STATE OF DELAWARE

THIS COPY IS FOR INFORMATION ONLY. YOU MUST REQUEST THE PROPOSAL FROM THE DEPARTMENT IN ORDER TO SUBMIT A BID.

DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T200411210.01

FEDERAL AID PROJECT NO. ESTP-S026(6)

SR 26, ATLANTIC AVENUE FROM CLARKSVILLE TO ASSAWOMAN CANAL

SUSSEX COUNTY

ADVERTISEMENT DATE: AUGUST 19, 2013

Completion Date 901 Calendar Days

SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
DELAWARE DEPARTMENT OF TRANSPORTATION
AUGUST 2001

Bids will be received in the Bidder's Room, Transportation Administration Center, 800 Bay Road, Dover, Delaware until 2:00 P.M. local time September 24, 2013

Contract No.T200411210.01
Federal Aid Project No. ESTP-S026(6)

SR 26, ATLANTIC AVENUE FROM CLARKSVILLE TO ASSAWOMAN CANAL
SUSSEX COUNTY

GENERAL DESCRIPTION

LOCATION

These improvements are located in SUSSEX County more specifically shown on the Location Map(s) of the enclosed Plans.

DESCRIPTION

The improvements consist of furnishing all labor and materials for SR 26, Atlantic Avenue from Clarksville to Assawoman canal. This project will make improvements to SR26, Atlantic Avenue. The existing roadway will be widened to provide one eleven (11) foot travel lane in each direction with five (5) foot shoulders which will be striped as bike lanes. A 12 foot shared center left turn lane will be included through the length of the project. Separate right turn lanes and left turn lanes will be added at intersections. Sidewalks and closed drainage will be provided for much of the roadway segments through Ocean View and Millville, and other incidental construction in accordance with the location, notes and details shown on the plans and as directed by the Engineer.

COMPLETION DATE

All work on this contract must be complete within 901 Calendar Days . It is the Department's intent to issue a Notice to Proceed such that work starts on or about November 27, 2013.

PROSPECTIVE BIDDERS NOTES:

1. No retainage will be withheld on this contract.

2. The Department's External Complaint Procedure can be viewed on our Website at; http://www.deldot.gov/information/business/, or you may request a copy by calling (302) 760-2555.

3. This project incorporates the electronic bidding system **Expedite**, **version 5.9a**.. Bidders wishing to use the electronic bidding option will find the installation file on the plan holders bid file disk. The installation file and instructions are also available on our Website at: http://www.deldot.gov/information/business/bids/const_proj_bid_info.shtml.

4. BIDDERS MUST REQUEST A CD OF THE OFFICIAL PLANS AND SPECIFICATIONