Project within the Contract Time. Lack of resources is not a sufficient reason for an extension of Contract Time.

Submit a progress Schedule to the Engineer for review. Do not start Work until the progress Schedule is approved and methods of construction operations for each phase of construction are acceptable to the Engineer and are in conformance with all applicable erosion and sediment control requirements. The progress Schedule will be used to establish the critical construction operations and to monitor the progress of the Work. Submit the progress Schedule chart in the form specified below, unless the Contract requires a Critical Path Method (CPM) Schedule. When the Contract requires a CPM Schedule, the specifications for preparing and maintaining the Schedule will be set forth in the Special Provisions. The cost of preparing and maintaining a progress Schedule is incidental to the Contract unless otherwise specified in the Contract Documents.

If the Contractor elects to use a CPM Schedule when it is not required in the Contract, comply with the requirements of Section 108.04 and no additional payment will be made for the CPM Schedule.

A. Progress Schedule Chart. Prepare a Progress Schedule Chart ("PSC") that shows in detail the time (Working Days or Calendar Days as specified) involved in performing construction activities for the duration of the Project. Schedule the Project in such manner and sequence as to minimize the time and surface area of erodible earth material. Use the PSC for the coordination of Work under the Contract including the activities of Subcontractors, vendors, and suppliers. The Department will use the PSC to monitor the progress of the Work. Show the impact of

utility activities, permits and interdependent Work between separate Project locations, if applicable.

Fully use, but do not exceed, the specified Contract duration in the PSC. Time charges will begin no later than the time stipulated in the Notice to Proceed. Review and approval of the PSC will not bind the Department nor constitute acceptance of any individual time period for scheduled activities.

B. Biweekly and As-Required Look-Ahead Schedules. Submit to the Engineer a two-week activity Schedule on each Friday for each two-week period of Work activity. This activity Schedule shall provide specific details related to actual construction activities the Contractor plans to have in progress during the two-week period.

When requesting an extension of Contract Time as specified in Section 108.07 and if required by the Engineer, submit a revised detailed progress Schedule showing the remaining Work to be completed and any delay periods that affected the Schedule. The Engineer also reserves the right to require the Contractor to submit a revised Schedule when the Contractor performs a significant amount of the Work out of sequence from the approved Schedule.

Monthly Payment Chart. Unless otherwise noted on the Plans submit to the Engineer, as part of the PSC or CPM Schedule submittal, an estimate of the monthly payments expected to be received on the Contract. This estimate will be referenced as the "Monthly Payment Chart". The Monthly Payment Chart can be generated by hand, or by a word processor or spreadsheet. Include, as a minimum, columns showing estimated monthly payments for the duration of the Contract Time. The total of all estimated monthly payments must equal the Awarded Contract total Bid Price. The Engineer may request an updated "Monthly Payment Chart" depending on the accuracy of the initial estimates and according to the overall needs of the Department. The Monthly Payment Chart is not binding on either the Department or the Contractor. The purpose of the chart is to help the Department plan its budget so that Contractors can be paid each month as quickly as is practicable.

Costs to prepare and/or update the "Monthly Payment Chart" are addressed as follows:

a. On Contracts requiring CPM Schedules and Updates, preparation of the initial chart is incidental to Item 763508. Updates are incidental to Item 763509

b. On Contracts not requiring CPM Schedules, the cost to prepare and update the "Monthly Payment Chart" is included in Item 763000, Initial Expense

108.05 Traffic Requirements and Contractor's Operations; Completing Work. Schedule and conduct Work in such a manner and in such sequence as will ensure the

least interference with traffic. Do not open up Work to the prejudice or determent of Work already started; and the Engineer may require the Contractor to finish a section on which the Work is in progress before Work is started on any additional sections.

108.06 Preference for Delaware Labor; Character of Workers and Equipment; Specified Construction Methods. In the construction of all public works for the State or any political subdivision thereof, or by persons contracting with the State or any political subdivision thereof, give preference in employment of laborers, workers, or mechanics to bona fide legal citizens of the State who have established citizenship by residence of at least 90 Days. Each public works Contract for the construction of public works for the State or any political subdivision thereof will contain a stipulation that any person, company, or corporation who violates the provisions of this Section shall pay penalty to the State Treasurer equal to the amount of compensation paid to any person in violation. The requirement to give preference to Delaware laborers, workers or mechanics shall not apply to federally funded Contracts.

Employ only competent and efficient persons. Whenever, in the opinion of the Engineer, any employee is careless or incompetent, obstructs the progress of the Work, acts contrary to instructions of the superintendent or foreman, or conducts himself/herself improperly, discharge the employee, upon the request of the Engineer, from the Work and do not again employ that person on the Contract or any other Contract for the Department, except with the written consent of the Engineer.

Use only machinery and Equipment that is of sufficient size and capacity to obtain satisfactory quality in the performance of the Work. Do not use Equipment that injures the Work, adjacent property or public roads. When the Contract specifies that the Work be performed by the use of certain methods and/or Equipment, use such methods and/or Equipment unless alternatives are authorized by the Engineer. Submit requests for the use of alternative Equipment or methods in writing for approval. If approval is given, the Contractor will be fully responsible for producing Work in conformity with Contract requirements. If, after trial use of the substituted methods and/or Equipment, the Engineer determines that the Work produced does not meet the Contract requirements, discontinue the use of the substitute method and/or Equipment and complete the remaining construction with the specified methods and/or Equipment.

If substituted methods or Equipment produce deficient Work, remove the deficient Work and replace it with Work of specified quality, or take such other corrective action as the Engineer may direct. No additional compensation or increases in Contract Time will be allowed as the result of authorizing a change in methods and/or Equipment under these provisions unless it is as a credit to the Department or a VEP.

108.07 Extensions of Contract Time; Weather Delays. If the Contractor cannot complete the Work within the time allowed by the Contract due to a delay or delays that meet the criteria of Section 105.21, submit a written request to the Engineer for an extension of time for Completion of the Contract. Submit the reasons justifying the delay. All time analysis will be performed based on the approved Contract Schedule.

Failure to submit an acceptable Schedule or failure to properly maintain the Schedule forfeits the Contractor's right to a time extension. If requested by the Engineer, submit a revised detailed progress Schedule showing the remaining Work to be completed on the Project. If the Engineer finds that the request for an extension of time is justified, the Engineer will grant an extension of time in such amount as the Contractor proves to be reasonable and proper. Upon written notice being sent by the Engineer, the new Completion time will become part of the Contract and shall be binding upon the Contractor and Surety. The Contractor shall not be entitled to any additional time as a result of any delay to the Schedule without articulating a valid reason that is permitted by these Specifications.

The Contractor is presumed to have included in its Contract price allowance for any reasonably anticipated delays in procurement of Materials and procurement is the Contractor's sole responsibility. Unless some unusual market condition such as an industry-wide strike, natural disaster, or area-wide shortage arises after bids are taken and prevents procurement of Materials within the allowable time limitations, delays in delivery of such Materials are not sufficient reasons for extending the Contract Time.

For Contracts that do not provide an allowance for Weather Days in the Contract documents, follow the requirements of Section 105.15(J) to determine if weather warrants and extension of Contract Time.

For Contracts that provide an allowance for Weather Days, the term "Weather Day" means any Calendar Day, including weekends, Holidays and non-Work periods, on which weather conditions would prevent a Contractor from performing Work, whether or not the Contractor was scheduled to Work that Day. For each Weather Day that occurs on a Jobsite, submit a request to the Engineer for that Day to be counted as a Weather Day. When the total number of Weather Days that are submitted and approved exceeds the number of allowable Weather Days provided in the Contract, Contract Time will be extended one Calendar Day for each Calendar Day that Work cannot progress due to the impact of weather. Such extensions will only begin accruing once the allowable Weather Days are exceeded and Contract Time will only be adjusted for Weather Days that occur after the number of allowable Weather Days has been exceeded. For Contracts without CPM Schedules, Calendar Days lost to weather do not need to occur on a critical path in order to be considered for an extension of Contract Time

108.08 Failure to Complete on Time. For each Calendar Day or Working Day that Work remains uncompleted after the Contract Time has expired, the sum specified in Section 108.09 will be deducted from any money due the Contractor. This sum is not a penalty, but is a liquidated damage assessed to recover the cost of inconvenience to the public, added cost of engineering and supervision, and other extra expenditures of public funds due to the Contractor's failure to complete the Work on time. Any Adjustment of the Contract Time for Completion of the Work granted under Section 108.07 will be considered in the assessment of Liquidated Damages.

The column indicated in the chart as "Calendar Day" will also be used in the assessment of Liquidated Damages for contracts with a predetermined Completion date.

Computations for the assessment of Liquidated Damages will be made in accordance with the daily computations described in the definition of Working Day, when the Contract is a Working Day Contract. On all other Contracts each and every consecutive Calendar Day, including Saturdays, Sundays, and Holidays, will be included in the computations for the assessment of Liquidated Damages.

Assume liability for Liquidated Damages for delays commencing from the date on which the Contract Time, as adjusted by Section 108.07, expires. The Department will not pay the Contractor for Maintenance of Traffic devices or measures used during periods when Liquidated Damages are assessed. This includes, but is not limited to, MOT devices, flaggers, Traffic officers and any Lump Sum MOT Items that may be included in the Contract. Additionally, the Department will not pay the Contractor for field office items or CPM updates used during periods when Liquidated Damages are assessed.

Permission for the Contractor or Surety to continue and finish Work after the Contract Time and approved extensions have elapsed will not waive the Department's rights under the Contract. The Department may waive such portions of the Liquidated Damages as may accrue after the Work is substantially complete and is in a condition for safe and convenient use by the traveling public. Payment of Liquidated Damages will be deducted from payments otherwise due the Contractor or be made by direct payment by the Contractor in the event that the total Liquidated Damages due exceeds the deductions.

108.09 Schedule of Liquidated Damages. The specific rates for Liquidated Damages are as follows:

http://deldot.gov/information/business/drc/pd_files/plan_development/liquidated_damages_chart.pdf

108.10 Default of the Contract. The Engineer may give notice to the Contractor and the Surety, in writing, declaring the Contract to be in default under the following conditions:

A. If the Contractor fails to begin the Work within the time specified in the Notice to Proceed.

B. If the Contractor fails to perform the Work with sufficient labor, Equipment, and Material resources to ensure the prompt Completion of the Work in accordance with the approved Schedule.

C. If the Contractor's Work is unacceptable, or if the Contractor refuses to remove Materials or perform any such Work as shall be determined by the Engineer to be defective or otherwise unacceptable Work.

D. If the Contractor discontinues the prosecution of the Work or fails to resume the Work which has been discontinued.

E. If the Contractor becomes insolvent, declares bankruptcy, commits any acts of bankruptcy or insolvency, or allows any final judgment to stand unsatisfied for a period of ten Days.

F. If the Contractor makes an assignment for the benefit of creditors without authorization by the Department.

G. If the Contractor, for any other cause whatsoever, fails to carry on the Work in a manner acceptable to the Department.

If the Contractor or Surety, within a period of ten Days after receiving a written notice of default from the Engineer, fails to remedy the situation to the satisfaction of the Engineer, the Engineer will declare the Contractor to be in default on the Contract, terminate the Contractor's right to proceed with the Work, and have full power and authority, without violating the Contract, to take over the prosecution of the Work from the Contractor. The Department may appropriate or use the Contractor's Materials at the site as may be suitable for use in the Project and may enter into an agreement with another Contractor for the Completion of the Contract according to the terms and provisions thereof, or use other methods as in the opinion of the Engineer will be required for the Completion of the Contract.

All costs and changes incurred by the Department as a result of the default, including the cost of completing the Work under Contract or remedying defective or otherwise unacceptable Work, and any applicable Liquidated Damages or disincentives will be deducted from monies due the Contractor for completed Work. If such cost exceeds the sum which would have been payable under the Contract, then the Contractor and the Surety shall be liable and shall pay to the Department the balance of such costs in excess of the Contract Price.

If it is determined, after termination of the Contractor's right to proceed, that the Contractor was not in default, the rights and obligations of the parties will be the same as if the termination had been issued for the convenience of the Department in accordance with Section 108.11. Thus, damages to which a Contractor may be entitled as a result of an improper default termination will be limited to amounts as provided for in Section 108.11.

108.11 Termination of the Contract for Convenience. The Department may, by written order to the Contractor, terminate the Contract or any portion of the Contract when such termination would be in the best interest of the Department. In the event such termination occurs without fault and for reasons beyond the control of the Contractor, all completed Items as of the date of termination will be paid for at the Contract price. Payment for partially completed and eliminated Work will be paid as provided in Section 109.06.

Acceptable Materials obtained by the Contractor for the Work, but which have not been

incorporated therein, may, at the option of the Department, be purchased from the Contractor at actual cost delivered to a prescribed location, or otherwise disposed of as mutually agreed.

After receipt of notice of termination from the Department, submit, within 60 Days of the effective termination date, its Claim for additional damages or costs not covered above or elsewhere in these Specifications. Such Claim may include such cost items as reasonable idle Equipment time, mobilization efforts, uncompensated bidding and Project investigation costs, overhead expenses attributable to the Project terminated, legal and accounting charges involved in claim preparation, Subcontractor costs not otherwise paid, actual idle labor costs if Work is stopped in advance of the termination date, guaranteed payments for private land usage as part of original Contract, and any other direct cost or direct damage for which the Contractor feels reimbursement should be made. The intent of negotiating this claim would be that an adjusted figure be reached with the Contractor. In no event, however, will loss of anticipated profits be considered as part of any settlement.

The Contractor agrees to make its cost records available to the extent necessary to determine the validity and amount of each item Claimed.

Termination of the Contract or portion thereof shall not relieve the Contractor of its contractual responsibilities for the Work completed, nor shall it relieve the Surety of its obligation for and concerning any just claim arising out of the Work performed.

108.12 Termination of the Contractor's Responsibility. The termination of the Contractor's responsibility for the Work occurs upon Final Acceptance in accordance to Section 105.20, except to the extent provided in Section 107.13.

Section 109 - Measurement and Payment

109.01 Measurement of Quantities
109.02 Scope of Payment for Unit Prices; Payment of Subcontractors
109.03 Compensation for Altered Quantities
109.04 Payment for Differing Site Conditions, Major Changes, Extra Work and Force Account
109.05 Basis of Payment for Fixed Quantity Items
109.06 Eliminated Items
109.07 Estimates; Retainage
109.08 Payment for Stored Material
109.09 Withholding of Money Due on an Estimate to Offset a Contractor's Liability
109.10 Final Payment; Time Limit to Challenge Quantities
109.11 Source of Supply and Carrier Rates on Construction Materials
109.12 Transportation Tax Exemption
109.13 Asphalt Cement Cost Adjustment

109.01 Measurement of Quantities. Work completed under the Contract will be measured by the Engineer according to the United States customary units (English units) or the modern metric system, SI (System of International Units) as designated in

the Contract Documents.

Unless stated otherwise, all Material that is to be measured by weight will be measured as follows:

A. Weigh each loaded truck or other approved hauling Equipment and then deduct the tare weight of the truck or hauling Equipment. Check the tare weight once daily, or as often as directed by the Engineer. Make appropriate adjustments in the use of the tare weight as directed by the Engineer. Computer generate all weight tickets.

B. Use a scale platform of such length and width that it will conveniently accommodate all trucks and other approved hauling Equipment. The entire vehicle, including its load, must rest on the scale platform and be weighed as one unit.

C. The State sealer of weights and measures will certify all scales used to weigh loads for payment.

A station, when used as a definition or term of measurement, will be 100 linear feet (1 km).
Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (such as manholes, utility poles, etc.) having an area of 9 square feet (1 m) or less. Transverse measurements for area computations will be the neat dimensions shown on the Plans.

Measure Structures according to neat lines shown on the Plans or other Contract Documents.

For Items measured by linear foot (linear meter), such as pipes, Culverts, guardrails, underdrains, etc., take measurements parallel to the base or foundation upon which such Structures are placed.

The term "ton" means the short ton consisting of 2000 pounds avoirdupois (the term "metric ton" means 1000 kilograms). Weigh all Material measured by weight or proportioned by weight on accurate, approved scales using competent, qualified personnel at locations designated by the Engineer. If Materials are shipped by rail, the car weight may be accepted provided that only the actual weight of Materials is used for payment. However, car weights will not be acceptable for Material to be passed through mixing plants. Weigh empty trucks used to haul Material being paid by weight daily at such times as the Engineer directs, and each truck shall bear a plainly legible identification mark.

When requested by the Contractor and approved by the Engineer in writing, Material specified to be measured by the cubic yard (cubic meter) may be weighed and such weights will be converted to volumes for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer. The Engineer and the Contractor must mutually agree to use such conversions before using

them. If no agreement can be reached, the Material will be measured in place by volume.

Bituminous Materials will be measured by the gallon (liter).

Volumes will be measured at 60 deg. F (16 deg. C) or will be corrected to the volume at 60 deg. F (16 deg. C) using ASTM D 1250 for asphalt or ASTM D 633 for tars.

When bituminous Materials are shipped by truck or transport, net certified weights or volume subject to correction for loss or foaming may be used for computing quantities.

Cement will be measured by the pound (kilogram).

Timber will be measured by the actual thousand feet board measure, MFBM (cubic meters) incorporated into the Structure.

When a complete Structure or structural unit (in effect, "lump sum" Work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances specified elsewhere in the Contract, manufacturing tolerances established by the industries involved will be accepted.

109.02 Scope of Payment for Unit Prices; Payment of Subcontractors. Receive and accept compensation provided in the Contract as full payment for furnishing all Materials and for performing Work under the Contract in a complete and acceptable manner and for all risk, loss, damage, and expense of every kind arising out of the nature of the Work or the performance thereof, subject to the provisions of Section 107.13.

If the "Basis of Payment" clause for an Item relating to a Unit Price in the Contract requires that the Unit Price cover and be considered compensation for certain Work or Materials used to complete the Work for that Item, this same Work or Material will not be measured or paid under any other Pay Item appearing in the Contract.

When requirements, responsibilities and/or furnishing of Materials (collectively called “Requirements” in this Section) are outlined in the Details, notes on the Plans and/or in the paragraphs preceding the “Basis of Payment” paragraph in these Specifications or Special Provisions, such Requirements are included in the payment for the Item. No separate payment will be made for the above mentioned Requirements even if those requirements are not expressly reiterated in the “Basis of Payment” Section of the specification.

Within 30 Days of receipt of any payment from the Department, file a statement to the Department on a form furnished by the Department that all Subcontractors furnishing labor or Material have been paid the full sum due them at that stage of the Contract, except any funds withheld under the terms of the Contract as required by Chapter 8, Title 17 of the Delaware Code, Annotated Revised 1974, and as amended.

109.03 Compensation for Altered Quantities. When the accepted quantities of Work vary from the quantities in the Contract Schedule, accept payment at the original Contract Unit Prices for the accepted quantities of Work performed. No allowance will be made for any increased cost, except as provided in Sections 104.05, 104.06, 104.07, and 108.11 and/or in any escalation clauses provided in the Contract Documents.

109.04 Payment for Differing Site Conditions, Major Changes, Extra Work, and Force Account. When the Contract requires the Department to compensate the Contractor for Differing Site Conditions, changes to the Contract, and/or Extra Work, (collectively called "Changed Work" in this Section) the Department and the Contractor shall jointly choose one of the following methods to calculate the compensation owed to the Contractor:

(1) perform the Changed Work at Contract Unit Prices;

(2) renegotiate the Unit Prices for the Changed Work;

(3) negotiate a lump sum payment for the Changed Work; or

(4) perform the Changed Work on a time and material basis using the rules for "Force Accounts" described below to determine payment.

Should negotiated new prices or renegotiated existing price(s) involve Work to be performed by a Subcontractor, the Contractor's total allowable mark-up on the subcontracted portion of the Work shall not exceed 10% of the Subcontractor's proposed price. Upon request by the Department, submit documentation substantiating the price of the Subcontractor's proposed Work.

Should the Engineer and the Contractor fail to agree on a method of compensation for Changed Work, the Engineer may direct the Contractor to perform the Changed Work, provided that the Changed Work is within the scope of the Contract. When the Contractor performs Changed Work at the Direction of the Engineer, the Work is called "Force Account Work" and the Contractor will be compensated following the procedure set forth below. Prior to starting Force Account Work, the Engineer and the Contractor must meet to determine the labor, Equipment and Materials that are necessary to perform the Work. The Engineer will make the final determination concerning what labor, Equipment and Materials are necessary. The Contractor must follow the direction of the Engineer when performing the Force Account Work. Force Account Work is to be compensated in the following manner except as further provided in Section 105.15:

1. ***Labor***. Receive as compensation the rate of wage (or scale) actually paid as shown on its certified payrolls for each and every hour that necessary labor and foremen are actually engaged in the Force Account Work. Superintendants, General Foreman, or other general supervisors of the Force Account Work are compensated by the overhead markup in Section (7.) below and are not paid as labor.
Receive as compensation the actual costs paid to, or on behalf of, workers by reason of health and welfare benefits or other benefits, when such amounts are required by collective bargaining agreements or other employment contracts generally applicable to the classes of labor employed on the Work.

2. ***Bond, Insurance, and Tax***. For Bond premiums, property damage, liability, and workers compensation insurance premiums, unemployment insurance contributions, and social security taxes on the Force Account Work, receive the actual incremental cost thereof, necessarily and directly resulting from the Force Account Work. Furnish satisfactory evidence of the rate or rates paid for such Bond, insurance, and tax.

3. ***Materials***. The Department reserves the right to furnish such Materials as it deems advisable. Make no claims for costs and markup on such Materials.
Only Materials furnished by the Contractor and necessarily used in the performance of the Force Account Work will be paid under this Section. The cost of Contractor furnished Materials shall be the cost to the purchaser, whether Contractor, Subcontractor, or other forces from the supplier thereof, together with transportation charges actually paid by the purchaser, except as the following are applicable:

a. If a cash or trade discount by the actual supplier is offered or available to the purchaser, credit that amount to the State notwithstanding the fact that such discount may not have been taken.

b. If Materials are procured by the purchaser by any method which is not a direct purchase from a direct billing by the actual supplier to such purchaser, the cost of such Materials is the price paid to the actual supplier as determined by the Engineer plus the actual costs, if any, incurred in the handling of such Materials.

c. If the Materials are obtained from a supply or source owned wholly or in part by the purchaser, the cost of such Materials shall not exceed the price paid by the purchaser for similar Materials furnished from said source on items or the current wholesale price for such Materials delivered to the job site, whichever price is lower.

d. If the cost of such Materials is, in the opinion of the Engineer, excessive, then the cost of such Material is deemed to be the lowest current wholesale price at which such Materials are available in the quantities concerned delivered to the Project site, less any discounts as provided in a. above.

e. If the Contractor does not furnish satisfactory evidence of the cost of such Materials from the actual supplier thereof, the cost will be determined in accordance with d. above.

4. ***Equipment and Plant***. Use only Equipment that is, in the opinion of the Engineer, in good operating condition. Specifically describe the Equipment used when documenting such Equipment for payment. Use Equipment of suitable size and suitable capacity required for the Work to be performed. In the event the Contractor elects to use Equipment of a higher rental or payment value than that suitable for the Work, payment will be made at the rate applicable to the suitable Equipment. The Engineer will determine the suitability of the Equipment. If there is a differential in the rate of pay of the operator of oversize or higher rate Equipment, the rate paid for the operator is to be that for the suitable Equipment.

a. *Contractor-Owned Equipment and Plant*. The hourly rates for Contractor-owned Equipment and plant will be determined from the applicable volume of the Rental Rate Blue Book (referred to hereafter as the "Blue Book"), published by Machinery Information Division of K-III Directory Corporation, 1735 Technology Drive, Suite 410, San Jose, CA 95110. These provisions apply to the Equipment and plant owned directly by the Contractor or by entities which are divisions, affiliates, subsidiaries, or in any other way related to the Contractor or its parent company.

The Blue Book will be used in the following manner:

1. The hourly rate will be determined by dividing the monthly rate by 176. The weekly, hourly, and daily rates will not be used.

2. The number of hours to be paid will be the number of hours that the Equipment or plant is actually used on a specific Force Account activity, not to exceed 176 hours per calendar month.

3. The current revisions to the Blue Book will be used in establishing rates. The current revision applicable to specific Force Account Work is as of the first Day of Work performed on that Force Account Work and that rate applies throughout the period the Force Account Work is being performed.

4. An area adjustment will be made. Equipment life adjustment will be made in accordance with the rate adjustment tables in the Blue Book. Charge overtime at the same rate indicated in (1) above.

5. The estimated operating costs per hour will be used for each hour that the Equipment or plant is in operation on the Force Account Work. Such costs do not apply to idle time regardless of the cause of the idleness.

6. Idle time for Equipment will not be paid, except where the Equipment has been held on the Project site on a standby basis at the written request of the Engineer and, but for this request, would have left the Project site. Such payment will be made at one-half the rate established in (1) and (4) above. Such payment will not exceed 8 hours in a Day and will not exceed 40 hours in a week.

7. The rates established above include the cost of fuel, oil, lubrication, supplies, attachments, repairs, overhaul and maintenance of any kind, depreciation, storage, overhead, profits, insurance, and all incidentals.

8. Operator costs are not included in this hourly rate for this Equipment.

In the event that a rate is not established in the Blue Book for a particular piece of Equipment or plant, the Engineer will

establish a rate for that piece of Equipment or plant that is consistent with its cost and use in the industry.

b. *Rented Equipment and Plant*. In the event that the Contractor does not own a specific type of Equipment and must obtain it by rental, inform the Engineer of the need to rent the Equipment and of the rental rate for that Equipment prior to using it on the Work. The Contractor will be paid the actual rental rate for the Equipment for the time that the Equipment is actually used to accomplish the Work, provided that rate is reasonable, plus the cost of moving the Equipment on to and away from the job if such moves are solely necessitated by the Force Account Work. For idle rental Equipment that must remain on the site because of a written directive from the Engineer and would have left the site but for that directive, the rented Equipment will be paid at the rental rate established above, not to exceed 8 hours per Day and not to exceed 40 hours per week. In no case will the Department pay the Contractor for equipment costs in excess of the actual cost paid by the Contractor for the rental. Provide a copy of the paid receipt or canceled check for the rental expense incurred.

5. ***Miscellaneous***. No allowance will be made for: general superintendence; the use of tools whose Blue Book value is less than $1,500.00; or other costs for which no specific allowance is herein provided.

6. ***Profit***. Profit shall be computed at 5% of the following:

a. Total Material cost (bare cost not including FOB).

b. Total direct labor cost (actual hours worked multiplied by regular hourly rate and benefits) as provided by Section 109.04 1.

7. ***Overhead***. Overhead is defined to include the following:

a. All salaries and expenses of executive officers, supervising officers, or supervising employees and all home office expenses;

b. All clerical or stenographic employees;

c. All charges for minor Equipment, such as tools whose Blue Book value is less than $1,500.00, including, but not limited to, shovels, picks, axes, saws, bars, sledges, lanterns, jacks, cables, pails, wrenches, and other miscellaneous supplies and services; and

d. All drafting room accessories such as paper, tracing cloth, and blueprinting.

Overhead costs for Force Account Work will be computed at 10% of the following:

a. Total Material cost (bare cost not including FOB).

b. Total direct labor cost (actual hours Worked multiplied by the regular hourly rate) and benefits as provided by Section 109.04 1.

c. Total Equipment and Plant cost.

d. Specific extraordinary overhead expenses, such as hiring of additional supervisory personnel or the use of a special type of minor Equipment (as defined above), which the Contractor has to purchase specifically for the Force Account, may be allowed. In such instances, the Contractor will be paid only the reasonable costs of such extraordinary overhead expenses provided the Engineer has agreed to such costs prior to their being incurred.

8. ***Subcontracting***. For administration costs in connection with approved subcontract Work, receive an amount equal to 5% of the total of such Work completed as set forth in 1. through 4. above.

9. ***Records***. Maintain Force Account Records in such a manner as to provide a clear distinction between the direct costs of Work paid for on a Force Account basis and the costs of other operations.

From the above records, furnish the Engineer completed Daily Force Account Work reports for each Day's Work to be paid for on a Force Account basis. Sign and submit such reports daily. Detail the daily Force Account Work reports as follows:

a. Name, classification, date, daily hours, total hours, rate, and extension for each laborer and foreman.

b. Designation, dates, daily hours, total hours, rental rate (including a copy of the Blue Book pages used), and extension for each unit of machinery and Equipment.

c. Quantities of Materials, prices, and extensions.

d. Costs for transportation of Materials.

e. Cost of property damage, liability, and workers compensation insurance premiums; unemployment insurance contributions; Bonds; and social security tax.

Substantiate Material charges with valid copies of vendor's invoices. Submit such invoices with the daily Force Account Work reports, or, if not available that Day, submit them with subsequent daily Force Account Work reports. Should the vendor's invoices

not be submitted within 60 Days after the date of delivery of the Material, or within 15 Days after the Completion if the Work, whichever occurs first, the Engineer reserves the right to establish the cost of such Materials at the lowest current wholesale prices at which said Materials are available, in the quantities concerned delivered to the location of Work less any discounts provided in Section 109.04 D.3.a.

The Engineer will compare its records with the completed daily Force Account Work reports furnished by the Contractor and make any necessary adjustments. When these daily Force Account Work reports are agreed upon and signed by both parties, the reports become the basis of payment for the Work performed, but do not preclude subsequent Adjustment based on a later audit by the Department.

Allow cost records pertaining to Work paid on a Force Account basis to be open to inspection or audit by representatives of the Department as provided in Section 105.19 J.

109.05 Basis of Payment for Fixed Quantity Items. When indicated on the Plans, Bid Proposal and/or the Special Provisions, certain Items will be paid on an estimated fixed quantity Item basis. Where this occurs, the method of measurement and basis of payment indicated in these Specifications is modified for such Items as follows:

When estimated fixed quantities are indicated, the only quantities for which payment will be made are the estimated quantities as shown in the Proposal at the Unit Prices bid, except in certain situations described below in (1), (2) and (3) of this Section.

When bidding, check the estimates provided in the Contract Documents and appraise the actual amount of labor, Equipment, or Material required to complete the Work in accordance with the Plans and Specifications. No allowance will be made or Claims considered for any quantities used in completing the Work in excess of those given in the Proposal unless:

1) The Contractor encounters a Differing Site Condition that causes the estimated fixed quantity to change;

2) The Engineer adds or deletes Work to the Contract that increases or decreases a fixed quantity Item; or

3) The Contractor contests the fixed quantity and can show that the actual quantity of the Work performed is more than 25% of the estimated fixed quantity.

When Differing Site Conditions cause an estimated fixed quantity to change, the Engineer will adjust the payment in accordance with Section 104.06 of these Specifications. When the Engineer adds or deletes Work, the actual quantity of Work that is added or deleted will be added to or deleted from the estimated fixed quantity. If estimated fixed quantity Items are deleted completely, no payment will be made.

In cases where a fixed quantity is contested by the Contractor, provide necessary measurements and computations to support a change in the quantity. If the change is verified and approved by the Engineer and the error in the estimated fixed quantity exceeds 25%, the Contractor will be compensated at the Unit Bid Price for the actual Quantity of Work performed under the Item.

109.06 Eliminated Items. Should any Items contained in the Contract be found unnecessary for the Completion of the Work, the Engineer may, upon written order to the Contractor, eliminate the Items from the Contract. The elimination of these Items will not invalidate the Contract. When the Contractor is notified of the elimination of Items, the Contractor will be reimbursed for the actual Work performed and all direct expenses incurred in preparation for the eliminated Item as calculated by the Force Account procedure outlined in these Specifications. Reimbursement of Materials actually purchased prior to notification of the elimination of Items will be paid at the actual cost of the Materials plus 15%. Such Materials will become the property of the Department. In no event will reimbursement for an eliminated Item exceed the Bid Price of the Contract Item. Also, in no case will the Contractor be reimbursed for the loss of anticipated profit.

109.07 Estimates; Retainage. The Engineer will once in each month make an estimate, in writing, of the total amount of Work performed on the Contract and the value of the completed Work to the date of the estimate. Five percent of the value of the Work performed as indicated by the estimate may be retained as security for fulfillment of the Contract until a total of 5% of the total bid price has been retained. Securities may be substituted for this retainage in accordance with Section 6919, Chapter 69, Title 29 of the Delaware Code and as amended. Payment of estimates, except final estimates, will not exceed those shown on the Proposal except those authorized by Change Order. No such estimates or payments will be made when, in the judgment of the Engineer, the Work is not proceeding in accordance with the provisions of the Contract or when, in the Engineer's judgment, the total value to the Work performed since the last estimate amounts to less than $3,000.00. The Engineer, if it deems it expedient to do so, may cause estimates to be made more frequently than one in each month and payments thereon to be made more frequently to the Contractor.

109.08 Payment for Stored Material. When approved by the Engineer, estimates may include an allowance for the value of tested and acceptable Materials of a non-perishable or non-contaminative nature which have been produced or furnished in a condition ready for incorporation as a permanent part of Work yet to be completed, provided the following terms and conditions are met:

A. Request. The request for payment allowance for properly stored Materials must be in writing, accompanied by an itemized inventory statement, written consent of the Surety, and an invoice or purchase order on the supplier’s letterhead documenting the cost of the Materials. No payment allowance will be permitted for amounts less than $25,000.00 for each Material of a qualifying Contract Item.

B. Materials. An allowance of 100% of the cost to the Contractor for Materials, not to exceed 90% of the Contract Item price, may be made when such Material is delivered and stockpiled or stored in accordance with the requirements specified in the Contract Documents.
Prior to such allowance, all such Material shall have been tested and found acceptable to the Engineer.
Payment will not be allowed in excess of the Bid Price of the quantity required for the Contract. Base the required quantity on the Contract bid quantities and approved revisions.

C. Excluded Materials. No allowance will be made for fuels, form lumber, Falsework, temporary Structures, or for other Materials of any kind which will not become an integral part of the finished construction.
No allowance will be made for cement, aggregate, sand, seed, plants, fertilizer, or other perishable or contaminative items, nor for Materials which, in the opinion of the Engineer, have an unacceptable shelf life or an environmental, or safety restriction.

D. Storage. Store all Materials in an approved manner and in areas where damage is not likely to occur. Dedicate the stored Material to the Project.
When Materials cannot be practically stored within the limits of the Project, the Engineer may approve the storage of Materials on private property or, for structural members, in the manufacturer's or fabricator's yard. Requests for payment for such Material stored outside the limits of the Project shall be accompanied by a release from the owner and/or tenant of such property or yard agreeing to permit the removal of the Materials from the property without cost to the State.

E. Materials Inventory. Materials shall be available for inspection and inventory at the storage site by the Engineer or the Engineer’s authorized representative at all times.

F. Materials Measurement and Payment. The method of measurement for Materials shall be in units which are easily inventoried and acceptable to the Engineer. Payment allowance for Materials will be included in the progress estimate as a new and separate Item and will be subject to retainage provisions. Submit proof of payment to the Engineer prior to processing the next progress estimate in the form of a paid invoice from the Material supplier. Failure to submit proof of payment prior to the processing of the progress payment will result the deduction of the applicable Material payment in its entirety from progress payments until such time as the proof of payment is received by the Engineer. As the Materials are incorporated into the Project and the Work is paid under the applicable Unit Price(s), an equal percentage of the Material Allowance will be deducted from progress estimates until 100% of the allowance has been deducted. At the conclusion of the Work for which the Materials are required, the cost of Materials remaining in storage for which payment allowance has been made will be deducted from the progress estimate.

109.09 Withholding of Money Due on an Estimate to Offset a Contractor's Liability. Whenever Liquidated Damages are assessable, such damages will be deducted from the monthly and final estimate. The payment of any current or final estimate or of any retained percentage shall in no way affect the obligation of the Contractor to repair or renew any defective parts of the construction and to be responsible for all damage due to such defects.

If at any time there is evidence of any lien or claim for which, if established, the Department might become liable, and which is chargeable to the Contractor, the Department will have the right to retain out of any payment then due or to become due an amount sufficient to completely indemnify the Department against such lien or claim. If there should prove to be any such claim after all payments are made, refund to the Department all monies that the Department may be compelled to pay in discharging any lien made obligatory in consequence of the Contractor's neglect or default.

Upon Substantial Completion of the Work under the Contract, the Engineer may release 60% of the amount then retained. The balance of the amount retained will be held until all reports required of the Contractor are received and final payment is authorized by the Department. The Department may, at its option, retain temporarily or permanently a smaller amount and may cause the Contractor to be paid temporarily or permanently, from time to time, such portion of the amount retained as it deems equitable.

No provision contained in these Specifications shall be construed as creating any debt, liability or obligation on the part of the State or Department to any Subcontractor, supplier, or materialman.

109.10 Final Payment; Time Limit to Challenge Quantities. The Engineer will, as soon as practicable after the Completion of the Contract, make a final estimate of the Work performed and the value of such Work, and the Department will pay the entire sum found to be due after deducting from all previous payments all amounts to be kept and all amounts to be retained under the provisions of the Contract. All prior partial estimates and payments will be subject to correction in the final estimate payment. Give notice to the Engineer of any alleged errors in the payment of Contract quantities. Such notice must be given to the Engineer within 120 Calendar Days of the date when the Engineer gives the Contractor notice that the Contract's quantities have been finalized. Failure to notify the Engineer within this time frame constitutes a waiver of the Contractor's right to contest the quantities. Nothing in this Section serves to preclude the Engineer from performing audits of its own records or the Contractor's records and to adjust payment based on such audits in accordance with other provisions in these Specifications.

The acceptance by the Contractor of the final estimate operates as and is a release to the State, the Department, the Secretary, and its agents from all claims of liability under the Contract, or for anything done or furnished or relating to the Work under the Contract, or for any act or neglect of the State, the Department, the Director, or its agents relating to or connected with the Contract.

109.11 Source of Supply and Carrier Rates on Construction Materials. Bidders must fully inform themselves as to the source of supply of acceptable Materials needed for the Work and in regard to the carrier rates and transportation facilities for these Materials before submitting Proposals.

Inability to secure satisfactory Materials from the source upon which the bid was based, or changes in carrier, or the alteration of transportation facilities for these Materials during the life of the Contract, shall not constitute cause for a Claim for extra compensation.

109.12 Transportation Tax Exemption. Base all Unit Prices on exemption from any transportation tax for which the State is, by law, exempt on Materials entering into and forming a part of the Project.

In order for the Contractors to take advantage of the exemption from payment of the tax on transportation and to have the construction Materials consigned to the State, in care of itself, furnish the supplier with a statement certifying that the Contractor has been authorized to claim the exemption, identifying the Contract in which the authorization was given and instructing the supplier to make the shipment involved free of tax.

109.13 Asphalt Cement Cost Adjustment. For all Sections within Division 400, payments to the Contractor will be adjusted to reflect increases or decreases in the Delaware Posted Asphalt Cement price when compared to the Project Asphalt Cement Base price, as defined in the Bid Proposal.

The Delaware Posted Asphalt Cement Price will be issued monthly by the Department and will be the industry posted price for Asphalt Cement, F.O.B. Philadelphia, Pennsylvania.

The Project Asphalt Cement Base price will be expressly stated in the Contract and will be based upon the anticipated Delaware Posted Asphalt Cement Price expected to be in effect at the time of receipt of bid.

All deviations of the Delaware Posted Asphalt Cement Price from the Project Asphalt Cement Base Price are eligible for cost adjustment. No minimum increase or decreases or corresponding percentages are required to qualify for cost adjustment.

The actual quantity of asphalt cement qualifying for any Asphalt Cement Cost Adjustment will be computed on the basis of the weight of asphalt cement shown on the Department's QA/QC report for the Material delivered to the site. For Recycled Hot-Mix, the asphalt percentage eligible for cost adjustment shall be only the new asphalt cement added to the mix.

There will be no separate payment for asphalt cement. Include the cost of asphalt cement in the various Unit Prices bid per ton (metric ton) for those Bid Items that

contain asphalt cement.

If the Contractor exceeds the authorized allotted Completion time, the price of asphalt cement on the last authorized allotted Working Day or Calendar Day will be the price used for cost adjustment during the time Liquidated Damages are assessed.

The Project Asphalt Cement Base Price will be determined by the Department and will be set forth in the Special Provisions for each Project.

Division 200 – Earth Work (11/24/2014)

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 201.05 Preparation of Ground Surface. (10/10/2011)

Remove the last sentence of the First Paragraph and replace with:

Following root mat and stump removal in fill areas, the existing material shall be leveled and compacted prior to cross sectioning (if required) and placement of initial embankment lifts.

Subsection 201.10 Basis of Payment. (5/15/2006) (10/10/2011)

Modify the 1st 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 leveling and compacting existing material ; 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. (10/10/2011)

Delete 202.04 and any updates in their entirety and replace with:

202.04 Removal of Existing Pipe: All obstructions, within the limits of construction, not covered under Section 201, shall be removed as shown on the Plans, or as directed by the Engineer. The removal of pipe is included in this section. All existing pipe designated for removal regardless of depth, shall be removed with reasonable care. If the removed pipe is reusable, it will remain the property of the Department and shall be stored at a suitable location on or adjacent to the Project for transport by the Department.

All pipes not being used in the drainage system shall be removed entirely or plugged at both ends with concrete block, brick or masonry, as shown in the Plans and in the Standard Construction Details and filled with flowable fill. Payment for pipe removal below or outside the limits of excavation and for plugging is incidental to 202000 - Excavation and Embankment. Flowable Fill will be paid under 208001 – Flowable Fill. Payment for pipe removed within the limits of excavation will be included in the measurement for item 202000.

Subsection 202.05 Embankment. (10/12/2010)

Next to last sentence, change “mixture” to “moisture”

Subsection 202.05 – Embankment. (10/12/2010)

202.05 (a) Preparation: Delete in its entirety and replace with the following:

a. *Preparation.* Unless shown otherwise on the Plans or in the Special Provisions, where the embankment height to be constructed is less than 5' (1.5 m), all sod, vegetation, and topsoil shall be removed from the surface upon which the embankment is to be placed, and the cleared surface shall be completely broken-up to a minimum depth of 6" (150 mm). This area shall then be re-compacted. Sod not required to be removed shall be thoroughly disced before construction of embankment.

   Existing roadway surfaces lying less than 5’ (1.5 m) below the final grade shall be treated as follows:

   1. Existing compacted unpaved road surfaces lying within 3’ (900mm) of the final grade, or within the pavement structure if the subgrade is more than 3’ (900mm) from the final grade shall be scarified to a depth of at least 6”(150mm) unless otherwise designated on the Plans. Scarified material shall be recompacted.

2. Existing bituminous surface treated and paved road surfaces lying within 5' (1.5 m) of the final grade, or within the pavement structure if the subgrade is more than 5' (1.5 m) from the final grade, **shall be removed**, and the underlying base materials scarified to a depth of 6" (150 mm). Scarified material shall be recompacted.

Existing roadway surfaces lying more than 5' (900 mm) below the final grade, or bottom of pavement structure, **may remain in place**, provided that no bituminous material is left in place below the water table as determined by the Engineer or as shown in the Contract Documents. Roadway surfaces remaining in place shall be treated as follows:

1. Bituminous concrete shall be broken up to a maximum surface area of 1 ft^2 (0.1 m^2) and recompacted.

2. Portland cement concrete shall be broken up to a maximum surface area of 1 yd^2 (0.8 m^2) with a pavement breaker or other approved equipment.

3. Bituminous surface treated roadways lying beneath an embankment shall be scarified to a depth of 6" (150 mm) and re-compacted.

Subsection 202.10 – Method of Measurement. (10/10/2011)

Modify the paragraph as follows:

202.10 Method of Measurement. The quantity of excavation will be measured by the cubic yard (cubic meter). The volume will be computed by the method of average end areas and will be measured by cross-sections taken at regular intervals and at breaks in grade. All excavation, except topsoil, will be measured in its original position. Topsoil will be measured in its original position or in a stockpile after excavation, at the discretion of the Engineer. Topsoil removed from fill areas may be stockpiled separately for the cross-sectioning or may be measured by cross-sectioning the area of removal before and after topsoil stripping is performed. Excess excavation generated by the Contractor that the Engineer has directed to be stockpiled for use at a later date will not be measured. Excess excavation generated by others will be measured by the cubic yard (cubic meter) in the stockpile.

Embankment will not be measured.

When 202000 is indicated on the Plans or in the Special Provisions as a fixed quantity, measurement and payment shall be in accordance with Subsection 109.05.

Subsection 206.04 Method of Measurement: (2/23/2011)

Replace (a) with the following:

(a) The pipe trenches will be measured to a width not to exceed 18” (450 mm) on each side of the pipe and to a depth limit not to exceed 12" (300 mm) lower than the bottom of the earth cushion for bedding in rock, as shown on the Plans, or as established by the Engineer.

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.

Section 208 – Excavation and Backfilling for Pipe Trenches: (2/23/2011)

Add the following to Section 208 (In accordance with Section 101.01 of the 2001 Standard Specifications)

208001- FLOWABLE FILL

Description:

Furnish and place flowable fill material at locations as specified in the Plans and as directed by the Engineer.

Materials:

A. Provide materials as specified in:

Portland Cement	AASHTO M 194
Fine Aggregate	Section 822, free of lumps, dirt, debris, and other contamination.
Air-Entraining Admixtures	
Chemical Admixtures	AASHTO M 302, Grade 100 or Grade 120
Fly Ash	
Ground Granulated Blast Furnace Slag (GGBFS)	Section 803
Water	
Subsection 801	
Subsection 804	
AASHTO M 154	

B. Flowable fill consists of a combination of portland cement, fine aggregate, water, and chemical admixtures and/or ground granulated blast furnace slag, fly ash.
C. Submit sources of all materials to the Engineer a minimum of 30 days prior to use.
D. Submit material test data of fly ash representative of the source to the Engineer a minimum of 30 days prior to use. Include test data characteristics of the ash leachate as determined by the Toxicity Characteristics Leaching Procedure (TCLP) in accordance with EPA SW-846, with respect to leachate metals.

Construction Methods:

A. *Mix Design*. Prepare and submit a mix design a minimum of 30 days in advance of use.
   1. Design the material to produce a 28-day compressive strength of 50 to 200 psi. While not required, the addition of an accelerator may be allowed if early gain in strength is desirable.
   2. Test compressive strength in accordance with the following AASHTO test methods:
      T 106M/T 106 Compressive Strength of Hydraulic Cement
      T 23, Making and Curing Concrete Test Specimens in the Field.*Plant and Equipment Requirements.* Provide flowable fill produced only in batching plants meeting the requirements of 812.07.
B. *Transportation.* Transport flowable fill to the project in ready-mix trucks or as approved by the Engineer. Place the material within three hours of the introduction of water to the mixture.
C. *Placement.* Place flowable fill only when:
   1. The ambient temperature is a minimum of 40º F (4ºC) and rising;
   2. The temperature of the flowable fill is a minimum of 50º F (10º C);
   3. Do not place flowable fill against frozen surfaces;
   4. Protect flowable fill from freezing for at least 36 hours in accordance with 501.04;
   5. Provide positive containment of the fill material to prevent flow beyond the desired placement location;
   6. Discharge fill at a rate that allows the material to:
      i. flow into the placement location;
      ii. fill all voids; and
      iii. not dislodge the existing containment or interior items.
   7. Make relief holes wherever necessary to ensure that all voids are filled.
D. Ensure that all interior items are capable of withstanding lateral hydraulic pressures of the flowable fill.
E. Do not exceed 5 feet in lift thickness unless otherwise directed by the Engineer
F. Allow each lift to cure until it is self-supporting before placing additional lifts or other loads.
G. Take care to prevent pipes from floating.
   1. Straps, soil anchors, or other approved means of restraint may be required to ensure proper alignment when flowable fill is used as backfill

for pipes. Ensuring proper alignment is the sole responsibility of the Contractor.

H. Place flowable fill to the final lines and grades shown on the Plans.
I. Maintain all confining and supporting structures, protective covers, and barriers until the flowable fill is self-supporting.
J. Shrinkage of the flowable fill as it cures may require additional backfill with other material.
K. Protect flowable fill from direct contact with vehicular traffic and from prolonged exposure to rain and or running water.

Method of Measurement:

The quantity of flowable fill will be the measured number of cubic yards of material accepted and placed within the approved limits of the fill location. Pipe trenches will be measured in accordance with Section 208.05.

Basis of Payment:

The quantity of flowable fill will be paid for at the Contract unit price per cubic yard. Price and payment will constitute full compensation for furnishing component materials, designing, mixing, and hauling the fill material; preparing the fill location for containment of the fill material; anchoring of items within the fill location; protecting and curing the material after placement; and all labor, tools, equipment and incidentals necessary to complete this work.

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 208.05 Method of Measurement: (2/23/2011)

Replace subsection with the following:

208.05 Method of Measurement. The quantity of excavation and backfilling for pipe trenches will be measured as the volume of excavation included between a line from the bottom of plan excavation to the bottom of the pipe at the time of pipe placement, and a normal horizontal measurement of outside pipe dimension plus 18” (450mm) each side, unless otherwise designated on the Plans, but exclusive of rock excavation, which will be paid for under Section 206. No allowance will be made for excavation or backfill outside the limits established above. The limits of trench excavation shall extend to the exterior wall of drainage inlets and manholes. When the trench intercepts a "normal" structure, such as a headwall, culvert, etc. (where payment for structure excavation is

applicable), the trench payment limit will terminate at the point where structure excavation begins [normally 18" (450 mm) outside the structure]. For pipe placement in a fill area, the trench payment limit will extend to only 12" (300 mm) above the pipe.

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

Modify the 1st 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/ft3 (1440 kg/m3)

(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 209.04 Borrow Types. (10/12/2010)

209.04 (g) Delete in its entirety

Table 209-A – Type G* (Select Borrow)

Delete in its entirety

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

Modify the 3rd 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^3.

Subsection 250 – Sediment Removal (11/24/2014)

Remove this subsection in its entirety.

Subsection 251- Silt Fence (11/24/2014)

Remove this subsection in its entirety. Refer to subsection 905 Sediment Trapping Devices.

Subsection 252 – Inlet Sediment Control (11/24/2014)

Remove this subsection in its entirety. Refer to subsection 905 Sediment Trapping Devices.

Subsection 254 – Stone Check Dam (11/24/2014)

Remove this subsection in its entirety. Refer to subsection 907 Water Control Practices.

Subsection 255 – Sediment Trap (11/24/2014)

Remove this subsection in its entirety. Refer to subsection 905 Sediment Trapping Devices.

Subsection 257 – Riprap Ditch (11/24/2014)

Remove this subsection in its entirety.

Subsection 258 – Temporary Swale (11/24/2014)

Remove this subsection in its entirety.

Subsection 259 – Perimeter Dike/Swale (11/24/2014)

Remove this subsection in its entirety.

Subsection 260 – Earth Dike (11/24/2014)

Remove this subsection in its entirety.

Subsection 261 – Temporary Slope Drain (11/24/2014)

Remove this subsection in its entirety. Refer to Subsection 907 Water Control Practices.

Subsection 262 – Stilling Well (11/24/2014)

Remove this Subsection in its entirety. Refer to Subsection 909 Waterway Construction Practices.

Subsection 263 – Sump Pit (11/24/2014)

Remove this Subsection in its entirety. Refer to Subsection 906 Dewatering Practices.

Subsection 264 – Dewatering Basin (11/24/2014)

Remove this Subsection in its entirety.

Subsection 265 – Geotextile Lined Channel Diversion (11/24/2014)

Remove this Subsection in its entirety. Refer to Subsection 909 Waterway Construction Practices.

Subsection 266 – Sandbag Dikes (11/24/2014)

Remove this Subsection in its entirety. Refer to Subsection 909 Waterway Construction Practices.

Subsection 268 – Stabilized Construction Entrance (11/24/2014)

Remove this Subsection in its entirety. Refer to Subsection 908 Soil Stabilization Practices.

Subsection 269 – Turbidity Curtain (11/24/2014)

Remove this Subsection in its entirety. Refer to Subsection 909 Waterway Construction Practices.

Subsection 270 – Portable Sediment Tank (11/24/2014)

Remove this Subsection in its entirety. Refer to Subsection 906 Dewatering Practices.

Subsection 271 – Stormwater Management Pond (11/24/2014)

Remove this Subsection in its entirety. Refer to Subsection 910 Stormwater Management Facilities.

Subsection 272 – Pond Outlet Structure, Concrete (11/24/2014)

Remove this Subsection in its entirety. Refer to Subsection 910 Stormwater Management Facilities.

Subsection 273 – Temporary Sediment Basin Outlet Structure, Corrugated Metal (11/24/2014)

Remove this Subsection in its entirety.

Subsection 274 – Clay Borrow, Stormwater Management Pond (11/24/2014)

Remove this Subsection in its entirety. Refer to Subsection 910 Stormwater Management Facilities.

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

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.

Materials:

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

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.

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.

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.

<u>Subsection 302.04 Placement. Subpart (c) Performance</u>. (5/15/2006)

Delete the first sentence in the 2nd 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.

<u>Subsection 401.04 Hauling Equipment</u> (10/10/2011)

Remove the current language and replace with the following:

Trucks used for hauling bituminous concrete shall have tight, clean, smooth metal beds which have been thinly coated with an emulsified oil, soap solution, or other approved release agent to prevent adherence of the bituminous mixture to the bed of the truck. Each truck shall have a securely fastened cover of canvas or other suitable waterproof material that covers the bed from front to back and over the sides. The front of the tarp shall be securely fastened to the body or protected by an air foil. The cover shall have at least three straps to a side and two straps on the back to prevent the cover from ballooning up, to protect the mixture from the weather, and to prevent heat loss. No loads shall be sent out so late in the day that spreading and compacting of the mixture cannot be completed by sunset unless approval for nighttime paving has been granted by the Engineer.

<u>Subsection 401.08 Placing Bituminous Mixtures</u>. (1/3/2008) (10/10/2011) (10/22/2013)

Add the following to the 2nd paragraph:

Type B Hot-Mix shall be placed in single individual lifts from 2.25” to 4” in depth.
Type C Hot-Mix shall be placed in single individual lifts from 1.25” to 2” in depth.

Add the following to the 4th paragraph:

Carefully plan the placement of the surface course to ensure that the joints in the surface course will correspond with the proposed traffic lanes and will not be located in the wheel path of vehicles using the roadway. Locate longitudinal joints at the lane line (center and edge). Longitudinal joints must also be parallel to the centerline unless otherwise shown on the Plans. Place the longitudinal joint between the travel way and shoulder on the shoulder side of the lane line. Establish and follow reference lines or other approved markings to control the true alignment of the longitudinal joints.

Replace Table 401-A with the following:

Table 401-A			
Minimum Ambient Air Temperature for Placement of Types of Bituminous Material			
Material	*1" (25 mm) Lift*	*1.25 to 2" (32 mm to*	*Greater than*
Type	*or Less*	*50 mm) Lift*	*2.25 to 3" (56 mm to 75) Lift*
B	50 °F (10 °C)	40 °F (4 °C)	32 °F (0 °C)
C	50 °F (10 °C)	40 °F (4 °C)	N/A

Note:

Type B - Dense graded base and binder course
Type C - Dense graded surface course

<u>Subsection 401.09 Deep Lift Base Course</u>. (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.

<u>Subsection 501.02 Materials</u>. (3/28/2012)

Remove Concrete Mix Composition, Class B, Fixed-Form Paving and
Remove Concrete Mix Composition, Class B, Slip-Form Paving and replace with the following:

501.02 Materials.

Concrete Mix Composition, Class B, Fixed-Form Paving 812.03
Concrete Mix Composition, Class B, Slip-Form Paving 812.03

<u>Subsection 503.02 – Portland Cement Concrete</u>. (3/28/2012)

Remove the last paragraph and replace with the following:

The consistency of portland cement concrete, Class A or Class B, shall conform to the requirements of Subsection 812.03, except as noted above.

<u>Subsection 601.07 Hardware</u>. (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.

<u>Subsection 602.02 Materials</u>. (3/28/2012)

Replace concrete Mix Composition, Classes A, B, C, and D with the following:

Concrete Mix Composition, Classes A, B, C, and D 812.03

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

Modify the 2nd 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.

<u>Subsection 602.19 Removal of Forms and Falsework, and Placement of Superimposed Vertical Loads</u>: (2/23/2011)

Modify the first sentence of the first paragraph after the chart as follows:

During cold weather [less than 40 ºF (4 ºC)] forms for vertical surfaces shall remain in place for a minimum of five days.

<u>Subsection 602.20 Bridge Decks</u>. (10/12/2010) (3/28/12)

Add the following sentence to 602.20 (a)(1):

These drawings and all calculations must be signed and sealed by a Professional Engineer registered in the State of Delaware.

Update the last paragraph of 602.20 (3) (C) (1) to read as follows:

Perform continuous removal of all waste materials, including slurry, resulting from the grooving operations in accordance with subsections 106.09 and 110.17, leaving all surfaces in a washed and clean condition.

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

Add the following sentence:

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

<u>Subsection 603.08 Method of Measurement</u>: (10/10/2011)

Remove existing language and bar chart and replace with following:

The quantity of bar reinforcement will be measured by using the approved shop drawing rebar schedule.

<u>Subsection 603.09 Basis of Payment</u>: (10/10/2011)

Remove existing language and replace with following:

The quantity of bar reinforcement will be paid for at the Contract unit price per pound (kilogram), based upon the approved shop drawing rebar schedule. Price and payment will constitute full compensation for furnishing and placing all materials, including clips, wire, chairs, and other material used for fastening the bar reinforcement in place, for banding and splicing, and for all labor, equipment, tools, and incidentals required to complete the work.

<u>Subsection 612.05 Excavation</u>. (3/18/2004) (2/23/2011)

Delete the entire paragraph and insert the following:

Excavate the pipe trench in accordance with Section 208 and the Standard Construction Details.

<u>Subsection 612.06 Bedding of Pipe</u>. (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.

<u>Subsection 612.11 Basis of Payment</u>. (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.

<u>Subsection 614.11 Basis of Payment</u>. (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.

<u>Subsection 617.02 Materials</u>. (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.

<u>Subsection 619.11 Test Piles</u>. (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).

<u>Subsection 619.12 Driving Production Piles</u>. (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).

<u>Subsection 623.07 Non-Shrink Grout</u>. (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.

<u>Subsection 623.11 Design Criteria</u>. (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.

<u>Section 701 - Curb and Integral Curb and Gutter</u> (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’ (6 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 ¼" 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^2/gal (4.9 m^2/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

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.

Materials:

A. Provide materials as specified in:

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

B. Submit samples of the proposed system to the Engineer for approval prior to the start of work.
C. Submit mortar mix formula for concrete sidewalk applications to the Engineer for approval prior to the start of work.
D. Utilize the dome pattern shown in the Standard Construction Details.
E. 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.

F. 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)

G. 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.

<u>Construction Methods</u>:

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.

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.

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.

Section 705 – Portland Cement Concrete Sidewalk. (10/12/2010) (10/22/2013)

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

705008 - CURB RAMP, TYPE 1
705009 - CURB RAMP, TYPE 2, 3, AND/OR 4
705010- CURB RAMP, TYPE 5

Description:

Furnish all materials and construct curb ramp(s) at the indicated location(s) on existing sidewalks in accordance with the Standard Construction Details, notes and details shown on the Plans, and/or as directed by the Engineer.

Materials:

E. Provide materials as specified in:

Portland Cement Concrete	Section 812, Class B
Graded Aggregate	Section 821, Type B
Hot-Mix	Section 823

Construction Methods:

A. Construct Curb ramps in accordance with the requirements of the Standard Construction Details, any modifications on Plans and to all the applicable requirements of Sections(s) 302, 401, 705, 758 and 762 of the Standard Specifications.
B. Provide and install PVC sleeves, 4” minimum or 6” maximum inside diameter. Place the lower end of the sleeve on top of the subbase material in the proposed concrete sidewalks for future traffic sign posts as directed by the Engineer.

Method of Measurement:

A. The quantity of curb ramps will be the measured square foot (square meter) surface area of curb ramp acceptably completed.
   1. The area of curb ramps will be established by the measurement of the curb, sidewalk and taper areas shown in the Standard Details.
   2. No measurement for payment will be made on vertical surfaces of curb or sidewalk.
B. Sidewalk or curb removed and/or replaced beyond the minimum limits required to achieve the slopes shown in the Standard Details as measured from the nearest edge of the landing area, are paid under the appropriate items for concrete removal, graded aggregate, sidewalk, and curb unless otherwise noted on the plans.
C. Curb ramps constructed in conjunction with the new P.C.C. sidewalk shall be measured and paid for under other items.

Basis of Payment:

The area of curb ramps will be paid for at the Contract unit price per square foot (Square Meter). Price and payment constitutes full compensation for furnishing and placing all materials including concrete, aggregate, hot-mix or concrete for patching along the curb line, expansion material, saw cutting, removal and disposal of the existing curb, gutter, sidewalk, and pavement, excavation, grading and compacting, including the curb and pavement areas within the limits of the ramp, and for all equipment, labor, tools, and incidentals necessary to complete the work. The limits of removal and replacement shall be the minimum area required to achieve the allowable slopes as shown in the Standard Details.

Subsection 705.04 Curing Material. (3/28/2012)

Delete and replace with the following:

Curing Material. Curing materials shall conform to the requirements of Subsection 812.02 (m).

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.

Section 708 – Drainage Inlets and Manholes: (10/10/2011)

Add the following:

708060 –REPLACE DRAINAGE INLET GRATE(S)

Description:

Furnish and install drainage inlet grate(s) at the location(s) shown on the Plans and/or as directed by the Engineer.

Materials:

Provide materials as specified in:

Drainage Inlet grates	AASHTO M 270 Grade 36 or ASTM A 36 capable of HS-25 load rating Standard construction Details or noted in the Plans

Construction Methods:

1. Meet with Engineer to confirm the quantity and location(s) of the existing drainage inlet grate(s) that do not conform to the requirements of the Standard Construction Details unless otherwise designated on plans.

2. Make field measurements to determine the exact sizes of the drainage inlet grate(s) prior to placing order.

3. Remove non-compliant drainage inlet grate(s) and install new grate(s).

4. Transport and unload old drainage inlet grate(s) to the Department's District Maintenance Yard as specified on the Plans, or as directed by the Engineer.

Method of Measurement:

The quantity of drainage inlet grate(s) replaced will be measured as the actual number of each that is installed and accepted.

Basis of Payment:

The quantity of drainage inlet grate(s) replaced will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for furnishing, hauling, installing, transporting and unloading old drainage inlet grates to the District Maintenance Yard, for all labor, tools, equipment, and incidentals to complete the job.

708061 - REPLACE DRAINAGE INLET FRAME(S)

Description:

Remove, replace, and adjust drainage inlet frame(s) at the location(s) shown on the Plans and/or as directed by the Engineer.

All adjustments are to be made prior to paving operations.

Materials:

Provide materials as specified in:

GABC	Section 302
Portland Cement Concrete	Section 812, Class B
Expansion joint Material	Subsection 808.06
Bar Reinforcement	Section 824
Curing Compound	Subsection 812.02 (i)
Castings	AASHTO M 270 Grade 36 or ASTM A 36 capable of HS-25 load rating Standard Construction Details or as noted in the Plans
Borrow, Type C	Subsection 209.04(c)
Topsoil	Section 732
Seeding	Section 734

General: Submit all materials to Materials and Research Section for approval in accordance with Subsection 106.01.

Construction Methods:

1. Meet with the Engineer to confirm the quantity and the location(s) of the existing drainage inlet frame(s) that do not conform to the requirements of the Standard Construction Details unless otherwise designated on the Plans.
2. Make field measurements to determine the exact sizes of the grate(s) prior to placing order.
3. Sawcut existing hot-mix or PCC pavement (minimum 2’ from face of drainage inlet).
4. Excavate materials from perimeter of the drainage inlet.
    a. Dispose of waste materials in accordance with Subsection 106.09;
5. Prepare subgrade for patching to match existing pavement section.
6. Place forms for the new drainage inlet top unit to accommodate the replacement frame in accordance with the Standard Construction Details.
    a. Place required bar reinforcement.
    b. Placing the grate on bricks or blocks is not permitted.
7. Place expansion joint material at the outside limits of the drainage inlet curb section.

8. Place Portland Cement Concrete (PCC) for Drainage Inlet top unit in accordance with the Standard Construction Details.
    a. Finish PCC in accordance with Subsection 701.11.
    b. Remove forms in accordance with Subsection 701.12.
    c. Cure in accordance with Subsection 701.13.
9. Backfill drainage inlet top unit.
    a. Place bituminous concrete patching in accordance with Section 401.
    b. Place topsoil to a depth of 6” in accordance with Section 732.
    c. Seed topsoiled areas in accordance with Section 734.

Method of Measurement:

The quantity of replacing drainage inlet frame(s) will be measured as the actual number of each that is installed and accepted.

Basis of Payment:

The quantity of replacing drainage inlet frame(s) will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for sawcutting, PCC and/or hot-mix removal and disposal, graded aggregate base course, bar reinforcement, furnishing, forming, finishing and curing PCC for drainage inlet top unit, furnishing, hauling and installing frame, backfilling, topsoil and seeding, transporting and unloading old frame to the Department’s District Maintenance Yard, and for all labor, tools, equipment, and incidentals to complete the job. Payment for hot-mix patching will be paid under Section 406.

708062 - FURNISH DRAINAGE INLET FRAME(S)

Description:

Furnish drainage inlet frame(s) at the location(s) shown on the Plans and/or as directed by the Engineer.

Materials:

Provide materials as specified in:

Drainage Inlet grates	AASHTO M 270 Grade 36 or ASTM A 36
	Standard construction Details or noted in the Plans

Construction Methods:

1. Make field measurements to determine the exact sizes of the drainage inlet frame(s) prior to placing order.
2. Transport and unload old drainage inlet grate(s) to the Department's District Maintenance Yard as specified on the Plans, or as directed by the Engineer.

Method of Measurement:

The quantity of furnish drainage inlet frame(s) will be measured as the actual number of each that is furnished.

Basis of Payment:

The quantity of furnish drainage inlet frames(s) will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for furnishing, hauling, installing, transporting and unloading old drainage inlet grates to the District Maintenance Yard, for all labor, tools, equipment, and incidentals to complete the job.

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 1st 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.

Section 710 – Adjusting and Repairing Drainage Inlets and Manholes (10/10/2011)

Add the following:

710001 – ADJUST AND REPAIR EXISTING DRAINAGE INLET(S)

Description:

Adjust and repair existing drainage inlet(s) at the location(s) shown on the Plans and/or as directed by the Engineer.

All adjustments are to be made prior to paving operations.

Materials:

Provide material as specified in:

GABC	Section 302
Portland Cement Concrete	Section 812, Class B
Expansion joint Material	Subsection 808.06
Bar Reinforcement	Section 824

Curing Compound	Subsection 812.02 (i)
Castings	AASHTO M 270 Grade 36 or ASTM A 36 capable of HS-25 load rating Standard Construction Details or as noted in the Plans
Borrow, Type C	Subsection 209.04(c)
Topsoil	Section 732
Seeding	Section 734

<u>Construction Methods</u>:

A. Adjusting and Repairing Drainage Inlet(s);

1. Remove covers of drainage inlets for inspection by Engineer.
2. Sawcut existing PCC or hot-mix pavement and dispose of excess materials in accordance with Subsection 106.09.
3. Excavate and remove existing castings.
    a. Take care to not damage castings, clean and set aside for reuse;
    b. Replace castings where specified.
4. If existing structure is in good condition, adjust the drainage inlet frame and grate to grade.
    a. Set forms for adjusting frame such that frame is encased in Class B PCC.
    b. Placing frame on bricks, blocks or other materials will not be permitted.
5. If existing structure is in poor condition, repair as directed.
    a. Keep silt and debris away from structure until work is complete.
    b. Set frame as directed in 4a.
6. Install steps on the back wall of drainage inlet(s) that are 4' (1.2m) in depth, measured from top of grate to the invert of the lowest pipe, or as directed on Plans.
    a. Begin installation within 24" (600 mm) of the top of grate and end installation no more than 12" (300 mm) above the lowest invert, space at 12" (300 mm) intervals.
    b. Embed steps a minimum of 3" (75 mm) in the wall and protrude 6" (150 mm) out from the wall.
7. Pour flow channel.
8. Form drainage inlet top unit as shown in the Standard Construction Details
9. Place Class B Concrete in accordance with Section 701.
    a. Cure Concrete in accordance with 501.11.
    b. Remove forms.
10. Topsoil in accordance with Section 733.
11. Seed in accordance with Section 734.

<u>Method of Measurement</u>:

The quantity of adjust and repair existing drainage inlet(s) will be measured as the actual number of each adjusted and/or repaired.

Drainage inlet(s) repaired from the top of the drainage inlet frame to a depth of 3' (900 mm) below will be paid at Contract unit price.

Drainage inlet(s) repaired below a depth greater than 3' (900 mm) to not more than 4 ½' (1.4 m) will be paid for at 1.5 times the Contract unit price.

Drainage inlet(s) repaired below a depth greater than 4 ½' (1.4 m) will be paid for at 2 times the Contract unit price.

In no case will the payment exceed 2 times the Contract unit price regardless of the depth of repairs.

Basis of Payment:

The quantity of adjust and repair existing drainage inlet(s) will be paid for at the Contract unit price for each based on the depth of adjustment. Price and payment will constitute full compensation for sawcutting, PCC or hot-mix pavement removal and disposal, excavation, cleaning and reusing existing castings, adjustment and repair, furnishing and placing PCC for drainage inlet top unit, furnishing and installing steps, pouring flow channel, topsoil, seeding, and for all labor, tools, equipment, and incidentals to complete the job.

If drainage inlet frame cannot be reused, payment for drainage inlet frame will be in accordance with 708062 – Furnish Drainage Inlet Frame.

If drainage inlet grate cannot be reused, payment for drainage inlet grate will be in accordance with 708060 – Replace Drainage Inlet Grate.

710002 – ADJUST AND REPAIR EXISTING MANHOLES

Description:

Adjust and repair existing and manhole(s) at the location(s) shown on the Plans and/or as directed by the Engineer.

All adjustments are to be made prior to paving operations.

Materials:

Provide material as specified in:

GABC	Section 302
Portland Cement Concrete	Section 812, Class B

Riser Ring	Section 812, Class A
Riser Gasket	In accordance with AASHTO M 198
Curing Compound	Subsection 812.02 (i)
Castings	AASHTO M 270 Grade 36 or ASTM A 36 capable of HS-25 load rating Standard Construction Details or as noted in the Plans
Borrow, Type C	Subsection 209.04(c)

Construction Methods:

A. Adjusting and Repairing Existing Manholes;

1. Remove covers of manholes for inspection by Engineer;
2. Sawcut existing PCC or hot-mix pavement and dispose of excess materials in accordance with 106.09.
3. Excavate and remove existing castings.
    a. Take care to not damage castings, clean and set aside for reuse.
    b. Replace castings where specified.
4. If existing structure is in good condition, adjust the manhole casting cover to the correct grade with an approved device.
    a. Ensure devices form a watertight seal.
5. If existing structure is in poor condition, repair with Class B Concrete as specified in Section 812, setting the manhole casting cover to the correct grade.
    a. Cure wet, exposed concrete surfaces for at least 48 hours.
    b. Keep silt and debris away from structure until work is complete.

Method of Measurement:

The quantity of adjust and repair existing manhole(s) will be measured as the actual number of each adjusted and/or repaired.

Manhole(s) repaired from the top of the manhole cover to a depth of 3’ (900 mm) below will be paid at Contract unit price.

Manhole(s) repaired below a depth greater than 3’ (900 mm) to not more than 4 ½’ (1.4 m) will be paid for at 1.5 times the Contract unit price.

Manhole(s) repaired below a depth greater than 4 ½’ (1.4 m) will be paid for at 2 times the Contract unit price.

In no case will the payment exceed 2 times the Contract unit price regardless of the depth of repairs.

Basis of Payment:

The quantity of adjust and repair existing manhole(s) will be paid for at the Contract unit price for each based on the depth of adjustment. Price and payment will constitute full compensation for sawcutting, PCC or hot-mix pavement removal and disposal, excavation, cleaning and reusing existing castings, adjustment and repair and for all labor, tools, equipment, and incidentals to complete the job.

710004 – ADJUST AND REPAIR EXISTING DOUBLE DRAINAGE INLET(S)

Description:

Adjust and repair existing double drainage inlet(s) at the location(s) shown on the Plans and/or as directed by the Engineer.

All adjustments are to be made prior to paving operations.

Materials:

Provide material as specified in:

GABC	Section 302
Portland Cement Concrete	Section 812, Class B
Expansion joint Material	Subsection 808.06
Bar Reinforcement	Section 824
Curing Compound	Subsection 812.02 (i)
Castings	AASHTO M 270 Grade 36 or ASTM A 36 capable of HS-25 load rating Standard Construction Details or as noted in the Plans
Borrow, Type C	Subsection 209.04(c)
Topsoil	Section 732
Seeding	Section 734

Construction Methods:

A. Adjusting and Repairing Existing Double Drainage Inlet(s).

1. Remove covers of drainage inlets for inspection by Engineer.
2. Sawcut existing PCC or hot-mix pavement and dispose of excess materials in accordance with Subsection 106.09.
3. Excavate and remove existing castings.
    a. Take care to not damage castings, clean and set aside for reuse.
    b. Replace castings where specified.
4. If existing structure is in good condition, adjust the drainage inlet frame and grate to grade.

a. Set forms for adjusting frame such that frame is encased in Class B PCC.
b. Placing frame on bricks, blocks or other materials will not be permitted.

5. If existing structure is in poor condition, repair as directed.
   a. Keep silt and debris away from structure until work is complete.
   b. Set frame as directed in 4a and 4b.
6. Install steps on the back wall of drainage inlet(s) that are 4' (1.2m) in depth, measured from top of grate to the invert of the lowest pipe, or as directed on the Plans.
   a. Begin installation within 24" (600 mm) of the top of grate and end installation no more than 12" (300 mm) above the lowest invert, space at 12" (300 mm) intervals.
   b. Embed steps a minimum of 3" (75 mm) in the wall and protrude 6" (150 mm) out from the wall.
7. Pour flow channel.
8. Form drainage inlet top unit as shown in the Standard Construction Details.
9. Place Class B Concrete in accordance with Section 701.
   a. Cure Concrete in accordance with 501.11.
   b. Remove forms.
10. Topsoil in accordance with Section 733.
11. Seed in accordance with Section 734.

<u>Method of Measurement</u>:

The quantity of adjust and repair existing double drainage inlet(s) will be measured as the actual number of each adjusted and/or repaired.

Drainage inlet(s) repaired from the top of the drainage inlet frame to a depth of 3' (900 mm) below will be paid at Contract unit price.

Drainage inlet(s) repaired below a depth greater than 3' (900 mm) to not more than 4 ½' (1.4 m) will be paid for at 1.5 times the Contract unit price.

Drainage inlet(s) repaired below a depth greater than 4 ½' (1.4 m) will be paid for at 2 times the Contract unit price.

In no case will the payment exceed 2 times the Contract unit price regardless of the depth of repairs.

<u>Basis of Payment</u>:

The quantity of adjust and repair existing double drainage inlet(s) will be paid for at the Contract unit price for each based on the depth of adjustment. Price and payment will constitute full compensation for sawcutting, PCC or hot-mix pavement removal and disposal, excavation, cleaning and reusing existing castings, adjustment

and repair, furnishing and installing steps, pouring flow channel, topsoil, seeding, and for all labor, tools, equipment, and incidentals to complete the job.

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 confirm 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 confirm 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 727 – Fences and Gates. (10/12/2010)

Add the following to Section 727 (In accordance with Section 101.01 of the 2001 Standard Specifications)

727014 - CONSTRUCTION SAFETY FENCE

Description:

Furnish all materials, erect, relocate, maintain, and repair construction safety fence at location(s) as noted on the Plans or as directed by the Engineer. Remove and

dispose of the construction safety fence after it is no longer required as determined by the Engineer.

Materials:

A. Submit source of supply for all fencing materials including the posts for approval by the Engineer prior to installation.
B. *Construction Safety Fence:*
    1. 4' (1.2 m) high, U.V. stabilized high visibility orange, high density polyethylene.
    2. Standard mesh opening size of approximately 1 1/2" (38 mm).
C. *Fence Post:*
    1. Length sufficient for 18" (450 mm) embedment in the ground.
        a. Oak wood, a minimum of 2" (50 mm) square.
        b. T-Section steel 1.25" x 1.00" (32 mm x 25 mm).
    2. If the fence is to be installed on bituminous and/or concrete surface, use posts that can be anchored by placing sand bags at their base without damaging pavement.
D. *Bottom Rail Edging:*
    1. If the fence is to be installed along a pedestrian sidewalk, provide bottom rail edging of wood or metal for cane detection.

Construction Methods:

A. Space posts no more than 10' (3 meters).
    1. Alternate spacing may be approved only if specified by the construction safety fence manufacturer.
B. Use 8" (200 mm) self-locking nylon safety ties for securing the fence to the post.
C. Install bottom rail edging for cane detection must be at least 6 inches above the surface of the sidewalk or pathway, with the bottom of the edging a maximum of 2.5 inches above the surface.
D. Maintain, repair, or replace construction safety fence as necessary when damaged, missing, or worn out.
E. Reposition/relocate the safety fence as necessary to perform construction activities.
F. Remove all construction safety fence and associated debris at the direction of the Engineer at the end of construction activities.

Method of Measurement:

The quantity of construction safety fence will be measured as the actual number of linear feet (meters) of safety fence furnished, installed and accepted.

Basis of Payment:

The quantity of construction safety fence will be paid for at the Contract unit price per linear foot (meter). Price and payment will constitute full compensation for furnishing, placing, maintaining, repairing, replacing, relocating, repositioning, cleaning the area, removal and disposal of the fence and related accessories, furnishing all labor, equipment, tools and all incidentals necessary to complete the work.

Section 727 – Fences and Gates. (2/23/2011)

Add the following to Section 727 (In accordance with Section 101.01 of the 2001 Standard Specifications)

727015 - MONUMENT

Description:

Furnish necessary materials and labor to set P.C.C. Monuments at the locations shown on the Plans, and as directed by the Engineer.

Materials:

Provide monument constructed in accordance with the details shown in the Standard Construction Details using materials specified in:

Portland Cement Concrete – Class B	Section 812
Bar Reinforcement	Section 824

Construction Methods:

A. Exact location to be set by a Delaware Professional Land Surveyor in accordance with the plans or as directed by the Engineer.
B. Place monuments in vertical positions in excavated holes at depths shown on the plans or designated, with two sides approximately parallel with the roadway.
C. Place backfill material in layers and firmly tamp without disturbing the location set by the surveyor so that the monument is stable and secure.
D. Take care not to break or damage monuments when removing and resetting.
E. Replace broken or damaged monuments with similar type without added compensation.

Method of Measurement:

Monuments will be measured as the actual number of monuments set and accepted.

Basis of Payment:

The quantity of monuments will be paid for at the Contract unit price per Each. Price and payment will constitute full compensation for furnishing all materials required and setting the monuments by land surveyor, for excavation and backfill, and incidentals necessary to complete the item.

Existing monuments damaged and replaced as required by Subsection 107.09 of the Standard Specifications will be repaired, replaced, and set at the Contractor's expense.

SECTION 732 – TOPSOIL (11/24/2014)

Remove this subsection and all previous Supplemental Updates in their entirety. Refer to Subsection 908 Soil Stabilization Practices.

SECTION 733 – TOPSOILING (11/24/2014)

Remove this subsection and all previous Supplemental Updates in their entirety. Refer to Subsection 908 Soil Stabilization Practices.

SECTION 734 – SEEDING (11/24/2014)

Remove this subsection and all previous Supplemental Updates in their entirety. Refer to Subsection 908 Soil Stabilization Practices.

SECTION 735 – MULCHING (11/24/2014)

Remove this subsection and all previous Supplemental Updates in their entirety. Refer to Subsection 908 Soil Stabilization Practices.

SECTION 743 - TEMPORARY TRAFFIC CONTROL AND DEVICES. (3/28/2012) (5/6/2013)(6/2/2014)

Delete Section 743 and all Previous Supplemental Updates in their entirety and replace with the following:

743.01 Description

Furnish, install, maintain, relocate, replace, and remove Arrow Boards, Portable Changeable Message Boards, Portable Light Assemblies, Plastic Drums, Traffic Officers, Reflector Panels, Truck Mounted Attenuators, Crash Cushions, Portable PCC Safety Barriers, Temporary Tubular Delineators, Temporary Impact Attenuators, Temporary Barricades, Temporary Warning Signs, Flaggers, and other temporary traffic control devices in accordance with the latest edition of the Delaware Manual on Uniform

Traffic Control Devices (DE MUTCD), the approved temporary traffic control plan, standard Typical Applications from the DE MUTCD and as directed by the Engineer.

743.02 Materials

Provide only crashworthy temporary traffic control devices in accordance with the requirements of the National Cooperative Highway Research Program (NCHRP) Report 350 or the Manual for Assessing Safety Hardware (MASH) published by the American Association of State Highway and Transportation Officials (AASHTO). Certification of compliance with NCHRP Report 350 and/or MASH is required for Category I through Category III temporary traffic control devices. For Category I devices, the manufacturer or Contractor may self-certify that the devices meet the NCHRP Report 350 and/or MASH criteria. Supply to the Engineer the Federal Highway Administration's NCHRP Report 350 and/or MASH acceptance letter including all applicable attachments, for each type of device that falls under Category II and III devices. Provide the self-certification and/or the FHWA acceptance letters at the pre-construction conference.

Project specific dimensional requirements, if any, are noted on the Plans. Meet Chapter 6F. Temporary Traffic Control Zone Devices of the DE MUTCD and all other Contract requirements.

Maintain temporary traffic control devices in good condition in accordance with the brochure entitled "Quality Guidelines for Temporary Traffic Control Devices", published by the American Traffic Safety Services Association (ATSSA).

743.03 General Temporary Traffic Control

The Contractor is responsible for making an independent determination that the safety measures outlined within the contract and the DE MUTCD are sufficient to protect the traveling public or the persons working on the project. The provisions of this Specification do not supersede or release the provisions of Standard Specification 107.10, Responsibility for Damage Claims.

A. Implement additional safety measures not expressly required by the Contract and necessary to ensure the safety of all persons, either independently or at the direction of the Engineer.
B. Submit to the Engineer in writing justifications for any Contractor proposed changes to the TTC plan or additions to the TTC plan included in the contract documents;
    1. Prepare a new (TTCP), signed and sealed by a Professional Engineer registered in the State of Delaware, in accordance with all applicable DelDOT standards to the Engineer for approval prior to the start of work at each and every location;
    2. Submit the TTCP 14 calendar days in advance of starting work.
    3. Longitudinal dimensions for maintenance of traffic configurations may be adjusted slightly to fit field conditions as directed by the Engineer.
C. Final approval of proposed changes, deviations, or additions will be determined

by the Traffic Safety Section.

D. Inventory existing signs within the Contract limits.
   1. Maintain signs that must remain in place during the project.
   2. Remove any other existing signs and properly store to prevent loss or damage.
   3. Immediately prior to the final inspection, inventory the traffic signs and account for any lost or damaged signs with the Engineer.
   4. Replace or reimburse the Department for any lost or damaged signs.

E. Throughout the duration of the Contract within the Project limits maintain access to:
   1. All businesses and residences;
      a. Coordinate any temporary closure of a driveway or entrance for tie-in purposes with the Engineer and the property owner in advance of the closure.
   2. all transit stops unless otherwise directed by the Plans or the Engineer;
      a. Maintain an area for the transit vehicle to allow for safe pick-up and drop-off of passengers;
      b. Provide an accessible path for pedestrians to safely access the transit stop.

F. Conduct construction operations in a manner that will minimize delays to traffic, and meet the following requirements:
   1. When work is being conducted within 200 feet in advance or up to 200 feet beyond an intersection that is controlled by a traffic signal, the Flagger must direct the flow of traffic in concert with the traffic signal to avoid queuing unless active work prohibits such action. The Flagger must direct traffic to prevent traffic from queuing through an intersection (i.e., blocking an intersection).
   2. When work is being conducted within a signalized intersection, a Traffic Officer may be required to direct traffic against the operation of the traffic signal only until the operation occurring within the intersection is completed.
   3. Schedule work in the vicinity of traffic signals to minimize the time during which the signal is operated without detectors.
   4. When a lane adjacent to an open lane is closed, set temporary traffic control devices 2’ (.61 m) into the closed lane from the edge of the open lane, unless an uncured patch exists or actual work is being performed closer to the open lane with minimum restriction to traffic.
   5. Do not close lanes unless construction activity requiring lane closure is taking place or will take place within one hour, except for “buffer lanes” on high volume and/or high speed roadways. Reopen lanes immediately upon completion of the work. Shorten the lane closure for moving operations as work progresses and as traffic conditions warrant to keep the length of the closure to a minimum. Conduct construction operations in a manner that minimizes disruption to traffic during peak hours and periods of heavy traffic flow. The Department reserves the right to stop

the Contractor's operations if, in the opinion of the Engineer, such operations are unnecessarily impeding traffic.

743.04 Notifications to the Engineer

A. *Road Closures and Detours:*
   1. No less than fourteen (14) calendar days prior to the start of any detours and road closures.
   2. Roadway closures or lane closures beyond those specified and approved in the Contract Documents, must be approved by the Chief Traffic Engineer or Designee a minimum of 48 hours in advance of the proposed restriction.

B. *Loop Detectors at Signalized Intersections:*
   1. Submit a schedule seven (7) days in advance of the proposed start date of work. Obtain Engineer approval prior to the start of work.
   2. The DelDOT Transportation Management Center (TMC) requires 48 hours advance notice of the cutting of a loop detector, and immediate notification once the loop detector has been reinstalled.
   3. Coordinate with the Engineer sufficiently in advance of loop detector work to ensure that these requirements are met.

C. Property Owners, Businesses, and Residents:
   1. Written notice, 48 hours in advance of the start of construction work.
      a. Include the scope of work, working hours, anticipated start and completion dates, a summary of construction activities that might interfere with access to the property;
      b. A schedule and access coordination plan;
      c. Contractor's name and address, and a DelDOT contact phone number;
      d. Provide written verification to the Engineer that the property owners and residents were notified.
   2. Failure to give proper notice is justification for suspension of work as specified in Standard Specification Section 104.07, Suspension of Work until proper notice is provided.

D. Fire Hydrant Obstruction:
   1. Notify the local 911 center if access to a fire hydrant is temporarily obstructed or restricted.
   2. Provide written confirmation to the Engineer that the local 911 center was notified.

743.05 Pavement Edge Drop-offs and Vertical Differences

Correct all pavement edge drop-offs at the end of each workday:

A. Use Temporary Road Material (TRM) to accomplish this work with unless an alternate method is specified in the Plans.

B. Fill all ruts and potholes with TRM as soon as possible.

C. Place TRM in accordance with the applicable sections of the Delaware Standard Specifications;
   1. TRM is incidental to the appropriate item in the Contract.
   2. When temporary elimination of a drop-off hazard cannot be accomplished, follow the requirements of Section 6G.20 of the DE MUTCD:
      a. Properly mark and protect the drop-off hazard with additional temporary barriers, barricades, warning signs, flashing lights, etc. .

D. *Steel Plates:*
   Steel plates may be used to protect an open trench area accessible by vehicular traffic that cannot be backfilled prior to the end of the working day.
   1. Submit steel plate shop drawings prepared and signed by a Professional Engineer registered in the State of Delaware for approval prior to the start of construction:
      a. Show the intended method to brace, sheet, support, or shore the excavation to prevent a trench failure.
      b. Show details of the plating design, the method of fastening plates, plate thickness, span, bearing and the method of preventing the movement of the plates.
      c. When steel plates are placed on a travel lane or shoulder, follow the standards presented in Table 6G-1 of the Delaware MUTCD.
         i. Provide a ramp (wedge) around the steel plate using TRM placed at a slope of 20 to 1 or flatter.
      d. Steel plates are not permitted between November 1 and April 1, without the prior approval of the Engineer.

743.06 Temporary Pavement Markings

Apply temporary striping to locations that require permanent striping at the end of each day's operation and before traffic is returned to unrestricted roadway use.

A. Apply temporary pavement markings in accordance with the requirements of Section 748 of the Delaware Standard Specifications, DE MUTCD and DelDOT's Temporary Pavement Markings Policy.

B. Submit to the temporary striping placement scheduling to the Engineer proving that the temporary striping can be completed prior to fully opening the roadway to traffic prior to the start of any activity that requires the placement of temporary striping.

C. Match temporary pavement striping to permanent pavement striping as shown on the Plans or as directed by the Engineer.
   1. Maintain temporary markings in at least the "Marginal" condition in accordance with the ATSSA Quality Guidelines.
   2. Maintain retroreflectivitiy levels in accordance with the appropriate temporary marking Special Provisions.

3. Refresh the temporary pavement markings as required or as directed by the Engineer.

D. Remove all conflicting striping as directed by the Engineer in accordance with 748530 Removal of Pavement Striping.

1. Painting over the conflicting striping is not permitted unless specifically stated in the Plans.

E. When pavement marking information is not provided in the Plans, prior to beginning construction:

1. Submit for approval, detailed drawings that depict the existing pavement markings for each project location.
   a. Include all lane and shoulder widths, turn lane lengths, locations of stop bars, turn arrows, crosswalks and railroad crossings;
   b. Changes may be required to the final pavement markings;
2. Approval is required prior to placement of any temporary pavement markings.

743.07 Travel Lane and Road Closure Restrictions

Travel lane and ramp closings are not permitted during the following holiday periods, unless otherwise noted on the plans:

A. December 24 through December 27 (Christmas Day)
B. December 31 through January 3 (New Years Day)
C. Friday prior to Easter through Easter Sunday
D. Thursday prior to Memorial Day through the Tuesday following Memorial Day
E. Dover International Speedway Race Weekends (Thursday prior to the race event through the day after the race event)
F. July 3 through July 5 (Independence Day)
G. Thursday prior to Labor Day through the Tuesday following Labor Day
H. Wednesday prior to Thanksgiving Day through the Monday following Thanksgiving Day

Additional time restrictions may apply as noted in the project plans or as directed by the Engineer.

743.08 General Construction

Place and install temporary traffic control devices at their specified location in accordance with Chapter 6 of the DE MUTCD and the manufacturer's installation instructions and recommendations prior to start of construction by personnel certified by the manufacturer when applicable. Submit personnel certification to the Engineer prior to installation of temporary traffic control devices.

Provide written certification within 24 hours of installation, or relocation, for certifying that temporary impact attenuators, crash cushions and temporary PCC safety barrier is properly installed and crashworthy in accordance with the manufacturer's current specifications and NCHRP 350 or MASH.

Maintain temporary traffic control devices throughout the duration of the Project. Replace damaged temporary traffic control devices within 24 hours of notification. After replacement is completed re-inspection and recertification is required as described above.

Repair or replace temporary traffic control devices damaged by actions of the Contractor at no cost to the Department.

Temporary traffic control devices are the property of the Contractor unless otherwise indicated in the Contract Documents.

743.09 Non-Compliance

Failure to comply with the requirements of this Section 743 is justification for suspension of work as specified in Standard Specification Section 104.07, Suspension of Work. Time charges will continue to be assessed until all deficiencies are corrected and certified.

A. Failures include but are not limited to the following:
   1. Deficiencies not corrected within 24 hours related to temporary traffic control or traffic control devices reported to the Contractor in writing unless otherwise directed by the Engineer.
   2. Non-compliance with the Delaware MUTCD, the specifications or the Plans.
   3. Unsafe operations.
   4. Placement of non-compliant temporary traffic control devices.

B. Serious or willful disregard for the safety of the traveling public or construction workers, may result in the Engineer placing temporary traffic control devices in the proper configuration. The cost of corrections to temporary traffic control by the Engineer will deducted from Contractor payments.

743.10 Item Specific Construction

A. *Arrow Boards:*
   1. The arrow boards furnished remain the property of the Contractor.
   2. The back panel of arrow boards must be equipped with three indicator lamps, visible to the work area indicating the proper functioning of the board.

B. *Portable Changeable Message Sign* (PCMS)
   1. Approval is required from the Engineer prior to placement of the PCMS.
   2. If approved messages are not provided in the Plans, submit a PCMS Approval Form to the Engineer for review and approval of messages and

location of PCMS.

3. Have 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.

C. *Portable Light Assembly Unit (Floodlights)*:

1. Repair or replace portable light assembly units within 30 minutes or less after receipt of notification of an operational problem.
   a. Failure to correct the problem within the required time frame will result in deduction of payment for the day the unit is not satisfactorily operating.
   b. Designate an on-site representative to be the Department's contact person on all issues related to the light assembly. The on-site representative should be the ATSSA Traffic Control Supervisor. If an ATSSA Traffic Control Supervisor is not required by the Contract Documents, then the on-site representative can be the Superintendent, or designee.

D. *Plastic Drums*

1. Provide plastic drums as specified in the DE MUTCD.
2. Equip each plastic drum with a weighted sand filled base or other approved ballast material.
   a. Do not weight drums with sand bags..
   b. Do not weight drums with sand, water or any material to the extent that would make them hazardous to road users when struck.
3. A minimum of two fluorescent orange and two white prismatic retroreflective strips with the top stripe being fluorescent orange.
4. Plastic drums must meet applicable reflectivity requirements.

E. *Reflector Panels*

1. Provide reflector panels for enhanced conspicuity of P.C.C. Safety Barrier as specified in the DE MUTCD
2. Install reflector panels as specified in the DE MUTCD.

F. *Traffic officers:*

1. Use Traffic Officers in a highway work zone in accordance with the latest version of DelDOT's "Guidelines for the Use of Uniformed Law Enforcement Officers in Work Zones."
2. All traffic officers are required to wear police officer uniforms.
3. Traffic officers outside of their vehicle are required to wear high-visibility safety apparel as required in DE MUTCD Section 6E.02.
4. Traffic officers ensure not just the safety of the construction personnel but the safety of the traveling public as well.
5. The Engineer may authorize additional officers to be used for speed enforcement.
6. Vehicles used are required to be marked police vehicles equipped as follows:
   a. full external light bar that is clearly visible for 360 degrees around the vehicle and at a distance of not less than 300 feet under normal atmospheric conditions at night;

b. radar unit or any other speed-measuring device;
c. radio communication available to inform 911 and DelDOT's Transportation Management Center (TMC) of traffic backups or other emergencies.

7. The traffic officers can be Town Police, Municipal Police, County Police or State Troopers in accordance with the jurisdictional location of the project and availability of the police officers. When questions of jurisdiction arise, the Delaware State Police Department will make the determination as to which force has jurisdiction.
8. Discuss with the Engineer in advance for approval of the schedule of hours and number of traffic officers anticipated for each site or operation. It will be the responsibility of the Contractor to explain to the officer the project activities pertaining to where the officer's services are needed.
9. Do not use Traffic officers to close lanes without additional temporary traffic control except for rolling road blocks or emergencies.
   a. Rolling road blocks require advance approval from the Engineer through DelDOT's Traffic Section.

G. *P.C.C. Barrier (All Types)*

1. For each P.C.C. Barrier Contract Item:
   a. Use only one type of barrier per run;
   b. Use the same type of connecting system on each segment;
2. Prior to installation, schedule pre-inspection of barrier with Engineer and District Safety Officer.
3. Ensure that all segments are free from defects and have no exposed reinforcing bar.
4. Install reflector panels in accordance with the DE MUTCD.
5. Remove barrier that does not meet the “Marginal” criteria of the ATSSA Quality Guidelines and replace with compliant segments of barrier.

H. *Truck Mounted Attenuators (TMA):*

1. TMA, Type I is to be used on highways with non-construction posted speeds up to and including 40 mph (70 km/h);
2. TMA, Type II is to be used on highways with non-construction posted speeds greater than 40 mph (70 km/h).
3. Have replacement components for the TMA readily available for immediate repair.
4. Equip all TMAs as follows:
   a. Cover the entire height and width of the end of the TMA with 6" (150 mm) diagonal, inverted "V" stripes of retroreflective material placed 6" (150 mm) apart;
   b. Mount on the TMA vehicle a amber high-intensity rotating, flashing, oscillating, or strobe light so that it is clearly visible for 360 degrees around the vehicle and at a distance of not less than 3,000 ft (915 m) under normal atmospheric conditions at night;
   c. Provide a Type C arrow panel.
5. Attach the TMA to the back of a truck in conformance with the manufacturer's recommendations.

6. *TMA Truck Requirements:*
    a. Do not exceed the manufacturer's recommended load rating of the truck. (Refer to Section 105.12 Load Restrictions);
    b. The truck must be in good operating condition.
    c. The truck must have a valid registration, registration number plate, current inspection documentation, weight verification, and proof of insurance.
7. Only operators with a valid driver's license of the required class may operate the TMA truck.

I. *Temporary Impact Attenuators (TIA) All Types:*
1. Furnish one complete replacement (stand-by) attenuator systems of each type used;
    a. Store replacement TIAs on-site;
    b. Only replacement TIAs that are properly installed and accepted will be paid for at the unit bid price of Each.
    c. Payment of stand-by attenuator will be through the respective furnish item for the type(s) of attenuator(s) furnished.
2. Install attenuator systems in accordance with the manufacturer's instructions.
3. Repair or replace damaged attenuator system within 24-hours of notification.
4. Relocate the attenuator systems in accordance with the Plans or as directed by the Engineer.
5. Provide written certification within 24-hours of installation or relocation to the Engineer.

J. *Temporary Warning Signs and Plaques in Temporary Traffic Control Zones:*
1. Provide warning signs and plaques in compliance with the Contract Documents, the DE MUTCD and the FHWA's "Standard Highway Signs and Markings" book;
2. Cover existing permanent signs that conflict with any temporary warning signs.
3. Use only approved sign posts to permanently mount signs facing traffic when required for more than three consecutive calendar days;
    a. Install sign posts in accordance with the manufacturer's instructions;
    b. Temporary sign stands for signs facing traffic for a period longer than three calendar days may be used only in the following situations:
        i. To avoid drilling through permanent concrete to ground mount signs placed on concrete islands in the median of a divided highway or other similar locations. Proper ballasting material is required;
        ii. A documented utility conflict exists and field adjustments to the sign location cannot be made. Proper ballasting material is required. Provide documentation of the utility conflict to the Engineer prior to using temporary sign stands;
        iii. Other unforeseen situations as approved by the Traffic Safety Section.
4. When a permanent ground mounted sign message is not applicable to the work operation or temporary traffic control setup it must be completely covered with a black plastic bag or an approved sign cover. For example:

a permanently ground mounted detour sign that is in place for the duration of the Contract, but only utilized during certain periodic operations.

5. Use only approved temporary sign stands to mount signs facing traffic for periods less than or equal to three calendar days.
    a. Remove any sign and temporary sign stand from the roadway that is no longer needed for a work operation or temporary traffic control setup.
6. Signs cannot be placed on bicycle lanes, sidewalks or shared use paths in a manner that restricts the use of these locations by pedestrian or bicycle traffic.

K. *Flaggers:*

1. Provide Flaggers meeting the following requirements:
    a. Certified within the last 4 years by American Traffic Safety Services Association (ATSSA) or an equivalent approved equal;
    b. Provide appropriate documents showing the flagger certification status for each flagger throughout the duration of Contract;
        i. Flaggers are required to have their approved flagger card, and a photo identification card on their person at all times while flagging;
        ii. The Engineer will require the replacement of any flagger that fails to produce approved flagger card and photo identification.
    c. Have available a person certified to flag that can relieve the flag person for any necessary breaks.
    d. Equip working flaggers with two-way radios or other approved communication devices.
        i. Cellular telephones with or without push-to-talk features, MP3 players or other similar electronic devices are not approved communication devices.
        ii. Use of a cellular telephone or other unapproved electronic communication device while performing flagging operations is justification for immediate removal of a flagger by the Engineer
    e. Equip working flaggers with an audible warning device, such as a horn or whistle, to alert workers of an errant vehicle
2. Any flagger not performing duties in accordance with the specifications is justification for suspension of work as specified in Standard Specification Section 104.07, Suspension of Work.
    a. Once the offending flagger is replaced and all flaggers are in compliance with the requirements of this specification, the work may resume.
    b. Flagger Cards may be confiscated from personnel flagging improperly.
        i. The Engineer will contact the Contractor's supervisor who will then confiscate the card from the flagger;
        ii. Turn the card over to the Engineer, who will forward it to DelDOT's Safety Section;
        iii. The Safety Section will either forward the card to ATSSA's main office, or send a letter if the person refuses to give up the card, in order to remove the individual's name from the certified list;

iv. Any flagger whose card has been confiscated must be retrained and retested prior to consideration for reinstatement;

c. At least one month must pass after the infraction before retraining and retesting any flagger whose card has been confiscated.

L. *ATSSA Certified Traffic Control Supervisor:*

1. Provide ATSSA certified Traffic Control Supervisors for the term of the Project.
   a. ATSSA certified Traffic Control Supervisor must be an employee of the General Contractor
   b. Submit a copy of the certification for the ATSSA certified Traffic Control Supervisors at time of bid.

2. The responsibility of the ATSSA certified Traffic Control Supervisors is the maintenance of traffic and temporary traffic control devices throughout the project.
   a. This responsibility includes, but is not limited to:
      i. The installation, operations, maintenance and service of temporary traffic control devices;
      ii. Daily maintenance of a log to record maintenance of traffic activities;
         a.) including the number and location of temporary traffic control devices; and
         b.) times of installation, changes, and repairs.
      iii. Serve as the liaison with the Engineer concerning the temporary traffic control devices and the maintenance of traffic.

743.11 Method of Measurement

The Engineer will measure temporary traffic control devices as those acceptably furnished, installed, maintained, relocated, removed, and completed as specified.

743.12 Basis of Payment

Price and payment constitutes full compensation for installation, maintenance, and relocation of pay items at the pay unit(s) below; removal when no longer required; and for all labor, tools, equipment and necessary incidentals to complete the work included in the items listed below. Payment will only be made for those TTC devices and flaggers in place on the roadway and protecting active construction operations that have the required certification and required information on board. No payment will be made for TTC devices and flaggers available or in storage but not in use. The Engineer will not pay for stolen or misused temporary traffic control devices or for temporary traffic control devices that become unusable due to normal wear. Payment will be made for accepted quantities at the contract unit price as follows:

Item	Description	Pay Unit
743000	Maintenance of Traffic	LS
743001	Arrow Panels Type A	EA-DY
743002	Arrow Panels Type B	EA-DY
743003	Arrow Panels Type C	EA-DY

Item	Description	Pay Unit
743004	Furnish and Maintain Portable Changeable Message Board	EA-DY
743005	Furnish and Maintain Portable Light Assembly (Flood Lights)	EA-DY
743006	Plastic Drums	EA-DY
743007	Traffic Officers	HOUR
743008	Reflector Panels	EACH
743009	Furnish and Maintain Truck Mounted Attenuator, Type I	EA-DY
743010	Furnish and Maintain Truck Mounted Attenuator, Type II	EA-DY
743011	Crash Cushion (Sand Barrels)	EACH
743012	Relocating Crash Cushion (Sand Barrels)	EACH
743013	Furnishing Portable PCC Structure Mounted Safety Barrier (Pinned Barrier)	LF
743014	Relocating Portable PCC Structure Mounted Safety Barrier	LF
743015	Furnish and Maintain Portable PCC Safety Barrier	LF
743016	Relocating Portable PCC Safety Barrier	LF
743019	Temporary Tubular Delineators	EACH
743023	Temporary Barricades, Type III	LF-DY
743024	Temporary Warning Signs and Plaques	EA-DY
743025	Install Temporary Impact Attenuator	EACH
743026	Furnish Temporary Impact Attenuator - Gating, Non-Redirective, Test-Level 2	EACH
743027	Furnish Temporary Impact Attenuator - Gating, Non-Redirective, Test-Level 3	EACH
743028	Furnish Temporary Impact Attenuator - Non-Gating, Redirective, Test-Level 2	EACH
743029	Furnish Temporary Impact Attenuator - Non-Gating, Redirective, Test-Level 3	EACH
743030	Relocate Temporary Impact Attenuator	EACH
743031	ATSSA Certified Traffic Control Supervisor	HOUR
743050	Flagger, New Castle County, State	HOUR
743051	Flagger, Kent County, State	HOUR
743052	Flagger, Sussex County, State	HOUR
743053	Flagger, New Castle County, Heavy Construction, State	HOUR
743054	Flagger, Kent County, Heavy Construction, State	HOUR
743055	Flagger, Sussex County, Heavy Construction, State	HOUR
743056	Flagger, New Castle County, Federal	HOUR
743057	Flagger, Kent County, Federal	HOUR
743058	Flagger, Sussex County, Federal	HOUR
743059	Flagger, New Castle County, Heavy Construction, Federal	HOUR
743060	Flagger, Kent County, Heavy Construction, Federal	HOUR
743061	Flagger, Sussex County, Heavy Construction, Federal	HOUR
743062	Flagger, New Castle County, State, Overtime	HOUR
743063	Flagger, Kent County, State, Overtime	HOUR
743064	Flagger, Sussex County, State, Overtime	HOUR
743065	Flagger, New Castle County, Federal, Overtime	HOUR
743066	Flagger, Kent County, Federal, Overtime	HOUR
743067	Flagger, Sussex County, Federal, Overtime	HOUR
743068	New Castle County, Heavy Construction, State, Overtime	HOUR
743069	Flagger, Kent County, Heavy Construction, State, Overtime	HOUR

Item	Description	Pay Unit
743070	Flagger, Sussex County, Heavy Construction, State, Overtime	HOUR
743071	Flagger, New Castle County, Heavy Construction, Federal, Overtime	HOUR
743072	Flagger, Kent County, Heavy Construction, Federal, Overtime	HOUR
743073	Flagger, Sussex County, Heavy Construction, Federal Overtime	HOUR

A. Method of Measurement and Basis of Payment for *743007 - Traffic Officers*:
   1. For bidding purposes, the unit price is fixed at $75.00 per hour. Actual payment is based on the submitted invoice from the police department plus ten (10) percent. Payment constitutes full compensation for the traffic police officer's wages, vehicle and equipment, the Contractor's allowable administrative cost and any necessary incidentals.

B. Basis of Payment for 743000 – Maintenance of Traffic:
   1. Price and payment will constitute full compensation for all maintenance of traffic activities accepted by the Engineer, including submission of temporary traffic control plans, submitting certifications, traffic cones, correction of edge drop-offs, and for all labor, equipment, tools and incidentals necessary to complete the item.
   2. The cost to move temporary traffic control devices in accordance with the temporary traffic control plan or as necessary to address safety issues is included in this item.

C. If work is not completed within the contract <u>completion time</u> (including approved time extensions), provide the necessary temporary traffic control devices that are required to complete any remaining work. The cost of such temporary traffic control will be borne by the Contractor. No additional payment will be made to maintain traffic in accordance with the DE MUTCD, contract plans and specifications. Temporary traffic control items include, but are not limited to, temporary warning signs, barricades, plastic drums, P.C.C. safety barrier, flaggers, traffic officers, arrow panels, portable changeable message signs, portable light assemblies and temporary impact attenuators.

D. The Department will not make payment for any temporary traffic control devices when the Contractor sets up temporary traffic control to perform work, but fails to perform any work. This does not include long-term temporary traffic control set-ups that are installed as part of the maintenance of traffic plans outlined in the contract documents.

E. If steel plates are used, the cost of furnishing and installing steel plates, bracing, sheeting, supporting or shoring the excavation, the preparation of shop drawings, and TRM wedge material are incidental to the item being constructed.

F. Basis of Payment for Flagger – Item Nos. 743050 through 743073:

Included in this Bid Proposal are the prevailing wages for highway construction as determined by the Department of Labor of the State of

Delaware in accordance with Title 29 Del.C. §6960, relating to wages and the regulations implementing that Section.

1. Flaggers must be bid at a minimum equal to the Laborer wage rate and may be bid up to, but not to exceed, 3 times the Laborer wage rate in accordance with the County where the work is being performed.

2. Flagger overtime must be bid at minimum of 1.45 times, and may be bid up to 4.35 times maximum, the Laborer wage rate in accordance with the County where the work is being performed.

3. When a contract for a project contains both Federal Davis-Bacon and State of Delaware prevailing wage standards, the employer's minimum wage obligations are determined by whichever standards are higher.

4. If the Contractor's bid price is not within the limits set forth in 743.12 (F) 1 and 743.12 (F) 2, the Department will adjust the bid to the minimum for prices bid below the minimum acceptable bid and to the maximum for prices bid above the maximum allowable bid prior to award.

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 748.10 METHOD OF MEASUREMENT. (10/10/2011)

Delete Subsection 748.10 and replace with the following:

748.10 Method of Measurement. The different types of pavement markings will be measured as follows:

(1) *Temporary Markings.* The quantity of temporary pavement markings will be measured by the linear foot (linear meter) of 4" (125 mm) line and by the square foot (square meter) for symbols, installed and accepted.

(2) *Permanent Markings.* The quantity of permanent pavement markings will be measured by the linear foot (linear meter) of 5" (125 mm) line and by the square foot (square meter) for symbols, installed and accepted.

The linear foot (linear meter) of 4" (100 mm) and 5" (125 mm) line refers to all 4" (100 mm) and 5" (125 mm) lines parallel to the centerline. The square foot (square meter) of symbols refers to all STOP bars, transverse lines, arrows, and words. All symbols will be measured according to the following square foot (square meter) values.

Straight Arrow	12.5 ft² (1.2 m2)
Left and Right Arrow Symbol	15.5 ft² (1.4 m2)
Combination Arrow	20 ft² (1.9 m2)
"Only" Legend	23 ft² (2.1 m2)
"School" Legend	35 ft² (3.3 m2)
"Stop" Legend	23.5 ft² (2.2 m2)
8″ (200 mm) Transverse Line	0.66 ft² per linear foot (0.20 m², per linear meter)
12″ (300 mm) Transverse Line	1.00 ft² per linear foot (0.30 m², per linear meter)
16″ (400 mm) Transverse Line	1.33 ft² per linear foot (0.41 m², per linear meter)
24″ (600 mm) Transverse Line	2.00 ft² per linear foot (0.61 m², per linear meter)
"R X R" Railroad Crossing Symbol	69 ft² (6.4 m²)

Left and Right 18' Lane Reduction Arrow 40.9 ft² (3.8 m²)

Subsection 748.11 BASIS OF PAYMENT. (10/10/2011)

Replace the 1st paragraph with the following:

748.11 Basis of Payment. The quantity of temporary and permanent paint pavement marking will be paid for at the Contract unit price per linear foot (linear meter) for 4"

(100 mm) and 5” (125 mm) line and the Contract unit price per square foot (square meter) of symbol. The quantity of permanent alkyd thermoplastic pavement marking will be paid for at the Contract unit price per linear foot (linear meter) of line and the Contract unit price per square foot (square meter) of symbol unless payment is reduced due to below minimum reflectivity as described below:

SECTION 753 - ADJUSTING SANITARY SEWER LATERALS. (10/12/2010)

Delete in its entirety and replace with the following:

753.01 Description. This work consists of adjusting sewer connections that interfere with the proposed construction or which are damaged by unavoidable construction operations.

753.02 Materials. Materials for adjusting sanitary sewer laterals shall conform to the following Sections:

Backfill Material, Borrow Type C	209 (For use under all roadways)
Portland Cement Concrete, Class B	812
Stone, Delaware No. 8	813

All pipe, fittings, and hardware shall conform to the requirements shown on the Plans and to the standards and specifications of the utility owner.

753.03 Construction Methods. All sewer connections shall be adjusted in accordance with the details shown on the Plans and the standards and specifications of the utility owner or operator, and as directed by the Engineer. The Contractor shall acquaint itself with these standards and specifications prior to the submission of a proposal for the construction of the work included in the Contract documents.

The location of the sewer connections are shown on the Plans based on the best information available at the time of bid. It is the Contractor’s responsibility to verify the location of sewer laterals by digging test holes where necessary and excavating by hand to avoid unnecessary damage to existing sewer laterals and adjacent property. Any damages to adjacent property resulting from the contractor’s failure to use proper care in locating and avoiding damage to existing sanitary sewer laterals will be the responsibility of the Contractor.

No changes to the location of sanitary sewer laterals shall be made without the approval of the Engineer or the Engineer's authorized representative. The contractor must notify the property owner 48 hours prior to relocating any sanitary sewer laterals.

All existing sanitary or combined sewers must be retained in service during construction and until acceptance of portions of new replacement facilities. Temporary piping, if necessary, shall be utilized to maintain service during construction. All construction shall be coordinated with the utility owner or operator prior to the interruption for temporary connections or new facilities of existing sanitary or combined sewers.

753.04 Method of Measurement. The quantity of sanitary sewer laterals adjusted will be measured as the actual number of laterals adjusted and accepted.

753.05 Basis of Payment. The quantity of sanitary sewer laterals adjusted will be paid for at the unit price per each. Price and payment will constitute full compensation for all necessary locating, excavating, test hole excavating, Type C backfill, backfilling, compacting, and disposing of excess material; for all cribbing, shoring, and sheeting; for furnishing and installing pipe and fittings regardless of size; for concrete encasement of fittings, regardless of size; for concrete encasement of fittings and joints, if required; and for all material, labor, equipment, tools, and incidentals required to complete the work.

SECTION 760 – PAVEMENT – MILLING. (3/28/2012)

RUMBLE STRIPS

Description:

Cut rumble strips in bituminous concrete pavement or portland cement concrete (PCC) pavement in accordance with the notes and details on the Plans and as directed by the Engineer.

Construction Methods:

1. Provide a machine designed for cold-milling rumble strips in bituminous concrete pavement or P.C.C. pavement.

    a. Equip machine with guides to provide uniformity and consistency in alignment of each cut;
    b. Cut the rumble strips to the dimensions shown in the notes and details on the Plans without tearing or snagging;
    c. Pickup and dispose of the waste material resulting from cutting rumble strips in accordance with Subsection 106.09. Wasting millings over the shoulder's edge will not be permitted.

Method of Measurement:

The Engineer will measure rumble strips longitudinally as the actual number of linear feet (linear meters) acceptably installed.

The twelve foot openings in bike-friendly rumble strips will not be measured for payment.

Basis of Payment:

Price and payment will constitute full compensation for all labor, tools, equipment, disposal of waste material and necessary incidentals to complete the work.

Item	Description	Pay Unit
760011	Rumble Strips, Full Lane Width	L.F. (L.M.)
760012	Bike-Friendly Rumble Strips, Hot-Mix	L.F. (L.M.)
760013	Bike-Friendly Rumble Strips, Concrete	L.F. (L.M.)

760014	Rumble Strips, Hot-Mix, Shallow Depth	L.F. (L.M.)
760015	Rumble Strips, Concrete, Shallow Depth	L.F. (L.M.)
760016	Rumble Strips, Hot-Mix	L.F. (L.M.)
760017	Rumble Strips, Concrete	L.F. (L.M.)
760018	Rumble Strips, Center Line, Hot-Mix	L.F. (L.M.)
760019	Rumble Strips, Center Line, Concrete	L.F. (L.M.)

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.

SECTION 762 SAW CUTTING PORTLAND CEMENT AND BITUMINOUS CONCRETE PAVEMENT: (3/28/2012)

Modify Section Name and replace existing language with the following:

762.01 Description. Mechanically saw cut patch edges or tie-in joints into existing pavement.

762.02 Construction Methods.

1. Use a suitable walk behind, motor driven, wet type diamond blade, circular cutter with control devices, mounted on a sturdy frame designed to cut portland cement concrete and hot-mix, hot-laid, bituminous concrete pavements.
2. Cut a groove in a straight line to sufficient depth to produce an even, neat joint to allow for removal of material without damage to adjacent pavement.
    a. Continuously supply water to the cutting blade either by water tank on the equipment or by other means.
    b. Saw cut portland cement concrete pavement the full depth of the pavement.
3. Other equipment may be used for saw cutting hot-mix, hot-laid bituminous concrete.
4. Continuously remove waste material created by saw cutting in accordance with Subsections 106.09 and 110.17.

762.03 Method of Measurement. The quantity of saw cutting portland cement concrete and hot-mix, hot-laid bituminous concrete will be measured as the actual number of

linear feet (linear meters) of pavement saw cut and accepted, measured along the cut, end to end.

762.04 Basis of Payment. The quantity of saw cutting portland cement concrete and hot-mix, hot-laid bituminous concrete will be paid for at the Contract unit price per linear foot (linear meter). Price and payment will constitute full compensation for saw cutting portland cement concrete and hot-mix, hot-laid bituminous concrete, disposing of waste material in compliance with Subsection 106.09, and for furnishing all materials, labor, equipment, tools, and incidentals required to complete the work.

SECTION 763 – INITIAL EXPENSE. (10/22/2013)

Delete in its entirety and replace with:

SECTION 763 – INITIAL EXPENSE / DE-MOBILIZATION

763.01 Description. This work consists of all operations necessary for the assembling and setting up of the Project, including the initial movement of personnel and equipment to the Project site, the establishment of the Contractor's offices, shops, plants, storage areas, and sanitary facilities, any other activities required by the Contract documents and by law or regulation, and all other work and operations that must be performed prior to beginning compensable items of work on the Project. This work also includes obtaining the required insurance and bonds, and all other items required for the start of work.

This item also includes all operations necessary for the final cleanup of the jobsite, for de-mobilization of all personnel and equipment, and for all paperwork necessary to close out the Project, including, but not limited to, obtaining releases from subcontractors.

763.02 Materials. Assume responsibility for the adequacy of all Materials that are required to assemble and set up the Project that are not to be a part of the completed Work.

763.03 Construction Methods. Perform all work in a safe and workmanlike manner.

763.04 Method of Measurement. This item will not be measured.

763.05 Basis of Payment. Payment will be made at the lump sum bid price for "Initial Expense / De-Mobilization", for which price and payment constitutes full compensation for all Work associated with mobilizing and demobilizing the Project as described above and for furnishing all Materials, Labor, Equipment and incidentals required to complete the Work.

When the lump sum price for this Item is less than or equal to 5% of the total bid price of the entire Contract at the time of Award ("Total Bid Price"), 45% of the item will be paid on each of the first two monthly estimates and 10% of the item will be paid on the final estimate. When the lump sum price for this item exceeds 5% of the Total Bid Price, 2 ¼% of the Total Bid Price will be paid on each of the first two monthly estimates and that portion exceeding 5% of the Total Bid Price, plus the remaining ½% of the Total Bid Price, will be paid on the final estimate.

Payment of the Contract lump sum price for Initial Expense/De-Mobilization will not be made more than once, regardless of the number of times that the Contractor must mobilize or demobilize from the site.

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 1st 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.

Section 812 Portland Cement Concrete. (3/28/2012)

Delete Section 812 and all Previous Supplemental Updates in their entirety and replace with the following:

812.01 Description. This material consists of portland cement, supplementary cementitious materials, fine aggregate, coarse aggregate, water, and/or admixtures mixed in the specified proportions for the required class of concrete.

812.02 Materials.

(a) Portland Cement – conform to the requirements of Section 801.
(b) Blended Hydraulic Cement – conform to the requirements of ASTM C1157.
(c) Fly Ash – conform to the requirements of Section 822, with total alkali content less than 3.0%, and a CaO content ≤ 8.0%.
(d) Ground Granulated Blast Furnace Slag – conform to the requirements of AASHTO M 302, Grade 100 or 120.
(e) Silica Fume – conform to the requirements of AASHTO M 307.
(f) Water – conform to the requirements of Section 803.
(g) Fine Aggregate – conform to the requirements of Section 804.
(h) Coarse Aggregate – conform to the requirements of Section 805. Conform the

gradation to the requirements of Section 813 or AASHTO M 43 as applicable.

(i) Fibers – conform to the requirements of Subsection 824.02(j).

(j) Air Entrainment agents – conform to the requirements of AASHTO M154.

(k) Chemical Admixtures – conform to the requirements of AASHTO M194 for the seven types as follows:

(1) Type A – Water reducing
(2) Type B – Retarding
(3) Type C – Accelerating (Non- Chloride)
(4) Type D – Water Reducing and Retarding
(5) Type E – Water Reducing and Accelerating
(6) Type F – Water Reducing, High Range
(7) Type G – Water Reducing, High Range and Retarding

(l) Lithium Admixtures – shall be certified as nonhazardous based on the heavy metal content.

(m) Curing Materials –as follows:

(1) Liquid Membrane compounds **–** conform to the requirements of AASHTO M 148, Type 2, Class A or B white pigmented liquid curing compounds.
(2) Sheeting – conform to the requirements of AASHTO M 171.
(3) Burlap – conform to the requirements of AASHTO M 182.
(4) Water – conform to Section 803.

812.03 Concrete Mix

A. Concrete Mix Designs.

Furnish a mix design for each class of concrete to be used. For normal weight concrete mixes, use the absolute volume method per ACI Publication 211.1. For lightweight concrete, select mix proportions based on trial mixes with the cement factor rather than water/cement ratio being determined by the specified strength per ACI Publication 211.2.

Design portland cement concrete mixes using properties specified in **Table 812.03-1a and Table 812.03-2a**. Obtain approval for each mix design used in project production. Submit each job mix formula at least 30 days before concrete production. Include laboratory test data and samples of all materials to be used in the mix in accordance with 812.03B. Identify the proposed source of the materials in each mix design.

Table 812.03-1a. Concrete Classes for Structures

Class of Concrete	Maximum w/cm ratio	Air Content (Percent)	Minimum 28-day Compressive Strength f'_c (psi)	Minimum 28-day Compressive Strength f'_c (MPa)	Maximum Permeability (Coulombs)
A	0.40	4.0 – 7.0	4,500	31.0	1,500
B	0.45	4.0 – 7.0	3,000	20.7	3,000

Class of Concrete	Maximum w/cm ratio	Air Content (Percent)	Minimum 28-day Compressive Strength f'_c (psi)	Minimum 28-day Compressive Strength f'_c (MPa)	Maximum Permeability (Coulombs)
B/SF	0.40	4.0 – 7.0	3,500	24.1	2,500
C	0.50	4.0 – 7.0	2,000	13.8	3,500
D	0.40	4.0 – 7.0	4,500	31.0	1,500

Notes:

(a) Class A concrete for approach slabs and Class D concrete for decks require the use of nonferrous reinforcement fibers at a rate of 1.5 lb per cubic yard (0.90 kg per cubic meter).

(b) Water reducing admixture(s) is required in all classes of concrete. Determine the quantity and type or combination of admixtures based on the admixture manufacturer recommendations, ambient temperature, concrete batch temperature(s), geometry of the work, concrete mix proportions, etc. The Contractor is responsible for the quality of the concrete placed in any weather or atmospheric conditions. Failure to produce a mix satisfying the contract specifications will be corrected as directed by the Engineer at the Contractor's expense.

(c) If a Type F or G admixture is used, the maximum allowable slump may be increased not to exceed 8-inches (120 mm).

(d) Concrete can only be placed only if the surface evaporation rate, as affected by ambient air temperature, concrete temperature, relative humidity, and wind velocity is less than or equal to 0.15 lb per square foot per hour (0.73 kg per square meter per hour)as published in ACI 305R-95 chart developed by Delmar Bloem. Copies of the chart may be obtained from the Department's Materials & Research Section.

(e) The following test procedures will be used for verifying mix properties:

(1) Mix Consistency: AASHTO T 119

(2) Air Content: AASHTO T 152 Modified or AASHTO T 196

(3) Permeability: AASHTO T 277

(4) Making and curing concrete test specimens: AASHTO T 23

i) Provide a protective environment in accordance with AASHTO T 23 for the first 24 to 48 hours at no expense to the Department.

Table 812.03-2a. **Concrete Consistencies**

Type of Work	Nominal Slump (inches)	Nominal Slump (mm)
Formed Elements:		

Type of Work	Nominal Slump (inches)	Nominal Slump (mm)
Sections< 12 in.	1 to 3	25 to 75
Sections ≥ 12 in.	1 to 4	25 to 100
Cast-in-place piles/drilled shafts not vibrated	5 to 8	125 to 200
Concrete placed under water	5 to 8	125 to 200
Filling for riprap	3 to 7	75 to 175
Slip Formed elements	0.5 to 1.5	12 to 37

Use only Type F or Type G admixtures for slumps greater than 4 inches (100 mm) . The maximum allowable slump may be increased to but not exceed 8-inches (200 mm).

Evaluate coarse and fine aggregates for use in portland cement concrete for potential alkali-silica reactivity (ASR) using at least one of the means referenced in table **812.03-3a** 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. Provide test results of the proposed aggregates, stamped by a Professional Engineer to the Engineer for review at least 30 days prior to the incorporation of the mixture on a Department project.

Table 812.03-3a

Tests and Criteria for Proposed Aggregate		
Procedure	**Description**	**Limit**
AASHTO T303[(1)]	Mortar Bar Expansion	< 0.08% at 28 days
ASTM C1293	Concrete Prism Expansion	< 0.04% at 1 year

[1] modify the w/cm ratio of the mortar to 0.47

Take mitigation steps 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 can incorporate one, or a combination of, the following materials:

- Low Alkali Cement having an alkali content of 0.40 or less,
- Blended hydraulic cement
- Ground Granulated Blast Furnace Slag
- Silica Fume

- Fly Ash
- 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** in **Appendix A.**

Evaluate the effectiveness of mitigation steps by testing according to table **812.03-3b.** All mixture design testing will be performed by a laboratory approved by the Engineer. Provide test results of the proposed concrete mixture components to the Engineer for review at least 30 days prior to the incorporation of the mixture .

Table 812.03-3b

Tests and Criteria for Proposed Concrete Components		
Procedure	**Description**	**Limit**
ASTM C1567 (modifed[1,2])	Mortar Bar Expansion	< 0.08% at 28 days
ASTM C1293 (modifed[3])	Concrete Prism Expansion	< 0.04% at 2 years

[1]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 cannot exceed 2.5 lb/yd^3.

[2]When evaluating lithium admixture, alone or in combination with ground granulated blast furnace slag, fly ash, or silica fume, four modifications to ASTM C1567 will be incorporated in the testing as referenced in, Section **II – Footnote** in **Appendix B**.

[3]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.

B. Concrete Trial Batches.

Conduct trial batch testing of the proposed mix and submit test results showing specified minimum strength, air content, aggregate gradation, workability requirements, permeability, and ASR expansion limits. Break histories in accordance with ACI 318M may be submitted to the Department for consideration in lieu of trial batches. The minimum sample population is 10 batches. Approval of proposed mix designs will be based upon criteria established in ACI 214 where the probability for any test property failing to meet contract criteria is not greater than 10% (Probability factor (p) not less than 1.30).

Establish exact proportions by testing trial mixes, and adjust to produce concrete that meets plasticity and workability requirements. Show aggregate proportions in terms of saturated surface dry condition. The producer must

monitor aggregate moisture content during production and make batch weight adjustments necessary to maintain mix consistency.

C. Mix Design Changes.

Provide a new mix design, based on trial mixes, for approval when there is any change in the source or character of materials used during production of concrete for the project. Provide the approved mix design proportions prior to concrete production.

D. Concrete Mix Design for Patches.

Early Strength concrete mix Designs

1. Early strength mix designs must meet all the requirements of this specification except that the minimum strength requirement is 2,000 psi before the work can be opened to vehicular traffic. The age at which this strength can be obtained will be per the contract schedule requirements.
2. Early strength can be obtained through the use of portland cement (type I, II, or III) and/or chemical admixtures meeting the requirements of 812.02.
3. All Early strength mix designs will be approved through successful trial batches per section 812.03

812.04 Handling and Storage of Materials

(a) Aggregates

(1) Locate aggregate stockpiles on hard, clean, surfaces with positive drainage constructed of materials such as portland cement concrete or bituminous concrete of sufficient thickness to support the required traffic loads for this application. The base surface must be approved prior to stockpiling aggregates. If at any time the stockpile surfaces deteriorate and possibly contaminate aggregate stockpiles, concrete operations will immediately be suspended until such time as the surface is repaired to the satisfaction of the Engineer. Maintain suitable partitions to segregate and contain fine and coarse aggregate stockpiles. Coarse and fine aggregate must be kept segregated until batching.

(2) Stockpile fine aggregates at the batch plant for a minimum of 24 hours prior to batching until surplus water has drained and the material has a uniform free moisture content. Batching directly from the washing plant is prohibited. Suitable partitions must be constructed to prevent wet fine aggregates from mixing with fine aggregate used for batching.

(3) Construct haul roads to the concrete plants to prevent any deleterious materials from entering the batching process. If deleterious materials are discovered anywhere in the batching process, the operation will immediately be suspended until the conditions are corrected to the satisfaction of the Engineer.

(b) Cementicious Materials

(1) Store Cement in suitable structures which protect the material from hydration.

(2) Any cement or cementicious material which shows signs of hydration such as lumps or cakes shall not be used.

(c) Admixtures

(1) Store admixtures so that contamination, stratifications, or deterioration is

prevented.
(2) Agitate admixtures thoroughly to the satisfaction of the Engineer.
(3) When admixture dosage rates differ from the manufacturer's recommendations, discontinue the use of admixture until the cause of the problem is identified and corrected to the satisfaction of the Engineer.

812.05 Mix Temperature Limitations

(a) Measure all temperatures at the point of placement.
(b) The maximum allowable temperature for Class D concrete for bridge decks is 85 F.
(c) The maximum allowable temperature for all other classes of concrete is 90 F.
(d) The minimum allowable temperature for all classes of concrete is 50 F.
(e) Take appropriate actions in accordance with ACI 318 recommendations for Hot Weather Concrete when batch temperatures at the mixing plant reach 6 degrees below the maximum allowed for the class of concrete being produced.
(f) Take appropriate actions in accordance with ACI 306 recommendations for Cold Weather Concrete when batch temperatures at the mixing plant reach 6 degrees above the minimum allowable for the class of concrete being produced.

812.06 Delivery of Fresh Concrete Batches

(a) The maximum allowable elapsed time between the introduction of the mix water and the final placement for slip form mixes is 45 minutes for non-agitating transport vehicles and 60 minutes for agitating transport vehicles.
(b) The maximum allowable elapsed time between the introduction of the mix water and the final placement for all other mixes is 30 minutes for non-agitating transport vehicles and 60 minutes for agitating transport vehicles.
(1) The delivery time restrictions may be extended with the use of approved water reducing admixtures, set retarding admixtures, and/or replacement of a portion of the portland cement content with Fly Ash Cement or Ground Granulated Blast Furnace Slag Cement. All properties of the mix design will be verified through successful trial batches.
(c) The interval between successive loads cannot exceed the lesser of
(1) 20 minutes, or
(2) the surface of the previous load exhibits signs of setting and cannot be mobilized through the use of mechanical concrete vibrators.

812.07 Plant Equipment Requirements

(a) Meet the requirements of AASHTO M 157 except as modified herein.
(b) Equip concrete batch plants for automatic batching and proportions of cement, aggregates, and water and visual observation of automatic insertion of admixtures.
(1) Weigh individual aggregates to within 1% of the target weight.
(2) Weigh combined aggregates to within 1% of the total target aggregate weight.
(3) The required batch quantity of water measured by either weight or volume must be within 1%.
(4) Weigh cement within 1% of the target batch weight.
(5) Admixture dispensers must be accurate to 1% of target volume.
(c) Provide a computer printed ticket for each batch issued by the plant to the truck driver containing the following:
(1) Name and location of the plant.

(2) Approved mix designation per table 812.01-2a
(3) Size and proportions of the batch.
(4) Type(s) and dosage rate(s) of admixture(s) used.
(5) Batch time as defined in 812.06.
(6) Allowable water in gallons withheld from meeting the maximum allowable water/cement ratio for the approved mix design.

(d) Bins and hoppers must meet the requirements of section 812.04(a).

(e) Weighing scales:
(1) Scales for weighing material must be of rugged design, constructed to support the hopper or hoppers with minimum adjustments consistent with the accuracy required.
(2) Scales rated to 5,000 lbs or less measure in graduations not greater than 5 pounds.
(3) Scales rated greater than 5,000 lbs shall measure in graduations not greater than 0.1% of the maximum rated load.
(4) Maintain scales within a maximum tolerance of 0.5% of the net load in the hopper.
(5) Retain at least one set of the following calibration weights for verifying scale calibrations
(i) Ten standard 50 lb blocks
(ii) Eleven standard 20 kg blocks, one standard 5 kg block, and two standard 1 kg block.
(iii) The weights shall be constructed of high quality cast iron and finished in such a manner that foreign materials do not adhere to the surface.
(iv) These weights may be checked at the Engineer's discretion.

(f) Central Mix plants
(1) Central mix plants must be capable of weighing and mixing all materials for portland cement concrete before placing batches into approved transport vehicles.
(2) The minimum mixing time for batches of 10 cubic yards or less will be 60 seconds.
(3) The minimum mixing time for batches greater than 10 cubic yards will be determined by the Engineer.
(4) Mixing time begins when all materials excluding mix water have been added to the mixing drum.

(g) Truck mixed portland cement concrete batches
(1) Mix each batch greater than 70 but less than 100 revolutions at a rate of rotation specified by the manufacturer.
(2) Inspect mixer drums annually for wear and have verified by the Department's Materials and Research section.
(3) Keep interior drum surfaces clean of accumulations of hardened concrete material.
(4) Replace drum blades when wear exceeds 1 inch of original height.
(5) Do not load truck mixers greater than the maximum gross vehicle weight.
(6) Do not exceed the manufacturers rating for the size of the batch which may be transported in these units when used as an agitator.

(h) Volumetric Truck Mixers
(1) Calibrate volumetric truck mixers by the Department's Materials and Research section annually or within 12 months of being used on a DelDOT project.
(2) Equip each truck with a ¼ cubic yard box constructed of suitable rigid materials at all times for calibration purposes.

(3) Dispense cement at a constant volumetric weight equivalent during mixing operations. Calibrate aggregate bins at various gate openings to discharge the volumetric weight equivalent of aggregate required for the approved concrete mix.
(4) Dispense water through a calibrated meter displaying the discharge rate into the mixing auger.
(5) Provide only approved trucks capable of mixing batched materials sufficiently to dispense a uniformly homogenous mix at the point of placement with no further mixing required.
(6) The following tolerances for proportioning the various ingredients are as follows:
(i) Cement: -0% to +4% of target weight
(ii) Fine aggregate: ±2% of target weight
(iii) Coarse Aggregate: ±2% of target weight
(iv) Admixtures: ±3% of target weight or volume
(v) Water: ±3% of target weight or volume

(i) Provide a laboratory of 150 ft^2 (14 m^2) minimum, for the exclusive use of the Engineer at all portland cement concrete facilities. The producer will furnish all heat, lights, air conditioning, telephone, electric, bottled drinking water, tables, desks, chairs, filing cabinets, and all testing equipment or devices to verify concrete properties in accordance with section 812.03 note (e). Furnish and maintain approved sanitary facilities.

Appendix A
Calculating Lithium dosage for mitigation of ASR without the use of Slag Cement or Fly Ash

I – Mixture Design

(a) Report the alkali content of the Portland cement as a percentage by mass of sodium oxide equivalent. The minimum alkali content of the portland cement used in the Lithium dosage calculation is 0.60% total alkali.

(b) The standard lithium dosage is 0.55 gallons of 30% lithium nitrate solution per pound of sodium oxide equivalent of the portland cement.

(1) If other lithium salts meeting the requirements of 812.01 are used, convert the lithium mass into an equivalent measurement of lithium nitrate salt.

(c) Determine the gallons per cubic yard of 30% lithium nitrate solution by multiplying the cement content of the mix design (lb/CY) by the Alkali content of the cement in percent by 0.55 gallons of 30% lithium nitrate solution divided by 100

(1) If a weaker concentration of lithium nitrate is used, determine the standard lithium dosage of the weaker solution by multiply the gallons of the standard lithium dosage by 30% lithium nitrate concentration divided by the concentration of the lithium nitrate solution proposed.

(d) The minimum dosage of lithium nitrate solution is 25% of the standard dosage calculation.

Maintain the water/cement ratio of the mix by one of the following measures:

(a) subtract 85% of the lithium admixture volume used in the batch from the required volume of mix water

OR

(b) subtract 70% of the lithium admixture mass used in the batch from the required mass of mix water

Appendix B

Procedure modifications to ASTM C1567 as found in publication CRD-C 662-09 "*Determining the potential Alkali-Silica Reactivity of Combinations of Cementitious materials, Lithium Nitrate Admixture, and Aggregate (Accelerated Mortar-Bar method)"*

II - Footnote

1. Portland Cement Source
    a. Use a portland cement having a total alkali content of 0.9 +/- 0.1%,
    b. portland cement must have a total autoclave expansion of 0.20% when tested according to AASHTO T-107/ASTM C-151.

2. Calculate the standard lithium dosage multiplying the alkali content of the portland cement in percent by 0.55 gallons of 30% Lithium Nitrate solution. (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)
    a. The minimum dose of lithium solution is 25% of the standard dosage calculation.
    b. Maintain the water/cement ratio of the mix by one of the following measures:
        i. subtract 85% of the lithium admixture volume used in the batch from the required volume of mix water

        OR

        ii. subtract 70% of the lithium admixture mass used in the batch from the required mass of mix water

An Excel spreadsheet is available from the Engineer to calculate material amounts for the modifications. Amounts of components used in tests submitted by the contractor must match those in this spreadsheet.

3. Use a soak solution containing 0.019 gal of lithium admixture multiplied by the fraction of the standard dose as calculated above, 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.)

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 must contain the calculated percent expansions along with a plot of the percent expansions versus days in the soak solution.

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:

WEIGHT PERCENT PASSING	
Sieve Size	**% Passing**
	Type 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:

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

[1]Minus 0.425 mm (No. 40) sieve material
[2]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 1and 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. Retroflectorized sheeting shall be AR-1000 (Type V) Abrasive resistant and shall be applied in accordance with Subsection 720.03.

DIVISION 900 – EROSION, SEDIMENT AND STORMWATER MANAGEMENT MEASURES – (11/24/2014)

Add Section 900 in its entirety**;**

DIVISION 900 DEFINITIONS

Concrete Washout. A concrete washout is a designated area to capture any effluent generated from washing out the mixing drum or the associated parts of a concrete delivery system, including, but not limited to, chutes, excess concrete and discharge hoses.

Construction Debris. Construction debris is any refuse generated within the Project Limits to include but not limited to packaging materials, scrap construction materials (i.e. geotextiles, lumber, excess asphalt, etc.), timber, pipe and electrical cuttings, plastics, styrofoam, concrete and other trash or building materials. All construction debris is waste material.

Disturbed Area. Disturbed area is an area where land disturbing activities have been initiated which may result in soil erosion. Examples include, but are not limited to, clearing, grubbing, grading, excavating, transporting, filling, and backfilling of land.

ES2M Inspections. *Erosion, Sediment and Stormwater Management* (ES2M) inspections are compliance inspections of the project site, completed by the ES2M CCR. The inspection is used to complete the ES2M Inspection Rating Form.

ES2M Certified Construction Site Reviewer (CCR). A Certified Construction Reviewer (CCR) is an inspector of sediment and stormwater controls on DelDOT owned construction sites.

For Minor Projects: This position will be assigned by the Engineer with the following responsibilities.

1. Perform weekly ES2M Inspections and document observed deficiencies, directives for correction with due dates & timely completion thereof within the DelDOT Construction Diary. These will be available for review by the Engineer.

For Medium and Major Projects, this position will be assigned by the Stormwater Engineer with the following responsibilities.

1. Schedule and attend an ES2M Pre-Construction Meeting on site, which is a separate meeting from the Project Pre-Construction meeting, a minimum of 7 days prior to the Notice to Proceed. Review approved ES2M plan with the contractor and the DelDOT Project Resident. Discuss any proposed plan

changes at this time. Document the meeting within 3 days of occurrence and distribute to attendees and other designated DelDOT personnel.

2. Perform weekly ES2M Inspections and submit reports to the Stormwater Section.

3. Perform SWM construction checklist and submit checklist to the Stormwater Section.

Hazardous Materials. Hazardous materials is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

Secondary Containment. Secondary containment provides an essential line of defense in the event of a failure of the primary containment system.

Sediment and Stormwater Management Plan. A Sediment and Stormwater Management Plan is the plan contained in the Contract Documents describing the control of soil erosion, sedimentation, stormwater quantity, and water quality impacts resulting from land disturbing activities arising from the Project.

Waters of the United States. As defined in Clean Water Act, 40 CFR 230.3(s) definitions and/or the most updated version of that definition.

SECTION 901 – EROSION, SEDIMENT AND STORMWATER MANAGEMENT

901.01 Description.

Describes the Regulations, Permits, policies and procedure relating to Erosion and Sediment Control and Stormwater Management that is applicable to all DelDOT contracts.

Describes the compliance procedures for failure to implement and maintain E & S controls.

901.02 Legal Authority

Any Contractor performing Work for the Department is required to maintain compliance with the Delaware Sediment and Stormwater Regulations (DSSR). The Department will ensure that all Contractors comply with the DSSR by enforcing the regulations through the terms of the Contract. As an owner, DelDOT must comply with Chapter 60 of Title 7 f the Delaware Code Section 9.1.02 of Delaware's Regulations Governing the Control of Water Pollution, 7 DE Admin. Code 7201.

901.03 Definitions

Concrete Washout. A concrete washout is a designated area to capture any effluent generated from washing out the mixing drum or the associated parts of a concrete

delivery system, including, but not limited to, chutes, excess concrete and discharge hoses.

Construction Debris. Construction debris is any refuse generated within the Project Limits to include but not limited to packaging materials, scrap construction materials (i.e. geotextiles, lumber, excess asphalt, etc.), timber, pipe and electrical cuttings, plastics, styrofoam, concrete and other trash or building materials. All construction debris is waste material.

Disturbed Area. Disturbed area is an area where land disturbing activities have been initiated which may result in soil erosion. Examples include, but are not limited to, clearing, grubbing, grading, excavating, transporting, filling, and backfilling of land.

ES2M Inspections. *Erosion, Sediment and Stormwater Management* (ES2M) inspections are compliance inspections of the project site, completed by the ES2M CCR. The inspection is used to complete the ES2M Inspection Rating Form.

ES2M Certified Construction Site Reviewer (CCR). A Certified Construction Reviewer (CCR) is an inspector of sediment and stormwater controls on DelDOT owned construction sites.

A. For Minor Projects: This position will be assigned by the Engineer with the following responsibilities.

1. Perform weekly ES2M Inspections and document observed deficiencies, directives for correction with due dates & timely completion thereof within the DelDOT Construction Diary. These will be available for review by the Engineer.

B. For Medium and Major Projects, this position will be assigned by the Stormwater Engineer with the following responsibilities.

1. Schedule and attend an ES2M Pre-Construction Meeting on site, which is a separate meeting from the Project Pre-Construction meeting, a minimum of 7 days prior to the Notice to Proceed. Review approved ES2M plan with the contractor and the DelDOT Project Resident. Discuss any proposed plan changes at this time. Document the meeting within 3 days of occurrence and distribute to attendees and other designated DelDOT personnel.

2. Perform weekly ES2M Inspections and submit reports to the Stormwater Section.

3. Perform SWM construction checklist and submit checklist to the Stormwater Section.

Hazardous Materials. Hazardous materials is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

Secondary Containment. Secondary containment provides an essential line of defense in the event of a failure of the primary containment system.

Sediment and Stormwater Management Plan. A Sediment and Stormwater Management Plan is the plan contained in the Contract Documents describing the control of soil erosion, sedimentation, stormwater quantity, and water quality impacts resulting from land disturbing activities arising from the Project.

Waters of the United States. As defined in Clean Water Act, 40 CFR 230.3(s) definitions and/or the most updated version of that definition.

901.04 Sediment and Stormwater Management Plan Approval

A signature and date in the Stormwater Engineer's block on the title sheet of the Plans indicate that the Plans were designed in conformance with the DSSR and that the Sediment and Stormwater Management Plan is approved.

Neither review and approval by the Engineer nor errors and omissions in the Contract Documents, or Contract Documents as amended, shall relieve the Contractor from its responsibilities for compliance with the Delaware Sediment and Stormwater Regulations.

901.05 Division of Responsibility

The Contractor Erosion & Sediment Control Supervisor (Contractor ESC Supervisor) will have the following responsibilities:

A. Will be considered the Responsible Personnel for all land disturbing activities.

B. Will have authority to direct and complete the work needed to comply with the approved Sediment and Stormwater Management Plan and to correct any deficiencies listed on the Erosion Sediment and Stormwater Management (ES2M) Inspection Rating Report

http://deldot.gov/information/business/drc/pd_files/plan_development/es2m_inspection_rating_form.pdf

http://deldot.gov/information/business/drc/pd_files/plan_development/es2m_inspection_rating_form_guidance.pdf

C. Will accompany the ES2M CCR on weekly ES2M Inspections, on medium and major projects, and sign and date in receipt of these reports.

D. Will implement and maintain the approved Sediment and Stormwater Management Plan.

E. Will attend the Erosion & Sediment Pre-Construction Meeting. Will exchange emergency numbers with the Engineer and provide a photo copy of his/her valid DNREC Certification.

F. In addition to A thru E above, for Minor and Medium Projects the Contractor ESC Superintendent will possess and maintain a Contractor Blue Card for the life of the project.

In addition to A thru E above for Major Projects, the Contractor ESC Supervisor will possess and maintain a CCR Card for the life of the project.

901.06 Failure to Implement and Maintain Erosion and Sediment Control Measures

Maintain erosion and sediment control items continuously throughout the duration of the project, including periods when the project is inactive or suspended. Repair, replace, or maintain any erosion and sediment control device promptly as noted on the ES2M Inspection Rating Report or as directed by the Engineer. Stabilize any eroded surface and remove and dispose of any accumulated sediment not trapped by a control measure in an approved stockpile area or haul off-site. Maintain access to all sediment control devices until construction phasing and stabilization allow the removal of those controls.

Based on the ES2M Inspection Rating Report form the following will happen:

Points Awarded	**Actions to be taken**
69.9-60.0	- A follow-up inspection will be required within 2 working days to correct deficiencies. - If the follow-up inspection is still within this point range, the Engineer will take any or all actions below to gain compliance.
59.9-0	- A follow-up inspection will be required within 2 working days to correct deficiencies. - If the follow –up inspection is still within this point range, the Engineer will proceed directly to 901.05 C.

If, at any time, the Contractor fails to perform the work as directed by the approved Sediment and Stormwater Management Plan, the ES2M Rating Report, or in writing from the Engineer, the Engineer will 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. Time charges will

continue during a Limited Suspension of Activity. No new land disturbance can take place during this time period.

B. Withhold Progress Payments. The Engineer will withhold monthly estimate payments for all contract items until E&S deficiencies are corrected.

C. Stop Work Order. The Engineer will suspend the performance of all construction, as noted in Subsection 105.02, for a maximum of 10 calendar days to bring the ES2M Inspection Rating Report to a 70 or above. If, after the 10 calendar days, the ES2M Inspection Rating Report is still below a 70, the Engineer will proceed to 901.05D.

Time charges will continue during this “Shut-Down” period and no claims for additional time or money shall be allowed 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 will 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 approved Sediment and Stormwater Management Plan.

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.

901.07 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 approved Sediment and Stormwater Management Plan, failure to supply a Contractor ESC Supervisor, or failure to correct deficiencies identified in the ES2M Inspection Rating Report, the Contractor will be responsible to pay the fines or the money will be deducted from monies due the contractor.

SECTION 902 - DEWATERING

902.01 Description.

Furnish necessary equipment, materials, and labor to dewater locations shown on the Plans, and as directed by the Engineer.

A. *Statewide General Permit for Minor Dewatering Activities.* Comply with the Statewide General Permit issued to the Department by DNREC via interagency Memorandum of Agreement. Covered work includes the following activities:

1. *Dewatering*. Dewater the work area in accordance with this specification at rates less than 50,000 gallons per day.

2. *Stream By-pass Pumping.* By-pass surface water to facilitate in-stream work for bridge and culvert replacements. By-pass pumping at rates exceeding 50,000 gallons per day are permitted provided no water is withdrawn for consumptive use and all water is returned to its natural course immediately downstream of the work area.

B. *Permits Required***.** Obtain a separate dewatering permit from DNREC when groundwater or surface water withdrawal rates in excess of 50,000 gallons per day are necessary.

1. *Permit Acquisition.* Obtain all necessary permits for dewatering and disposal of pumped water required to construct and complete the Work from DNREC, Division of Water, Water Supply Section, unless covered in the Statewide General Permit for Minor Dewatering Activities.

2. *Permit Costs.* Pay all costs associated with the acquisition of separate dewatering permits from DNREC.

3. *Permit Acquisition Time.* Dewatering permits for rates exceeding 1,000,000 gallons per day require public notice and possibly a public hearing before DNREC will issue a permit. Ensure that sufficient permit acquisition time is included in the project schedule to obtain the permit. Time extensions will not be granted for failure to account for this time in the project schedule.

4. *Other Permits.* State and Federal permits are required for any entry into streams or wetlands. Environmental Requirements are more fully described in the Project Environmental Statement.

The Statewide General Permit for Minor 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. (See Specification Section 107.02, Permits, Licenses and Taxes.)

5. *Licensing Requirements.* Meet any and all DNREC licensing requirements for the installation or operation of the dewatering equipment, or employ the services of properly licensed subcontractors such as a well driller when an individual dewatering permit is required.

902.02 Materials.

Provide Materials as necessary and required.

902.03 Construction Methods.

A. *Submit Approved Permits.* Submit copies of all permit approvals to the Engineer. Dewatering operation cannot begin until the necessary dewatering permit is submitted to the Engineer.

B. *Dewatering Equipment.* Provide sufficient equipment and back-up or replacement equipment necessary to ensure the continuous dewatering of the work area. Instantaneous and totalizing flow meters, accurate to within +/- 5%, are required on all dewatering equipment.

C. *Required Notifications.* Notify the DNREC Water Supply Section at (302) 739-9945, 48 hours prior to starting any dewatering operations.

Notify DNREC Wetlands and Subaqueous Lands Section at 302-739-9943, 48 hours prior to starting any dewatering adjacent to wetlands or if discharge water is proposed to be directed to any wetlands.

D. *Dewatering Operation.* Do not allow surface and ground water to rise around the proposed work. Continue dewatering until the work has been brought to finished lines and grades, and accepted by the Engineer. None of the proposed work shown on the Plans will be laid in water, unless otherwise indicated on the Plans or directed by the Engineer.

E. *Protection of Work Area.* 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. Comply with applicable sediment control measures.

F. *Protect Adjacent Property.* Dispose of pumped water into a suitable conveyance system without flooding or damage to adjacent property, buildings, structures, utilities, and other work. 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. Do not drain dewatering discharge into work completed or under construction without prior consent of the Engineer. Dispose of Water in such a manner as not to be a menace to the Public Health. Discharging to the sanitary sewer system is not permitted.

G. *Protect Adjacent Waterbodies.* Discharge of saline water into a fresh water system or discharge fresh water into a saline water system is prohibited.

Dewatering operations for the Project cannot cause the inadvertent drawdown or dewatering of wetlands or other surface water bodies.

H. *Dewatering Discharge.* Ensure all discharges are directed to sediment trapping or filtering devices such as a dewatering bag, dewatering basin, portable sediment tank, sediment trap or sediment basin prior to release into ditches, storm drain systems, streams or surface water bodies of any type.

I. *Dewatering of Temporary Cofferdams for Bridge Construction.* Upon completion of driving of temporary sheet pile for in–stream work, or erection of a temporary dike to create a temporary cofferdam, leave the sediment-laden water within the cofferdam undisturbed for a minimum of 12-hours to allow settling of suspended soil particles. Remove water from temporary cofferdams by skimming it off the surface. Immerse intake no more than 6" (150 mm) below the water surface. Once the water level has been pumped down, accomplish additional dewatering using a sump pit constructed in conformance with DelDOT Standard Details. Any deviation from Standard Details requires prior approval and may require an individual dewatering permit from DNREC.

J. *Well Impacts.* As required by Title 7, Del.C., §6031 and §6037, take whatever steps are necessary to provide continuous uninterrupted water service to any affected public or private potable water supplies or wells within the project area if adversely affected by the dewatering operations associated with this project.

902.04 Method of Measurement and Basis of Payment.

Dewatering Operations will not be separately measured or paid. All Costs are incidental to the associated work items.

SECTION 903 – POLLUTION PREVENTION

903.01. Description.

Implement and maintain the Pollution Prevention plan outlined in the Contract Documents using best management practices (BMPs) within the Project Limits to identify pollution sources to minimize or eliminate potential pollutant impact.

903.02. Materials.

Provide Materials as necessary and required.

903.03. Construction Methods.

A. **Waste Management Practices.** Use the following construction methods for waste management practices:

1. *Waste-Collection*

   a. Designate and clearly mark a waste collection area within the LOC for locating a receptacle(s). Collect and store all waste material in the receptacles. Each receptacle shall have a cover available for installation at the end of each work day and/or during a weather event that produces stormwater runoff.

   b. Place receptacle(s) in a location away from inlets that does not drain to a water body.

   c. Empty receptacles a minimum of once every 20 working days or more as necessary. Stored Waste will not be allowed to exceed the capacity of the receptacle(s). Monitor the Project Limits daily for waste material and pickup waste material as necessary.

   d. Dispose of waste material in accordance with all applicable Delaware laws.

2. *Sanitary Facilities*

   a. Provide well-maintained sanitary facilities within the LOC. Provide tie-downs and/or staking to prevent accidental tipping during times of high winds.

   b. Inspect and monitor on a regular basis, and repair and/or replace immediately.

   c. Temporary facilities will be located a minimum of 50 feet from storm drains and/or waterways.

B. **Equipment and Vehicle Fueling and/or Maintenance Practices.** Use the following construction methods for equipment and vehicle fueling and/or maintenance practices:

1. Clearly mark designated areas for on-site fueling.

2. Have a spill kit readily available at the site of the fueling operation.

3. Use drip pans, drip cloths, or absorbent pads when replacing fluids, fueling or making emergency repairs.

4. Collect all spent fluids and store in appropriately labeled containers in proper covered storage areas. Recycle fluids whenever possible.

C. **Dewatering Equipment.** Use the following construction methods for dewatering equipment.

1. When equipment, including pumps, is used in dewatering operations located within the Waters of the United States, secondary containment is required.

2. Whenever possible, remove equipment from the Waters of the United States at the end of each day.

D. **Designated Washout Areas.** Use the following construction methods for designated washout areas.

1. Collect concrete washout in a temporary device for hardening and proper disposal as per Standard Construction Detail – Concrete Washout. Clearly mark designated disposal facilities.

2. Clearly mark designated Paint and Stucco washout. The device and/or constructed BMP require approval of the Engineer prior to using.

3. Locate washout facilities at least 50 feet from a storm drain and/or any waterways whenever possible. Locations require approval of the Engineer.

4. Regular inspection and maintenance of these areas is required.

E. **Storage Facilities and Staging Areas.** Use the following construction methods for storage facilities and staging areas.

1. Store all potential pollutants (paint, solvents, pesticides, fuels, oils, and other hazardous materials) under cover or secured in areas with secondary containment.

2. Fuel tanks above 250 gallons require secondary containment systems. Double-lined tanks meet the secondary containment requirement. If requested by the Engineer, provide information on the device detailing this specific requirement.

3. Designate staging areas for activities such as fueling, mixing paints, etc.

4. Regular inspection and maintenance of these areas is required.

F. **Equipment/Vehicle Washing**

1. Clearly mark the wash area.

2. Ensure that all washing occurs only in the designated area.

3. Locate wash areas a minimum of 50 feet from a storm drain and/or waterway.

4. Do not use detergents to remove dirt.

5. Route wash water discharges to sanitary sewer whenever possible.

903.04. Basis of Payment.

All items are considered incidental to the requirement.

SECTION 904 – RESERVED

SECTION 905 – SEDIMENT TRAPPING DEVICES

905.01 Description.

Trap sediment before it leaves the job site by using a type of silt fence, sediment traps or basins, a type of inlet protection or flocculation and other approved sediment trapping devices.

Sediment-Laden Runoff. Stormwater runoff from disturbed areas shall be directed to an approved sediment control measure, prior to release from the Project limits of construction as shown on the Plans, or as directed by the Site Reviewer and the Engineer.

905.02 Materials.

Provide materials for sediment trapping devices as specified below:

Seed	Section 908
Geotextile	Section 827

A. ***Silt Fence***. Provide Materials for silt fence as follows:

1. *Posts*. For posts, use oak timber or steel a minimum length of 36".
   a. Oak timber posts will be straight with a minimum nominal cross-section of 2" x 2"
   b. Steel posts will be 2 1/2" diameter Schedule 40 pipe or be standard steel "T" or "U" section of 1.3-lb/ft minimum.
2. *Reinforcing Strip*. For reinforcing strip use wooden lath, plastic strip or other approved equivalent.
3. *Fasteners and Attachment.* For fasteners and attachments use either 5/8" long brass or copper staples to securely attach the fabric to the posts.
4. *Prefabricated Silt Fence.* Prefabricated silt fence may be used if constructed with the materials specified in this Section and approved by the Engineer.
5. *Wire Mesh.* For wire mesh, use 14 gauge wire mesh 2" x 4"square.

B. ***Sediment Trap*** – Provide outlet for sediment trap as specified on the plans.

C. ***Inlet Sediment Control*.** Provide Materials for inlet sediment control as follows:

1. Meet or exceed American Standards for Testing Materials (ASTM) for the following

- Tensile Strength (Grab) (lbs) 225 x 150
- Tensile Elongation (Grab) (lbs) 15 x 20
- Trapezoidal Tear (lbs.) 40 x 50
- Mullen Burst (psi) 350
- AOS (US Sieve) 20 – 40
- UV 500 hrs. (%) 70
- Flow Rate (gpm/ft^2) 110

2. *Stone*. Use DE No. 3 and R4 Riprap

3. *Wire Mesh.* Wire mesh must be of sufficient strength to support filter fabric with water fully impounded against it.

905.03 Construction Methods.

Use the following construction methods for sediment trapping devices:

A. ***Silt Fence*.** Construct, maintain and remove silt fence as follows:

1. *Construction of Silt Fence.* Construct silt fence as follows:
   a. Excavate the trench along the upstream side of the post line as shown on the Standard Construction Details.
   b. Install posts along the established fence line on the downstream edge of the trench.
   c. Securely attach the geotextile material to the upstream side of the posts with fasteners and attachment.
   d. Install a reinforcement strip at the geotextile roll ends; overlap a minimum of 6" at post locations.
   e. Embed the geotextile in the excavated trench.
   f. Backfill and compact the trench over the geotextile
   g. On slopes, turn the terminal ends of silt fence upslope a sufficient distance to eliminate flow around the ends of the silt fence.
   h. Do not construct the silt fence across any ditch, swale, or any area of concentrated water flow.

2. *Construction of Reinforced Silt Fence.* Construct reinforced silt fence as

follows:

a. Construct according to Subsection 905.03A1.
b. Fasten wire mesh to the posts between the geotextile and the posts.

3. *Maintenance of Silt Fence*. Maintain silt fence as follows:

a. Repair or replace all geotextile damaged at anytime during the life of the Contract.
b. Replace all deteriorated or clogged geotextile.
c. Periodically remove accumulated trash.
d. Remove trapped sediment, when it reaches 50% of the exposed height of the fabric.
e. After every heavy rainfall, check for and remove excessive buildup of sediment.
f. Clean the geotextile of trapped sediment by lightly brushing the geotextile when dry.

4. *Removal of Silt Fence*. Remove silt fence as follows:

a. Remove the silt fence and all materials incidental to the silt fence construction when the Engineer determines that they are no longer required.
b. Restore all areas affected by the construction of the silt fence to the original or plan contours.
c. Stabilize all areas affected by the construction of the silt fence.

B. ***Sediment Trap.*** Construct, maintain and remove sediment trap as follows:

1. *Construction of Sediment Trap***.** Construct sediment trap as follows:

a. Construct sediment traps by excavating to the dimensions and elevations indicated on the Plans and Standard Construction Detail, Sediment Trap.

b. Stabilize the side slopes with Temporary Seed.

c. If any sediment trap conflicts with the placement of permanent drainage pipes or ditch lines,

i. First excavate the sediment trap to the dimensions and elevations shown on the Plans.

ii. Then, place the proposed pipes and/or ditches when the sediment trap is no longer needed.

d. Do not excavate sediment traps in excess of 4ft deep. Excavate sediment traps having proposed bottom elevations greater than 4ft lower than the original grade in stages concurrent with the roadway excavation.

e. Mark the cleanout elevation on a stake driven into the ground at the bottom of the trap. The depth marked is one-half the design depth of the trap.

f. All traps require an outfall that is incidental to the Sediment Trap item as shown on the Plans.

2. *Maintenance of Sediment Trap***.** Maintain sediment trap as follows:
   a. Maintain the sediment trap to the original dimensions and function of the sediment trap.
   b. Inspect the sediment trap immediately after every rainfall and make repairs as needed.
   c. Remove accumulated sediment when depth has reached the cleanout elevation.
   d. Dispose of sediment properly.
   e. Restore trap to its plan dimensions and elevations.

3. *Removal of Sediment Trap*. Remove sediment trap as follows:

After all areas draining to the trap are permanently stabilized and the Engineer has approved its removal, the sediment trap shall be backfilled and the area restored to the original or plan contours and stabilized.

C*.* ***Inlet Sediment Control.*** Construct, maintain and remove inlet sediment control as follows:

1. *Construction of Inlet Sediment Control.* Construct inlet sediment control as follows:

Construct according to the type required and follow the applicable Standard Construction Details or manufacturers recommendations.

2. *Maintenance of Inlet Sediment Control.* Maintain inlet sediment control as follows:
   a. Remove accumulated sediment from inlet sediment control as soon as practicable, but within 48 hours, as directed by Engineer.
   b. Remove and replace as necessary based on product manufacturer's requirements or when sediments interfere with proper flow of water through the product.
   c. Do not deposit sediment within catch basins and / or associated pipes.
   d. Do not allow sediment discharges into bodies of water and/or wetlands State, Federal or privately owned.
   e. Do not allow sediment discharges into ditches or swales.

3. *Removal of Inlet Sediment Control.*

Remove inlet sediment control and stabilize all areas affected by the construction of the inlet sediment control.

905.04 Method of Measurement.

The Engineer will measure the quantity of work acceptable completed for sediment trapping devices as follows:

A. Silt Fence and Reinforced Silt Fence by the linear feet of fence placed and accepted exclusive of overlap(s).

B. Sediment Traps as the actual number of cubic yards of material excavated to construct the sediment traps. The volume of excavated material will be computed from the actual dimensions and elevations of the sediment traps constructed as shown on the Plans.

C. Inlet Sediment Control as each

905.05 Basis of Payment.

The quantity of Sediment Trapping Practices is paid for at the Contract unit price for each acceptably placed. Price and payment constitutes full compensation for furnishing all materials, excavating and backfilling, installing, maintaining, (including sediment removal) and removal when no longer needed, for restoring the site, seeding, for all labor, tools, equipment, and incidentals required to complete the work.

Note: Maintenance of the Sediment Trapping Devices will not be measured for payment. Maintenance of the device including sediment removal is incidental to the initial installation of the device.

ITEM	DESCRIPTION	PAY UNIT
905001	Silt Fence	LF
905002	Reinforced Silt Fence	LF
905003	Sediment Trap	CY
905004	Inlet Sediment Control, Drainage Inlet	Each
905005	Inlet Sediment Control, Curb Inlet	Each
905006	Inlet Sediment Control, Culvert Inlet	Each

SECTION 906 – DEWATERING PRACTICES

906.01 Description.

Trap and filter all water produced by dewatering activities. Pump all water produced by dewatering activities to a suitable discharge area. Trap and retain sediment prior to discharging any water into drainageways, adjoining properties, and rights-of-way below a project site.

906.02 Materials.

Provide materials for dewatering practices as specified below:

A. *Portable Sediment Tank.* Provide Materials for portable sediment tanks as follows:

1. *Wire Mesh.* For wire mesh, use steel or galvanized welded wire reinforcement with openings ¼" by ¼"and wire diameter of 23 gauge.

2. *Pipe.* Use pipes that meet the requirements of Section 614 or 615

3. *Fasteners.* Use fasteners that conform to the requirements of ASTM F 541, Type 1 or Type 2, and are of sufficient strength to lift the portable sediment tank filled with sediment to a depth of 24".

4. *Metal Plate.* For metal plates, use ½" Steel Plates.

5. *Geotextile.* Use geotextiles that meet the requirements of Section 827.

B. *Dewatering Bag.* Provide Materials for dewatering bags as follows:

1. *Fabric***.** Use a non-woven geotextile fabric conforming to the following properties:

Properties	**Values**	**Test Method**
Weight	10 oz/yd² (min)	ASTM D-3776
Tensile Strength	250 lb (min)	ASTM D-4632
Puncture Resistance	165 lb (min)	ASTM D-4833
Flow Rate	70 gal/min-ft² (max)	ASTM D-4491
Permitivity	1.3 sec^{-1} (max)	ASTM D-4491
Bursting Strength	550 psi (min)	ASTM D-3786
UV Resistance	70% (min)	ASTM D-4355
AOS	150 micron (max)	ASTM D-4751

2. *Seams***.** For seams in the fabric, use double-sewn seams forming a continuous surface except for the inlet opening. Minimum seam

strength of 100 lb/in, when tested in accordance with ASTM D-4884.

3. *Inlet Opening***.** Use inlet openings capable of accommodating a maximum of a 4" diameter hose.

4. *Performance Requirement***.** Construct dewatering bags to filter all effluent so that soil particles retained on a #100 sieve (150 microns) are captured in the bag and removed from the discharge water.

C. *Sump Pit.* Provide Materials for sump pits as follows:

1. *Pipe***.** Use 24" and 36" diameter corrugated metal pipe conforming to the requirements of Section 615.

2. *Stone***.** Use Delaware No. 57 conforming to the requirements of Section 813.

3. *Geotextile***.** Use geotextile conforming to the requirements of Section 827.

4. *Wire Mesh.* For wire mesh, use steel or galvanized welded wire reinforcement with openings ¼" by ¼"and wire diameter of 23 gauge.

D. *Skimmer Dewatering Device*

Use the Materials and construction methods that are specified in the Standard Construction Details for skimmer dewatering devices.

906.03 Construction Methods. Use the following construction methods for dewatering practices:

Use dewatering practices shown in the plans or Contract Documents. If the Contract Documents or the Engineer do not specify a specific dewatering practice, use a dewatering practice from the following list that is appropriate for the specific situation. Use of dewatering practices that are not included in this list must be approved by the Engineer prior to use.

A. *Portable Sediment Tank.* Construct, maintain and remove portable sediment tanks as follows:

1. *Construction of Portable Sediment Tank.* Construct portable sediment tanks as follows:

   a. Construct the Portable Sediment Tank According to Standard Construction Detail, Portable Sediment Tank

   b. Locate the tank for ease of clean-out and disposal of the trapped sediment and to minimize the interference with the construction activities and pedestrian traffic.

c. With approval from the Engineer, the portable sediment tank may be installed at a different location than is shown on the Plans, within the LOC.

d. Construct watertight welds.

e. First, line the inside of the perforated pipe with a layer of wire mesh; then with a layer of geotextile.

f. Securely fasten the wire mesh and geotextile to the pipe.

2. *Maintenance of Portable Sediment Tank.* Maintain portable sediment tanks as follows:

a. Remove sediment when it accumulates to a depth of 24" in a tank designed according to Standard Construction Detail, Portable Sediment Tank, or when it accumulates to one-third of the portable sediment tank height for an approved alternate design.

b. Remove and replace the filter fabric when the portable sediment tank can no longer allow a rate of 425 gallons per minute, when there is a tear, or when directed by the Engineer.

c. Dispose of all sediment collected in the portable sediment tank in an approved disposal area or as approved by the Engineer.

3. *Removal of Portable Sediment Tank.* Remove portable sediment tanks as follows:

a. Remove the portable sediment tank when no longer needed.

b. Regrade the area to match the contours shown on the plans or, if none are shown, to match the grades that existed before construction the portable sediment tank.

c. Stabilize all areas affected by the portable sediment tank.

B. *Dewatering Bag.* Construct, maintain and remove dewatering bags as follows:

1. *Construction of Dewatering Bag***.** Construct dewatering bags as follows:

a. Place dewatering bag(s) at locations designated on the plans or as approved by the Engineer, within the LOC.

b. Securely attach the dewatering bag to the discharge hose or pipe and maintain a water tight connection.

c. Do not exceed the manufactures recommended pumping rate.

d. Discharge the dewatering effluent without causing any erosion between the dewatering bag and the outlet. The type of erosion control will be approved by the Engineer.

2. *Maintenance of Dewatering Bag***.** Maintain dewatering bags as follows:

a. Furnish and place a new dewatering bag when the dewatering bag cannot readily pass any more water as determined by the Engineer.

b. New dewatering bags will be paid per the unit cost of Item 906002, Dewatering Bag.

3. *Removal of Dewatering Bag.* Remove dewatering bags as follows:

a. Remove and dispose of a dewatering bag when it is replaced or when it is no longer needed.

b. Regrade the area to match the contours shown on the plans or, if none are shown, to match the grades that existed before construction the dewatering bag.

c. Stabilize all areas affected by the dewatering bag.

C. *Sump Pit.* Construct, maintain and remove sump pit as follows:

1. *Construction of Sump Pit.* Construct sump pit as follows:

a. Excavate the sump pit according to the dimensions on Standard Construction Detail, Sump Pit, and at the location shown on the Plans.

b. Place the layer of stone in the bottom of the sump pit as shown on Standard Construction Detail, Sump Pit.

c. Place the stationary pipe with bottom cap on top of the bottom layer of stone.

d. Place the removable pipe inside of the stationary pipe as shown on Standard Construction Detail, Sump Pit. Both pipes shall extend to the same height and be a minimum of 12”above the lip of the sump pit.

e. Backfill the sump pit with stone.

f. Slope the stone to meet the height of the pipes.

2. *Maintenance of Sump Pit.* Maintain sump pit as follows:

a. Replace the geotextile and, if applicable, the wire mesh on the removable pipe and bottom cap when clogged with sediment.

3. *Removal of Sump Pit.* Remove sump pit as follows:

a. Remove the sump pit and all materials incidental to the construction of the sump pit.

b. Regrade the area to match the contours shown on the plans or, if none are shown, to match the grades that existed before construction the sump pit.

c. Stabilize all areas affected by the sump pit, if needed.

D. ***Skimmer Dewatering Device***. Construct, maintain and remove skimmer dewatering devices as follows:

1. *Construction of Skimmer Dewatering Device.* Construct skimmer dewatering devices according to the dimensions on Standard Construction Detail, Skimmer Dewatering Device, and place at the location shown on the Plans.

2. *Maintenance of Skimmer Dewatering Device.* Maintain the skimmer dewatering device in proper operational condition while required on the project.

3. *Removal of Skimmer Dewatering Device.* Remove the skimmer dewatering device from the project site at the completion of the project, or when directed by the Engineer.

E. ***Well Point System***. Construct, maintain and remove well point systems as follows:

1. *Construction of Well Point System*. Construct well point system as follows:

   a. Design a well point system capable of controlling groundwater at the project site in order to install proposed structures on a dry and stable sub-base. Select a location for the installation of the well point system that will not interfere with the construction of the proposed structure until such time it can be removed. If any modifications to the construction phasing are necessary for the inclusion of the well point system into the work area, it must be included in the shop drawings

   b. Comply with and obtain all necessary permits as required by Section 902 - Dewatering of the DelDOT Standard Specifications. Obtain all permits prior to beginning excavation. Provide a copy of the permit to the Engineer.

   c. Install and test the well point system as per the approved design to demonstrate its effectiveness to the satisfaction of the Engineer prior to continuing with the excavation.

   d. If the well point system is inadequate and cannot maintain a lowered groundwater elevation necessary to complete installation of proposed structures on a dry and stable sub-base, modify the system as may be required to achieve the required results.

2. *Maintenance of Well Point System*. Maintain the well point system to ensure working order and continuous drawdown throughout the dewatering process.

3. *Removal of Well Point System*. Remove the well point system as follows:

   a. Remove the well point system after all proposed structures and backfill affected by groundwater conditions have been installed or as directed by the Engineer.

b. Stabilize all areas affected by the well point system, if needed.

906.04 Method of Measurement.

The Engineer will measure the quantity of work acceptably completed for dewatering practices as follows:

A. Portable Sediment Tanks by each placed and accepted.

B. Dewatering Bag by each placed and accepted.

C. Sump Pit by each placed and accepted.

D. Skimmer Dewatering Device by each constructed, placed and accepted.

E. Well Point System will not be measured.

906.05 Basis of Payment.

The quantities of Dewatering Practices are paid at the Contract unit prices for each acceptably placed. Price and payment constitutes full compensation for furnishing all materials, fabricating, excavating and backfilling, installing, maintaining (including sediment removal) and removal when no longer needed, for relocating within project limits, for restoring the site, seeding, for all labor, tools, equipment, and incidentals required to complete the work.

The quantity of well point system will be paid lump sum. Price and payment will constitute full compensation for designing; permitting; installing; operating; maintaining; removing; and for all labor, equipment, tools, materials and incidentals required to complete the work. Any required re-design or modification of the well point system shall be incidental to this item.

ITEM	DESCRIPTION	PAY UNIT
906001	Portable Sediment Tank	Each
906002	Dewatering Bag	Each
906003	Sump Pit	Each
906004	Skimmer Dewatering Device	Each
906005	Well Point System	LS

SECTION 907- WATER CONTROL PRACTICES

907.01 Description.

To prevent existing flow or runoff from entering disturbed areas by diverting it to a stabilized outlet or to redirect sediment laden water to a sediment trapping device.

907.02 Materials.

Provide materials for water control practices as specified below:

A. *Stone Check Dam.* Provide Materials for stone check dam as follows:

1. *Riprap***.** Use riprap that meets the requirements of R-4, Section 712 with the exception that geotextile will not be required to be placed under the riprap.

2. *Seed***.** Use seed that meet the requirements of Section 908.

B. *Temporary Slope Drain.* Provide Materials for temporary slope drain as follows:

1. *Pipe***.** Use flexible corrugated polyethylene pipe conforming to AASHTO M 294, Type C, unless otherwise indicated on the Plans

2. *Plywood***.** Use plywood, 48" by 48" with a nominal thickness of 1/2".

3. *Lumber***.** Use construction grade two-by-four. The two-by-four shall measure 2” x 4” x 24”.

4. *Riprap***.** Use riprap that meets the requirements of Section 712.

5. *Seed***.** Use seed that meet the requirements of Section 908.

6. *Geotextile***.** Use geotextiles that meet the requirements of Section 827.

907.03 Construction Methods. Use the following construction methods for water control practices.

A. *Stone Check Dam.* Construct, maintain and remove stone check dams as follows:

1. *Construction of Stone Check Dam***.** Construct stone check dams as follows:

    a. Construct the stone check dam in reasonably straight sections of the swale or channel. Place the riprap so that it completely covers the width of the channel. Construct the top of the stone check dam so that the center is lower than the outer edges, forming a spillway across which the water can flow as shown on Standard Construction Detail, Stone Check Dam.

2. *Maintenance of Stone Check Dam.* Maintain stone check dams as follows:

    a. After each rainfall, inspect the stone check dam for sediment accumulation or washout. Repair whenever washout, construction traffic damage, or silt accumulation among the riprap occurs and whenever the stone check dam ceases to function as intended.

    b. *Sediment Removal.* Remove sediment from behind the check dams when it has accumulated to one-half of the original height of the stone check dam at the spillway.

3. *Removal of Stone Check Dam.* Remove stone check dams as follows:

a. Remove temporary stone check dams only when directed by the Engineer. Ensure that all riprap is removed when the stone check dam is removed. Any disturbed areas will be seeded immediately after the check dams are removed.

B. *Temporary Slope Drain.* Construct, maintain and remove temporary slope drain as follows:

1. *Construction of the Temporary Slope Drain***.** Construct temporary slope drain as follows:

a. Excavation, grading, shaping and preparation of embankment slopes, edge berms, and interceptor berms shall be as indicated on the Plans, Standard Construction Detail, Temporary Slope Drain, and Section 202.

b. Install the appropriate size pipe according to the following table:

Pipe Diameter	*Maximum Drainage Area*
12"	0.5 ac
18"	1.5 ac
21”	2.5 ac
24"	3.5 ac
30"	5.0 ac

c. Use construction methods for flexible pipe drains that meet the requirements of Section 614. Ensure slope drains have the flexibility and potential for length change to adjust to the interim elevations. Fasten slope drains to the slope by a method approved by the Engineer. Construct and install a plywood anti-seep collar as shown on Standard Construction Detail, Temporary Slope Drain. Ensure that the temporary slope drain discharges into the back of sediment traps, into sediment basins, or into ditches discharging into sediment traps or basins. When a temporary slope drain outlets into a sediment trap or basin, ensure that it discharges at the riser crest or weir elevation.

d. Use construction methods for riprap aprons that meet the requirements of Section 712. A riprap apron, with geotextile, shall be installed below the pipe outlet. The riprap apron shall be a minimum of 3 square yards.

e. Adjust the elevations of and reconstruct the slope drains so that the slope drains remain functional as the embankment elevation rises.

2. *Maintenance of the Temporary Slope Drain.* Maintain temporary slope drain as follows:

a. Maintain embankment slopes, edge berms, and interceptor berms in conformance with the requirements of Section 202.

b. Inspect the drain system for clogging and/or breaks and clean and repair as required to remain functional.

3. *Removal of the Temporary Slope Drain***.** Remove temporary slope drain as follows:

a. When the Engineer determines that the temporary slope drain is no longer required, remove the temporary slope drain and all materials incidental to the construction of the temporary slope drain. Any disturbed areas will be seeded immediately after the temporary slope drain is removed

907.04 Method of Measurement.

Sediment removal is incidental to the maintenance of the Water Control Practice Item. The Engineer will measure the quantity of work acceptably completed and as follows:

A. Stone Check Dam: the actual number of tons of riprap placed and accepted.

B. Temporary Slope Drain: the actual number of linear feet, measured from end to end of pipe, installed and accepted.

907.05 Basis of Payment.

The quantity of Water Control Practices is paid for at the Contract unit price for each acceptably placed. Price and payment constitutes full compensation for furnishing all materials, excavating and backfilling, installing, maintaining, (including sediment removal) and removal when no longer needed, for restoring the site, seeding, for all labor, tools, equipment, and incidentals required to complete the work.

The quantity of clearing and grubbing required for the temporary swale construction will be paid for according to Section 201.

For the Stone Check Dam no payment will be made for any replacement of riprap during the Project construction period.

For Temporary Slope Drains, if the Contractor is required to add a piece of slope drain pipe to an existing temporary slope drain, the additional piece of slope drain pipe will be paid for separately and on the same basis as that for the existing temporary slope drain. The Contractor shall submit a unit price cost breakdown for this work when more than one size of pipe is used.

The quantity of edge berm will be paid for according to Section 202.

ITEM	DESCRIPTION	PAY UNIT
907011	Stone Check Dam	Ton
907012	Temporary Slope Drain, 12”	LF
907013	Temporary Slope Drain , 18”	LF
907014	Temporary Slope Drain, 21”	LF
907015	Temporary Slope Drain, 24”	LF
907016	Temporary Slope Drain , 30”	LF

SECTION 908 - SOIL STABILIZATION PRACTICES

908.01 Description. Provide an acceptable, uniform stand of established perennial turf grasses, including topsoil, topsoiling and mulching, on all areas to be treated as shown on the plans or where designated by the Engineer.

Temporarily Stockpiled Material. Temporary stockpiles materials should be handled as follows:

Store stockpiled material away from streams and wetlands within the LOC.

Install the erosion and sediment control items designated on the Plans or as directed by the Engineer about the base of the pile in advance of the actual stockpiling operation. Place erodible earth material in neat piles. Seed side slopes as the pile is placed. Seed remaining unstable surfaces immediately following completion of the stockpiling operation.

For areas outside of ROW, prepare and submit for approval erosion and sediment control plans to the appropriate agencies having jurisdiction.

No payment will be made for costs associated with the installation of erosion and sediment controls required by other agencies having jurisdiction on stockpiles located outside the areas designated on the Plans or required by the Engineer.

Interim and Final Stabilization. An area of the work will be considered 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 this section as determined by the Engineer. Complete growth of vegetation includes permanent grass reaching a height of 3" and 70% uniform density over all seeded areas.

Incremental Stabilization. For incremental stabilization, side slopes and other slopes require placement of temporary seeding as the work progresses in height increments not to exceed 10' of embankment.

Tracking of Slopes. During grading operations track all areas including slopes 1:4 (vertical to horizontal) or steeper to prevent gully and sheet erosion. The tracking will 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 are incidental to Section 202. Before applying seeding items on slopes 1:4 (vertical to horizontal) or steeper, track the slopes as described above. All costs associated with tracking of slopes to prepare a seedbed are incidental to the topsoil item being applied to the slope surface.

Maximum Soil Exposure Times. All erodible earth material exposed by the Work will be stabilized within the time frames specified below:

Location	Type of Stabilization	Maximum Time to Stabilize
Sediment Controls	Temporary Seeding	Seven (7) calendar days from the initial completed construction of the bmp device (ex: ditches, sediment traps, dewatering basins, etc.
Short term inactivity not meeting final grade and not to exceed six (6) months	Temporary Seeding	Fourteen (14) calendar days from the ceasing of ground disturbing work in the location.
Areas meeting final grades	Permanent Seeding	Seven (7) calendar days from the ceasing of ground disturbing work in the location.

Points of Ingress and Egress. Construct, maintain, and remove stabilized pads of aggregate on a filter cloth base at each entrance to and exit from the construction site so that construction vehicles and equipment do not track sediment off-site. Construct

entrances in accordance the Standard Construction Detail, Stabilized Construction Entrance, at the locations shown on the Plans, and as directed by the Engineer.

908.02 Materials.

Provide materials for soil stabilization as specified below:

A. *Topsoil.* Provide Materials for topsoil as follows:

1. Topsoil friable loam soil 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.

2. Topsoil reasonably free of noxious perennial weeds or wood vegetation and completely void of Johnsongrass *(Sorghum halapense)*, Canada Thistle *(Cirsium arvense)*, Burcucumber *(Sicyos angulatus)*, Giant Ragweed *(Ambrosia trifida)* and Texas Amaranth *(Amaranthus palmeri)*.

3. Topsoil cannot be delivered until the source of supply has been approved by the Engineer.

B. *Topsoiling.* Provide Materials for topsoiling as follows:

1. Topsoiling material is the existing soils designated to be stripped, salvaged and temporarily stockpiled for later use.

Determine and incorporate the type and amount of soil supplements needed to create the proper conditions for acceptance of permanent vegetation.

C. *Seeding.* Provide Materials for seeding as follows:

1. *Water*. Use only water meeting the requirements of Section 803.

2. *Mulch*. Use only Mulch that is biodegradable and free of contaminants. Photodegradable products are not acceptable.

Place ECB adjacent to wetlands and streams, and in the flow line of channels in accordance with manufacturer's requirements for use and installation. ECB is paid for under other items.

Mulches, except as shown on Plans, are incidental to Seeding and must meet manufacturer's requirements for use and installation.

Before placement, submit the manufacturer's requirements for use and installation to Engineer.

3. Grass and Agricultural Seeds.

(a) *Permanent and Temporary Seeding.* The Seeding Chart on the following pages shall be used for the following specified seeding:

Table A. *Permanent Grass Seeding - Dry Ground (PGS-DG)*

Table B. *Permanent Grass Seeding - Wet Ground (PGS-WG)*

Table C. *Permanent Grass Seeding - Subdivision (PGS-SUB)*

Table D. *Temporary Grass Seeding - Dry Ground (TGS-DG)*

Table E. *Streambank Mix Seeding*

Table A. Permanent Grass Seeding – Dry Ground (PGS-DG)					
Species	**%Weed[1]**	**% Purity**	**% Germination**	**Lbs./A**	**Seeding Dates**
Hard Fescue Mixture *(Festuca longifolia and Festuca trachyphylla)*	0.15	98	85	150	
Creeping Red Fescue *(Festuca rubra L.)*	0.15	98	85	85	
Redtop *(Agrostis alba)*	0.75	95	90	40	
Total Perennial Seed Quantity[2] (lbs/Ac)				275	
Winter Cereal Rye *(Secale cereal)*	0.75	98	85	20	Nov 1 – 15 Feb
Annual Ryegrass *(Lolium multiflorum)*	0.15	95	90	10	16 Feb – 30 Apr 1 Aug – 31 Oct
Foxtail Millet *(Setaria italic)*	0.5	95	95	20	1 May – 31 July

Table B. Permanent Grass Seeding – Wet Ground (PGS-WG[5])					
Species	**%Weed[1]**	**% Purity**	**% Germination**	**Lbs./A**	**Seeding Dates**
Redtop *(Agrostis alba)*	0.75	95	90	40	
Creeping Bentgrass *(Agrostis palustris)*	0.75	98	90	25	
Sheep Fescue[3] *(Festuca ovina)*	0.5	98	85	35	
Rough-Stalked Bluegrass *(Poa trivialis)*	0.5	98	80	25	
Total Perennial Seed Quantity (lbs/Ac)				125	

Table C. Permanent Grass Seeding – Subdivision Mix (PGS-SUB)					
Species	**%Weed[1]**	**% Purity**	**% Germination**	**Lbs./A**	**Seeding Dates**
Turf-type Tall Fescue Cultivar[4] *(Festuca arundinacea var.)*	0.5	98	90	200	
Perennial Ryegrass *(Lolium perenne)*	0.4	90	90	20	
Kentucky Bluegrass *(Poa pratensis)*	0.4	90	80	30	
Redtop *(Agrostis alba)*	0.75	95	90	40	
Annual Ryegrass *(Lolium multiflorum)*	0.15	95	90	20	
Total Seed Quantity (lbs/Ac)				310	

Table D. Temporary Grass Seeding – Dry Ground (TGS-DG)[5]					
Species	**%Weed[1]**	**% Purity**	**% Germination**	**Lbs./A**	**Seeding Dates**
Winter Cereal Rye *(Secale cereal)*	0.75	98	85	50	Nov 1 – 15 Feb
Annual Ryegrass *(Lolium multiflorum)*	0.15	95	90	40	16 Feb – 30 Apr 1 Aug – 31 Oct
Foxtail Millet *(Setaria italic)*	0.5	95	95	40	1 May – 31 July

Table E. Streambank Seed Mix – Seeding[6]					
Species	**%Weed[1]**	**% Purity**	**% Germination**	**Lbs./A**	**Seeding Dates**
Tall Fescue KY 31 *(Festuca arundinacea)*	0.5	98	90	180	
Perennial Ryegrass *(Lolium perenne)*	0.4	90	90	20	
Redtop *(Agrostis alba)*	0.75	95	90	20	
Annual Ryegrass *(Lolium multiflorum)*	0.15	98	90	10	
Total Seed Quantity (lbs/Ac)				230	

[1] Title 3 Delaware Code, Chapter 15, Seeds and its associated regulations identify several species of seed designated as Noxious Weeds by the Delaware Department of Agriculture and therefore may not be part of the allowable percentage of weed seeds in any quantity.

[2]Add the applicable quantity of Seasonal Nurse Crop as listed according to the seeding date.

[3] *Festuca ovina* must be an improved variety of Sheep Fescue as approved by the Engineer. Selection should be based on performance within the Mid-Atlantic region as determined by the most current National Turfgrass Evaluation Program Progress Report.

[3] Permanent Seeding - Wet Ground should be used on saturated or seasonally flooded areas as dictated by the wetland limits on the Plans.

[4] Turf-type Tall Fescue Cultivars - Selection should be based on performance within the Mid-Atlantic region as determined by the most current National Turfgrass Evaluation Program Progress Report.

[5]Wet, bare ground, leaf litter covered or partially vegetated retention ponds, traps, or basins, or all intermittently flooded sites in general may be seeded with *Temporary Seeding - Dry Ground*. No wood fiber mulch may be added to the hydroseeder. Do not apply mulch, fertilizer, or limestone with this seeding.

[6]No temporary grass seeding will be substituted for this mix. All other aspects and conditions of Section 908 will apply.

D. *Mulch.* Provide Materials for mulch as follows:

1. Use only ECB composed entirely of 100% biodegradable material. Top-soiled grass swale at maximum design shear stress less than or equal to 2 pounds per square foot.

2. Use only TRM Type 1 & 2 composed of mostly non-degradable material.

   A. Type 1, top-soiled grass swale at maximum design shear stress greater than 2 pounds per square foot and less than or equal to 6 pounds per square foot.

   B. Type 2, top-soiled grass swale at maximum design shear stress greater than 6 pounds per square foot and less than or equal to 8 pounds per square foot.

E. *Stabilized Construction Entrance.* Provide Materials for stabilized construction entrance as follows:

1. *Pipe*. Pipe as specified in the Plans.

2. *Seed*. Use seed that meets the requirements of Section 908.

3. *Stone*. Use Delaware No. 3 that meets the requirements of Section 813.

4. *Geotextile*. Use geotextile that meet the requirements of Section 827.

908.03 Construction Methods. Us the following construction methods for soil stabilization:

A. *Topsoil.* Construct and maintain topsoil placement as follows.

1. *Construction methods for Topsoil*. Construct topsoil placement as follows:

   a. Clear all areas from which topsoil is to be secured of all brush, sticks, weeds, stones, bricks, ashes, and other refuse which may hinder or prevent growth of future plant materials placed in the topsoil.

   b. When securing topsoil from an approved source, strata or seams of material not meeting the requirements of topsoil will be removed from the source by the Contractor. If these materials cannot be removed without contaminating the topsoil brought to the jobsite, the source will be abandoned.

   c. Thoroughly loosen topsoil to a depth of 3 inches within 72 hours before seeding.

   d. Spread topsoil on these areas to a depth sufficiently greater than that specified on the Plans, so that after natural settlement has taken place the work will conform to the elevations on the Plans.

2. *Maintenance.* Maintain the topsoil until final completion and acceptance of the Contract. Maintenance consists of preserving, protecting, replacing, and such other work as may be necessary to keep the topsoil in a satisfactory condition.

B. *Topsoiling.* Construct and maintain topsoiling as follows.

1. Place topsoil in accordance with of 908.03.A.3.

2. *Maintenance.* Maintain topsoil in accordance with 908.03.A.4.

C. *Seeding*. Construct and maintain seeding placement as follows.

1. *Construction methods for Seeding*. Construct seeding placement as follows:

   a. This Work consists of preparing the soil and tracking, placing the seed and applying any soil supplements necessary to provide a suitable stand of turf grass and placing sufficient mulch. Seed tags will be removed from the seed bags prior to seeding by the

inspector. Seed mixes will conform to the 908.02.C.3(a) Materials Seeding section for Grass and Agricultural Seeds or as indicated on the plans. Mulch will be placed for optimum performance per manufacturer's guidelines with no bare ground visible. Manufacturer's guidelines will be submitted to the Engineer prior to installation.

b. Treat all disturbed soil areas as follows:

i. **Areas meeting final grade.** Complete permanent seeding.

ii. **Areas not meeting final grade.** Complete temporary seeding according to the appropriate seeding date in Table D, unless soil conditions (i.e., frozen ground) dictate the use of other approved temporary soil stabilization practices. Temporary soil stabilization practices shall not exceed 28 calendar days.

2. *Maintenance.* Maintain all seeded areas free from weeds and debris in accordance with Section 105.13.

D. *Mulch.* Construct and maintain mulch placement as follows.

1. *Construction methods for Mulch*. Construct mulch placement as follows:

a. No bare ground will be visible.

b. Place immediately after seeding operations have been completed or as approved by the Engineer, but in no case will this period exceed 24 hours from the completion of the seeding operation.

c. Install and anchor the ECB and TRM Type 1 and 2, in accordance with notes and details in the Plans and the following Standard Construction Details: INSERT LINK

If the installation requirements of the manufacturer are more stringent than the above, the manufacturer's requirements will govern.

d. Mulch is incidental to seeding unless noted on the plans.

2. *Maintenance.* Maintain mulch placement to ensure no erosion of and no visible observation of the soil surface.

E. *Stabilized Construction Entrance.* Construct, maintain and removal of stabilized construction entrance as follows.

1. *Construction of Stabilized Construction Entrance*. Construct Stabilized Construction Entrance placement as follows:

a. Obtain the approval of the Engineer before any additions, deletions, or changes in the location of a stabilized construction entrance.

b. When required, place entrance pipe in Class C bedding and grade to drain. Install the pipe before placing the geotextile or stone. Excavate to the required dimensions as shown in the Standard Construction Details and the compact the subgrade of the stabilized construction entrance. Place the geotextile on the compacted subgrade and place the stone on top to the required depth.

c. Stabilize as described above the entire width at points where ingress and egress occur. The Engineer may direct the Contractor to widen the entrance as required to prevent the entrance location from becoming a source of sediment.

d. If the Contractor chooses to clean construction vehicle wheels to remove sediment prior to leaving the project boundaries, the cleaning will be done in aggregate stabilized areas that drain into approved sediment trapping devices.

2. *Maintenance of Stabilized Construction Entrance.* Maintain Stabilized Construction Entrance placement as follows:

a. The Contractor will leave all paved surfaces adjoining the Project limits free of accumulated sediment at the end of each workday. The Contractor may utilize any means and methods available to remove sediment provided the cleaning operation itself does not violate the water or air pollution laws of the State.

b. After heavy use and after each rain, inspect the stabilized construction entrance to ensure proper functioning. When the voids in the stone pad are filled, rake the surface to reestablish the voids in the stone pad. If sedimentation of the entrance is severe, and the raking is unsuccessful in restoring void space, replace the top 2” of the stone with 2” of clean Delaware No. 3 stone.

3. *Removal of Stabilized Construction Entrance*. When the stabilized construction entrance is no longer needed for access to the Project or when directed by the Engineer, remove all materials incidental to the construction of the stabilized construction entrance. Restore to the original plan contours all areas affected by the stabilized construction entrance. Stabilize the restored areas

908.04 Maintenance Bond. Upon Substantial Completion of the Work, the Contractor shall furnish to the Department a Maintenance Bond for item 908XXX - Seeding. The Maintenance Bond shall meet the following requirements:

a) A sum equal to 100% of the value of all Permanent Grass Seeding Items paid to the Contractor;

b) All signatures are original signatures, in ink, and not mechanical reproductions or facsimiles of any kind;

c) The Contractor is the named principle;

d) The term of the bond is for one full year;

e) Section 908 – Seeding Work items associated with permanent seeding requires completion after substantial completion of the Project. The term of the Maintenance Bond will be for a period of one year beyond the completion of permanent seeding Work; and

f) Written by a Surety or insurance company that is in good standing and currently licensed to write surety bonds in the State of Delaware by the Delaware Department of Insurance.

908.05 Method of Measurement.

The Engineer will measure the quantity of work acceptably completed for soil stabilization as follows:

A. Topsoil by the number of square yards or tons acceptably placed.

B. Topsoiling by the number of square yards or tons acceptably placed in the areas shown on the Plans or where directed by the Engineer. Measurements will be made along the surfaces of the completed topsoiling areas.

C. Seeding by the square yards of surface area of acceptably placed permanent or temporary grass seed. Unless otherwise specified on the plans, mulching will not be measured.

D. Mulch by the actual number of square yards of erosion control blanket or turf reinforcement matting acceptably placed.

E. Stabilized Construction Entrance by the actual number of tons of stone acceptably placed. Stone used for topdressing will be measured as the actual number of tons of stone acceptably placed. Drainage pipe, if used, will be measured as the actual number of linear feet of pipe acceptably placed.

908.06 Basis of Payment.

A. ***Topsoil.*** The quantity of topsoil will be paid for at the Contract unit price per Square Yard or Ton. Price and payment constitutes full compensation for preparing the grade; for furnishing, hauling, and placing all materials including necessary soil supplements such as; lime, sulfur or fertilizer; for maintaining topsoil; for loosening of the topsoil and for all labor, equipment, tools, and incidentals required to complete the work.

B. ***Topsoiling.*** The quantity of topsoil will be paid for at the Contract unit price per Square Yard or Ton. Price and payment constitutes full compensation for preparing the grade; for hauling, and placing all topsoil salvaged under Section 202; for maintaining topsoil; for loosening of the topsoil, for additional soil supplements, and for all labor, equipment, tools, and incidentals required to complete the work.

C. ***Seeding***. The quantity and type of seeding will be paid for at the Contract unit price per square yard. Price constitutes full compensation for preparing the ground; for furnishing and placing all materials including seed and mulch; and for all labor, equipment, tools, maintenance bond and incidentals required to complete the work.

Acceptance of Permanent and Temporary Grass Seeding. Repair all areas failing to meet the specified perennial grass cover at no additional expense to the Department.

Payment Schedule			
Seed Type	Permanent Seed	Permanent Seed	Temporary Seed
Completed Work	at the time seed is acceptably placed	production of a uniform stand of established perennial grass species having attained a height of 3 inches with a density of 70% of the seeded area for acceptance by the Engineer.	at the time seed is acceptably placed
Percent of Total Item Price	80%	20%	100%

D. ***Mulch***. The quantity of erosion control blanket mulch or turf reinforcement matting will be paid for at the Contract unit per square yards. Price and payment constitutes full compensation for furnishing and placing all materials, including staples, assembly, installation, and maintenance until accepted by the Department.

E. ***Stabilized Construction Entrance***. The quantity of stabilized construction entrances, including topdressing, will be paid for at the Contract unit price per ton of stone. The quantity of stone used for topdressing will be paid for separately from the quantity of stabilized construction entrances but at the same price per ton of stone. Price and payment constitutes full compensation for the furnishing and placing all material, including the geotextile; for maintaining the stabilized construction entrance during the Project construction period, excluding topdressing; for removing the stabilized construction entrance after completion of the Project; for restoring the site, including any required seeding; and for all labor, equipment, tools, and incidentals required to complete the work.

The quantity of drainage pipe is paid for separately.

ITEM	DESCRIPTION	PAY UNIT
908001	Topsoil (TON)	TON
908002	Topsoil (SY)	SY
908003	Topsoil, 4” depth	SY
908004	Topsoil, 6” depth	SY
908005	Topsoil, 12” depth	SY
908007	Topsoiling	SY
908008	Topsoiling, 2” depth	SY
908009	Topsoiling, 4” depth	SY
908010	Topsoiling, 6” depth	SY
908011	Topsoiling, 8” depth	SY
908012	Topsoiling, 12” depth	SY
908013	Topsoiling, 18” depth	SY
908014	Permanent Grass Seeding, Dry Ground	SY
908015	Permanent Grass Seeding, Wet Ground	SY
908016	Permanent Grass Seeding, Subdivision	SY
908017	Temporary Grass Seeding, Dry Ground	SY
908019	Streambank Seed Mix, Seeding	SY

908020	Erosion Control Blanket Mulch	SY
908021	Turf Reinforcement Matting, Type 1	SY
908022	Turf Reinforcement Matting, Type 2	SY
908023	Stabilized Construction Entrance	TON

SECTION 909 – WATERWAY CONSTRUCTION PRACTICES

909.01 Description. Construct, maintain, and remove temporary waterway diversions in order to allow Work in existing waterway channels by redirecting the water flow of the existing channel around or through the intended work area.

909.02 Materials. Provide material for waterway construction practices as specified below:

A. *Sandbag Dike/Diversion.* Provide Materials for sandbag dike/diversion as follows:

1. *Sand*. Use sand that meets the requirements of Section 804.

2. *Sheeting*. For sheeting, use polyethylene or other approved material by the Department's Materials & Research Section, 6mil thick, impervious, and resistant to puncture and tearing.

3. *Pipe*. Use flexible pipe with water tight bands and of size and material indicated on the plans.

4. *Pre-fabricated Sandbag*. Use pre-fabricated sandbags manufactured of jute, woven polyester, or polypropylene mesh resistant to ultra-violet radiation of sufficient strength to contain the sand without failure or leakage. The minimum sack size is approximately 16" by 25" measured inside the seam when the sack is when empty. Fill each sack approximately half full with sand.

B. *Geotextile Lined Channel Diversion.* Provide Materials for geotextile lined cannel diversion as follows:

1. *Stone.* Use Delaware No. 3 stone conforming to the requirements of Section 813

2. *Geotextile.* Use geotextile that meets the requirements of Section 827

3. *Fasteners.* Use steel pins, 3/16" in diameter, and at least 18" long.

4. *Washers*. For washers, use steel and 1 ½" in diameter.

C. *Turbidity Curtain.* Provide Materials for turbidity curtain as follows:

1. *Curtain***.** Furnish turbidity barriers made of a synthetic material coated with suitable elastomeric or polymeric compound having a high resistance to weathering, ultra violet light, hydrocarbons, fresh and salt

water, and temperature extremes. Furnish material with a tensile strength greater than 200 lb when measured lengthwise or crosswise. Seams, if required, can be vulcanized welded or sewn. Seams must develop the full strength of the material.

2. *Flotation Units***.** Furnish flotation units that are flexible, sufficiently buoyant to support the required width of the turbidity barrier maintaining a freeboard of at least 3 inches above the water surface level, and contained in a flotation sleeve or collar attached to the turbidity curtain.

3. *Load Lines***.** Fabricate load lines into the top and bottom of the turbidity curtain. The top load line consisting of woven webbing or vinyl sheathed steel cable and having a minimum breaking strength of 10,000 lb. The bottom load line consisting of a minimum 5/16" galvanized steel chain incorporated into the bottom hem of the turbidity curtain to act as ballast. The load lines must have suitable devices which develop the full breaking strength for connecting to load lines in adjacent sections.

4. *Shoreline Stakes*. Furnish shoreline stakes of sufficient size to anchor the turbidity curtain in place.

5. *Fasteners***.** Furnish fasteners, either 5/8" long brass or copper staples, or 17 gage galvanized or aluminized steel tie wires long enough to securely attach the fabric to the posts.

6. *Anchors***.** Standard marine type boat anchors with the size, weight, and overall number of the anchors sufficient to hold the turbidity curtain in its intended location. Danforth type anchors for sandy bottoms, or kedge or mushroom type anchors for mud bottoms. Alternate anchoring methods such as heavy concrete weights or driven pilings may be used if approved by the Engineer before use.

7. *Rope***.** Use polypropylene rope, 5/8" diameter, with at least a breaking strength of 800 lb.

D. *Stream Diversion.* Provide Materials for stream diversion as follows:

Conform material to the requirements in the appropriate Section of the Standard Specifications for components used in the stream diversion system such as sand bags, geotextiles, steel sheet piles, stone, etc.

E. *Stilling Well.* Provide Materials for stilling well as follows:

1. *Riprap*. Use R-4 riprap conforming to the requirements of Section 712.

2. *Seed*. Use seed that meets the requirements of Section 908.

3. *Geotextile*. Use geotextile that meets the requirements of Section 827.

909.03 Construction Methods. Use the following construction methods for waterway construction.

Have all required materials on site before starting construction of the waterway diversion.

F. ***General Excavation.*** Use the general excavation methods below when performing any waterway construction practice.

1. When excavation is required by the Plans, perform excavation as a continuous and uninterrupted operation.

2. When all excavated material is to be stockpiled, place and temporarily stabilize all excavated materials outside the 100 year floodplain at an approved location.

G. ***Sandbag Dike/Diversion.*** Construct, maintain and remove sandbag dike/diversion as follows:

1. *Construction of Sandbag Dike/Diversion.* Construct sandbag dike/diversion as follows:

   a. Construct the sandbag dike or diversion in accordance as shown in the Standard Construction Detail for Sandbag Dike or Sandbag Diversion. Begin at the upstream end of the proposed channel and proceed to the downstream end. Use sandbags to contain the stream.

   b. When overlapping the sheeting, cover the downstream portion with the upstream portion, and the overlap at least 24".

   c. Construct a weir in the sandbag dike as specified on the project plans.

2. *Maintenance of Sandbag Dike/Diversion.* Maintain sandbag dike/diversion as follows:

   a. Inspect daily and repair as necessary to maintain an acceptable work environment.

   b. Immediately repair dike/diversion any damage.

3. *Removal of Sandbag Dike/Diversion.* Remove sandbag dike/diversion as follows:

   a. Remove the dike/diversion upon completion of all Work with the approval of the Engineer.

   b. Regrade the area to match the contours shown on the plans or, if none are shown, to match the grades that existed before construction the sandbag dike/diversion.

   c. Stabilize all areas affected by the sandbag dike/diversion.

H. ***Geotextile Lined Channel Diversion.*** Construct, maintain and remove geotextile lined channel diversion as follows:

1. *Construction of Geotextile Lined Channel Diversion.* Construct the geotextile lined channel diversion as follows:

   a. The cross-section of the diversion channel will replicate in size and shape the cross-section of the natural channel, unless otherwise specified. Begin excavation for the geotextile lined channel diversion at the downstream end of the proposed channel and proceed upstream. Excavation, including the downstream and upstream connection to the natural channel, will be constructed under dry conditions. Use sandbags to contain the stream. Install the geotextile as shown on the Standard Construction Detail, Geotextile Lined Channel Diversion.

2. *Maintenance of Geotextile Lined Channel Diversion.* Maintain the geotextile lined channel diversion as follows:

   a. Inspect at the beginning and end of the Work day to ensure proper function.

   b. Make repairs immediately.

3. *Removal of Geotextile Lined Channel Diversion.* Remove the geotextile lined channel diversion as follows:

   a. Redirect stream flow to its natural path and remove the Geotextile Lined Channel.

   b. Entirely remove all materials incidental to the construction of the Geotextile Lined Channel and backfill the area according to Section 207.05.

   c. Regrade the area to match the contours shown on the plans or, if none are shown, to match the grades that existed before constructing the Channel Diversion.

   d. Stabilize all areas affected by the construction of the Geotextile Lined Channel Diversion

I. ***Turbidity Curtain, Floating.*** Construct, maintain and remove turbidity curtain, floating as follows:

1. *Construction of Turbidity Curtain, Floating.* Construct turbidity curtain, floating as follows:

a. Submit the manufacturer's drawings and technical specifications to the Engineer for approval before the installation of the turbidity curtain and its accessories.

b. Follow all the directions of the turbidity curtain manufacturer, when assembling and installing a turbidity curtain.

c. Install the turbidity curtain parallel to the flow of water only, i.e. along the river bank. Do not install the turbidity curtain perpendicular to the direction of stream flow, i.e. from river bank to opposing river bank. Contain all construction activities generating any sediment or turbidity into the waterway within the turbidity curtain.

d. Begin installation at high tide from a shoreline anchorage and work along with the current in a downstream direction.

e. Form a continuous vertical and horizontal barrier to suspended sediment. Rest the bottom of the turbidity curtain in contact with the bottom of the waterway for the entire length of the turbidity curtain.

f. Float the turbidity curtain into position, attached to the anchor lines, and then unfurl. Securely attach curtain panel ends together using rope lashings. Securely tie the top lashing to the anchor line. Place the anchors such that the turbidity curtain remains in the Plan location and none of the flotation devices are pulled under the water surface. If directed by the Engineer, supply and place additional anchorage.

g. Securely fasten the curtain to the side of the stakes facing the work area generating the sediment and turbidity to ensure a sediment-tight seam.

2. *Maintenance of Turbidity Curtain, Floating.* Maintain turbidity curtain, floating as follows:

a. Maintain the turbidity curtain so that no sediment caused by the Project enters the waterway beyond the turbidity curtain, throughout the Project construction period.

b. Repair or replace all turbidity curtain damaged before installation, during installation, or during the life of the Contract to the satisfaction of the Engineer.

3. *Removal of Turbidity Curtain, Floating.* Remove turbidity curtain, floating as follows:

a. Do not remove the turbidity curtain until completion of affected work and the turbidity has settled to no more than what existed before the start of construction. Furl in place, then release the turbidity curtain from its anchors and towed out of the water when directed by the Engineer. Minimize turbidity to adjacent waters during the removal of the turbidity curtain and all related components. The turbidity curtain and related components are the property of the Contractor.

J. *Stream Diversion.* Construct, maintain and remove the stream diversion as follows:

1. *Construction of Stream Diversion.* Construct the stream diversion as follows:

Dewatering of the work area shall be in accordance with Sections 902 & 207 of the standard specifications.

The design shown in the Plans is based on the most conservative stream diversion approach anticipated at the time of bid, i.e., the largest footprint needed to complete the work. Make every effort to implement the design within the limits shown on the Plans without additional impacts to the stream or wetland depicted on the Environmental Compliance sheet(s).

If additional stream and/or wetland impacts are necessary, submit a preliminary layout of the impacts to the Engineer. Obtain written permission before proceeding with final design. Assume all cost of design and construction of alternate plans

The design of the alternate plans must comply with all applicable hydrologic and hydraulic engineering standards in effect when preparing the proposed alternative stream diversion plan regarding capacity of the system and potential surface water impacts upstream and downstream of the stream diversion.

If permission is granted to proceed with final design of a proposal for an alternate stream diversion, prepare and submit the alternate in accordance with Section 105.04 of the Standard Specifications. Prepare alternate plans and Submit three (3) copies of the final design as follows for review:

a. Plans require sufficient detail to demonstrate the adequacy of the materials, methods, and equipment in providing stream diversion and erosion and sediment control;

b. Include an itemized list of all materials and equipment to be used;

c. Scaled drawings of the proposal overlaid on the Environmental Compliance sheet(s) in the Plans;

d. supporting computations, maps, tables, etc;

e. all necessary supporting paperwork required for the submission of the permit modification request to the appropriate permitting agency;

f. A table of any increased temporary impacts to wetlands and open waters.

The alternate plans must be signed and sealed by a Professional Engineer licensed in the State of Delaware.

The Department's Environmental Studies Office will make application for permit modifications through the appropriate permitting authorities. The Environmental Studies Office will advise the Engineer of any missing or additional information needed to process the permit modification.

The Department cannot guarantee the approval of any proposed alternative plan by any permitting authority or the Department. Denial of the alternate plan, long review times, or multiple submissions to any or all permitting authorities to gain approval does not relieve the Contractor from its obligation to complete the project on time. The time between submission of the final status of the permit modification(s) and response from the Engineer may take as long as two months. No additional time will be granted for delays resulting from failing to schedule sufficient time for permit modification review and final decision.

Installation and testing of the approved stream diversion system is required to demonstrate its effectiveness to the satisfaction of the Engineer before disturbance of the existing structure. Correct any deficiencies found by the Engineer at no additional cost to the Department.

2. *Maintenance of Stream Diversion.* Maintain the stream diversion as follows:

   a. Maintain each component in accordance with the Specifications and the Standard Construction Detail.

3. *Removal of Stream Diversion.* Remove the stream diversion as follows:

   a. Remove each component in accordance with the Specifications and the Standard Construction Detail.

K. *Stilling Well.* Construct, maintain and remove the stilling well as follows:

1. *Construction of Stilling Well.* Construct the stilling well as follows:

   a. Excavate to the dimensions shown on the Plans or a minimum of 5' x 5'. Temporarily stockpile all channel bed material from the excavated area. When overlapping the sheeting, the upstream portion will cover the downstream portion, and the overlap will be at least 24".

   b. Line all surfaces of the stilling well with the geotextile prior to placing the riprap. Place the geotextile and riprap as indicated on the Plans, Standard Construction Detail, Stilling Well, and Section 712.

2. *Maintenance of Stilling Well.* Maintain the stilling well as follows:

   a. Throughout the Project construction period, the Contractor shall maintain the stilling well to the original dimensions and function of the stilling well. The Contractor shall remove and dispose of all trash and

debris that enters the stilling well and interferes with the functioning of the stilling well.

3. *Removal of Stilling Well.* Remove the stilling well as follows:

a. Remove the stilling well upon completion of all work with the approval of the Engineer.

b. Regrade the area to match the contours shown on the plans or, if none are shown, to match the grades that existed before constructing the stilling well.

c. Stabilize all areas affected by the construction of the stilling well.

909.04 Method of Measurement.

Sediment removal is incidental to the maintenance of the Waterway Construction Practice Items. The Engineer will measure the quantity of work acceptably completed for waterway construction as follows:

A. Sandbag Dike/Diversion by actual number of cubic feet of sandbags placed and accepted. All measurements will be based on one sandbag being 1 cf.

B. Geotextile Lined Channel Diversion by the actual number of cubic yards excavated and accepted.

C. Turbidity Curtain, Floating by actual number of linear feet of turbidity curtain placed and accepted. Measurements are from edge to edge of the turbidity curtain along the support cable.

D. Stream Diversion will not be measured.

E. Stilling Well by the actual number of cubic yards excavated and accepted.

909.05 Basis of Payment.

A. **Sandbag Dike/Diversion.** The quantity of sandbag dikes and sandbag diversions will be paid for at the Contract unit price per cubic feet. Price and payment constitutes full compensation for furnishing and placing all materials, excluding the pipe; for constructing the sandbags; for maintaining the sandbag dikes and sandbag diversions; for removing and disposing of the sandbag dikes and sandbag diversions and all incidental materials; for restoring the area; for seeding; and for all labor, tools, equipment, and incidentals required to complete the work.

The quantity of pipe will be incidental.

B. **Geotextile Lined Channel Diversion.** The quantity of geotextile lined channel diversion will be paid for at the Contract unit price per cubic yard. Price and payment constitutes full compensation for excavating; for furnishing and placing all material, including geotextile, stone, washers, pins, seed; for maintaining the geotextile lined channel diversion during the Project construction period; for removing the geotextile lined channel diversion and all incidental materials; for restoring the site; for seeding; and for all labor, equipment, tools and incidentals required to complete the work.

C. **Turbidity Curtain, Floating.** The quantity of floating turbidity curtain will be paid for at the Contract unit price per linear foot. Price and payment constitutes full compensation for furnishing, assembling, installing, maintaining, and removing the turbidity curtain and all materials incidental to the construction and installation of the turbidity curtain, and for all labor, tools, equipment, and incidentals required to complete the work.

D. **Stream Diversion.** The quantity of stream diversion will be paid for at the Contract lump sum price. Price and payment constitutes full compensation for all materials and labor, including, but not limited to, all sand bags, steel sheeting, diversion pipes, pumps, sediment retaining devices, riprap, geotextiles, stilling wells, sump pits and/or any excavation necessary; as well as installation and maintenance of all items during operation, and for removal of all items after they have served their purpose and restoration of the stream to preconstruction lines and grades except as provided for by the plans. Cost associated with repairing, replacing and maintaining the stream diversion items shall be included in the lump sum bid price.

The stream diversion system is designed to overtop in high flow events. Any damage during an overtopping event, including necessary cleaning and rebuilding of the stream diversion system shall be paid under force account. Payment will not be made for any stream diversion materials installed prior to approval from the Engineer.

All materials used for the stream diversion system are the property of the Contractor after removal except channel bed fill to be utilized in the final work. Payment includes design and preparation of all plan submittals and supporting paperwork and copies, permit acquisition costs, and all labor, equipment, tools, and incidentals necessary to complete the stream diversion operation.

Dewatering of the work area shall be in accordance with Sections 902 & 207 of the standard specifications.

E. **Stilling Well.** The quantity of stilling well will be paid for at the Contract unit price per cubic yard. Price and payment constitutes full compensation for furnishing all materials; for excavating; for maintaining the stilling well; for removing all stilling well materials; for restoring the site, including backfilling, seeding; and for all labor, equipment, tools, and incidentals required to complete the work.

The quantity of riprap will be paid for according to Section 712.

ITEM	DESCRIPTION	PAY UNIT
909001	Sandbag Dike	CF

909002	Sandbag Diversion	CF
909003	Geotextile Lined Channel Diversion	CY
909004	Turbidity Curtain, Floating	LF
909005	Stream Diversion	LS
909006	Stilling Well	CY

SECTION - 910 STORMWATER MANAGEMENT FACILITIES

910.01 Description. This work consists of constructing stormwater management facilities.

910.02 Materials. Provide material as specified below and in accordance with what is shown in the plans:

A. Infiltration Stone (No. 3, No. 8, or No. 57). Place infiltration stone meeting the following requirements:

1. *Stone*. Use stone that meets the material and gradation requirements of respective Sections 805 and 813 of the DelDOT Standard Specifications. Use infiltration stone that is washed, free of stone dust, fines or soil particles and has a maximum of 2.0% passing the #200 sieve when tested according to AASHTO T11. Do not use Crushed concrete or asphalt pavement (RAP) for this purpose.

2. Use geotextile fabric meeting the requirements in Section 713 of DelDOT's Standard Specifications.

B. Clay Borrow. Use clay borrow that conforms to the following requirements:

1. *Clay Borrow, Cut-Off Trench*. Use clay borrow to construct cut-off trenches that conforms to the Unified Soil Classification System designation SC, CL or CH and is free of rubbish; organic matter such as leaves, roots, grass, or sewage; and stones larger than 6" and other objectionable material.

2. *Clay Borrow, Pond Liner*. Use clay borrow for pond liners that conforms to the Unified Soil Classification System designation GC, SC, CL, or CH and is free of rubbish; organic matter such as leaves, roots, grass, or sewage; and stones larger than 6" and other objectionable material.

3. *Borrow Sources*. Prior to removing material from a borrow source, comply with the requirements of Subsection 209.05.

4. *Borrow Source Testing*. The Department will assist the Contractor in verifying a borrow source as detailed in Subsection 209.06

C. Outlet Structure, Concrete. Construct concrete outlet structures that meet the following requirements:

1. *Borrow*. Use clay borrow for backfill material that conforms to the requirements of Section 910.02B.

2. *Concrete*. Concrete used in riser structures may be precast or cast in place. Use only cast-in-place concrete for walls, anti-seep collars, and bedding for a principle spillway-. Use class A concrete for foundations, riser structures, walls, anti-seep collars, and bedding for a principle spillway pipe. Use Class A concrete meeting the requirements of Section 812.

3. *Reinforcing Steel*. . Use Grade 60 (Grade 400) reinforcing steel meeting the requirements of Section 603.

4. *Grout*. Use non-shrink Grout conforming to the requirements ASTM C 1107.

5. *Pipe*. Refer to Section 612 of these Standard Specifications for the reinforced concrete pipe when used as a principal spillway.

6. *Gaskets*. Refer to Subsection 612.03 of these Standard Specifications for the gaskets to be used with reinforced concrete pipe.

7. *Steps*. When steps are required, use molded plastic steps with a reinforcing bar core conforming to the requirements of AASHTO M31 / M31M, ASTM A478, and ASTM D4101.

8. *Trash Rack***.** All trash racks supplied for outlet structures will be aluminum.

D. Stormwater Management Pond. Provide material for the construction of stormwater management ponds that meets the requirements of Section 910.02B.

E. Infiltration Trench. Construct infiltration trenches that meet the following requirements:

1. *Stones***.** Stones will meet the requirements of Section 910.02A.

2. *Geotextile***.** Geotextile will meet the requirements of Section

827.

3. *Polyvinyl Chloride (PVC) Pipe***.** Use schedule 40 PVC pipe.

4. *Reinforcing Bar***.** The reinforcing bar shall be Use epoxy-coated, No. 4 reinforcing bar that conforms to the requirements of AASHTO M31, Grade 60 and M284.

910.03 Construction Methods.

A. *Infiltration Stone (No. 3, No. 8, or No. 57)* Use the following construction methods for infiltration stone.

1. *Subgrade Establishment*.

i. Establish the soil Subgrade to the design subgrade elevation. Excavate the area in a manner that the subgrade elevation will be left in as near an undisturbed condition as possible. Use only low ground pressure equipment to traffic the soil within the infiltration area.

ii. Where erosion of the native material subgrade has caused accumulation of fine materials and/or surface ponding, this material remove this material with light equipment and scarify the underlying soils to a minimum depth of 6 inches with a York rake or equivalent and light tractor.

iii. Bring the subgrade to the lines, grades, and elevations indicated on the plans. Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction before placing the aggregate subbase.

iv. After excavation is complete, line the bottom and sides of the stone reservoir with geotextile to prevent upward piping of the underlining or underlying soil. Place the fabric as smoothly as possible with a 12 inch minimum overlap or greater as recommended by the manufacturer.

2. *Aggregate Placement*.
   a. Prior to the placement of aggregate, remove any excess soils or contaminated soils from the surface of the subgrade.
   b. Place materials in layers not exceeding 6" bulk and 4" compacted in depth, unless noted otherwise on the Contract Documents.

3. *Aggregate Compaction*.

Use a static tandem drum type roller of not less than five tons weight to compact aggregate. Roll until no visible movement or significant settlement of the stone occurs beneath the roller drum. Plate compactors may be used for smaller areas where the larger equipment cannot reach.

4. *Aggregate Tolerances.*

   a. When placing base course aggregate in areas to be paved with pervious pavement (asphalt or concrete), construct the surface of the aggregate to compacted grade within the range of - 0.50" and + 0.00". Use string lines or electronic grade controls to establish the finished grade of each lift of stone.

   b. Upon completion of fine grading, compaction, and Contractor confirmation of conformance with the tolerances, notify the Engineer and schedule an inspection for approval. Do not pave or place concrete over the infiltration stone until it has been inspected and approved by the Engineer.

B. Clay Borrow. Use the following construction methods for Clay Borrow.

Place and compact Clay borrow in accordance with the requirements of Section 910.03D.4 and as directed by the Engineer.

C. Outlet Structure, Concrete. Use the following construction methods for Outlet Structure, Concrete.

1. *Excavation*. Excavate for the outlet structure to the required depth. Compact the foundation upon which the structure is to be placed to a firm and level, and unyielding surface.

2. *Riser*. To construct concrete risers pour the concrete in place or use pre-cast concrete elements. If the concrete risers are pre-cast, design the lifting lugs, and all hardware required to transport and install the structure. Do not use the top slab to lift the riser structure. Fill any space between pipes and the walls of the pre-cast riser with grout. The largest dimension of the opening in the riser of connection of the outfall pipe shall be no greater than the outfall pipe diameter plus 4".

3. *Anti-Seep Collars*. To construct anti-seep collars, excavate the subgrade to the dimensions of the bottom half of the collars. Use the excavation as the form for the bottom half of the anti-seep collars. Place formwork for the top half of the anti-seep collars.

4. *Principal Spillway Outfall Pipe*. Use Class A pipe bedding for the principal spillway pipe.

    a. Use concrete shims to establish grade and alignment of the pipe. Do not use lumber or bricks for shims. Exercise care during backfill to prevent any pipe movement from the proposed horizontal and vertical alignment.

    b. When the principal spillway outfall pipe is to be placed partially or completely in fill, perform the work in the following order: first, construct the fill embankment 24" above the proposed top of pipe. Second, excavate the trench to the required grade with side slopes no steeper than 1:1.

    c. Place bell and spigot pipes with the bell ends upstream. Keep the pipe trench free of standing water during pipe placement and backfilling using an approved dewatering method.

5. *Backfill*. Place backfill material next to pipes and other structures to the required elevation in 4" horizontal loose-thickness lifts at the same rate on all sides to prevent damage to the structures from unequal loading.

    a. Compact each lift using a manually directed power tamper under and around the pipe and other structures to 90% or more of maximum dry density.

    b. Do not place backfill material next to cast- in-place concrete structures until the concrete has reached the strength requirements of Section 602.19.

    c. Place a minimum depth of 24" of hand compacted backfill material over the pipe before crossing it with construction equipment.

D. Stormwater Management Pond. Use the following construction methods to construct Stormwater Management Ponds.

1. *Excavation*. Excavate for stormwater management ponds to the lines and grades shown on the Plans or as directed by the Engineer.

    a. Use all suitable excavated material to construct the dam foundation and embankment. If permitted by the Engineer, materials determined by the Engineer to be unsuitable for use in the dam foundation and embankment may be deposited on slopes. Otherwise, use all excess material meeting the requirements for embankment to construct embankments as required by the contract documents. Remove and dispose of all material in excess of the Project's embankment requirements and all material that is unsuitable for embankment. Excavate

rock per the requirements of Section 205. Rock will be paid under section 205.

2. *Dam Foundation and Reservoir Preparation*. Prior to constructing the dam foundation and reservoir, clear the area of trees, logs, stumps, roots, brush, boulders, sod, topsoil and rubbish. Grade all surfaces under the foundation to remove irregularities. Scarify the surfaces parallel to the axis of the fill to loosen the soil a minimum of 2" in depth. Control the moisture content of the loosened material as specified in Section 910.03D.4.

    a. Keep the foundation area free of standing water during placement of the material for the dam through the use of approved dewatering methods. Clean exposed rock surfaces under the foundation of all loosened earth material.

    b. Fill test pits and other cavities with compacted soil conforming to Section 210.

    c. Topsoil shall be stockpiled and used in the completed embankment and other areas as directed by the Engineer. Stockpile and use Topsoil per the requirements of Section 202 and Section 908.

3. Foundation Cutoff Trench. Locate the foundation cutoff trench under the dam centerline or as shown on the Plans. Key the foundation cutoff trench into the original ground extending down to a relatively impervious layer and up the abutment slope to at least the ten-year pool elevation. Excavate the foundation cutoff trench prior to placing the dam embankment. Extend the cutoff trench a minimum of 4′ below the original ground surface or as indicated on the Plans. The trench shall have a minimum 4′ bottom width or be wide enough to accommodate the equipment used for excavation, backfill, and compaction. The side slopes of the cutoff trench shall be no steeper than 1:1.

4. Dam Foundation and Embankment Placement and Compaction. Do not place fill until the required foundation preparation has been completed and the foundation excavation has been inspected and approved by the Engineer. Do not place fill on frozen surfaces. Do not use frozen materials to construct the fill.

a. If the surface of any layer becomes too hard, smooth or dry for proper bond with the next layer, scarify the surface of the layer parallel to the axis of the dam to a depth of not less than 2” and bring the material to the optimum moisture content before the next layer is placed.

b. Fill material shall contain the optimum moisture to obtain the required density. If the material is too wet, dry or remove and replace it. If the material is too dry, add water and mix the soil until the optimum moisture content is met.

c. Place fill material beginning at the lowest area in 8” to 12" thick continuous, horizontal layers over the entire length of the fill. Obtain compaction using approved rollers or compactors. Begin compaction or rolling at the edges of the fill and progress towards the center of the embankment. Continue compaction until each layer of the full width of the embankment is thoroughly and uniformly compacted to at least 90% of the laboratory maximum density.

5. *Maintenance of the Stormwater Management Pond*. When the stormwater management pond is used as a sediment basin, sediment will be removed when the cleanout elevation is reached. Dispose of the sediment at a location approved by the Engineer.

E. Infiltration Trench. Use the following construction methods for infiltration trench.

Mark the footprint of proposed Infiltration Trench and 10 feet outside of the perimeter with construction tape at the beginning of project construction. Do not allow construction equipment within the marked area until construction of the infiltration trench begins. Do not construct the Infiltration Trench until the drainage area is stabilized with a good stand of grass at least 6 inches tall and approved by the Engineer.

During construction, exercise caution not to disturb and compact any in situ soil below the proposed bottom grade and within the 6 foot wide footprint of the Infiltration Trench. Scarify any glazed and compacted surface caused by the excavation operation before backfilling the trench with stone.

Construct the observation well using 6” diameter Schedule 40 PVC with 4 rows of 3/8” holes, evenly spaced around the pipe and 6” on center vertically. Construct a removable cap on the top and place an 18” length of rebar through the pipe and secure on the bottom to serve as an anchoring system. Extend the observation well from the bottom of the trench to 1-foot above the top elevation.

Construct the infiltration trench to the dimensions shown on the construction plan.

910.04 Method of Measurement.

The Engineer will measure the quantity of work acceptably completed for stormwater management facilities as follows:

A. Infiltration Stone by the number of cubic yards of stone placed and accepted.

B. Clay Borrow by the number of cubic yards measured in accordance with Subsection 209.09.

C. Outlet Structure, Concrete by each constructed and accepted.

D. The quantity of stormwater management ponds will be measured as the actual number of cubic yards of material excavated to construct stormwater management ponds and remove the sediment, if used as a sediment basin. The volume will be computed by the method of average end areas and will be measured by cross-sections taken at regular intervals and at breaks in grade. All excavation, except topsoil, will be measured in its original position. Topsoil will be measured in its original position or in a stockpile excavation, at the discretion of the Engineer. Topsoil removed from fill areas may be stockpiled separately for the cross-sectioning or may be measured by cross-sectioning the area of removal before and after topsoil stripping is performed. No measurement will be made for materials excavated beyond or below the lines and grades shown on the Plans.

E. Infiltration Trench by the linear feet constructed and accepted.

910.05 Basis of Payment.

The Engineer will pay the quantity of work acceptably completed and as follows:

A. For Infiltration Stone, price and payment will constitute full compensation for subgrade preparation, furnishing, hauling, placing, compacting the stone, and for all labor, tools, equipment, and incidentals necessary to complete the item.

B. For Clay Borrow, price and payment will constitute full compensation for stripping, excavating, hauling, placing, and compacting the borrow material and for all labor, equipment, tools, and incidentals required to complete the work.

C. For Outlet Structure, Concrete, price and payment will constitute full compensation for excavating; for dewatering; for all ground preparation; for furnishing and placing all materials, reinforcing steel, concrete, concrete pipes, gaskets, grout, pipe bedding, steps, backfill, trash rack, and all other materials required for pond outlet structure, concrete; for welding; and for all labor, equipment, tools, and incidentals necessary to complete the work.

D. For stormwater management ponds price and payment will constitute full compensation for clearing, grubbing, and disposing of all obstructions, including all pipes within the limits of the work, not covered under any other Section; for excavating the foundation cutoff trench; for placing and compacting the foundation; for grading and compacting the dam; for excavating, grading, and shaping the reservoir and emergency spillway; for removing and disposing of all unsuitable material; for backfilling all areas from which unsuitable materials have been removed; for salvaging and stock piling topsoil for re-use; for removing and disposing of all material not otherwise provided for so that the stormwater management pond is completed in a neat and clean manner; for dewatering; and for all labor, equipment, tools, and incidentals required to complete the work.

The removal and final disposal of materials not specified to be removed under this item will be paid under the respective pay items otherwise provided in the Contract.

E. For Infiltration Trenches, price and payment will constitute full compensation for furnishing and installing all required materials, including stones, geotextile, PVC pipes, anchor bars; and for all labor, tools, equipment, and incidentals required to complete the work.

ITEM	DESCRIPTION	PAY UNIT
910001	Infiltration Stone, No.3	TON
910002	Infiltration Stone, No.8	TON
910003	Infiltration Stone, No.57	TON
910004	Clay Borrow, Cut-off Trench	CY
910005	Clay Borrow, Pond Liner	CY
910006	Outlet Structure	EACH
910007	Stormwater Management Pond	CY
910008	Infiltration Trench	LF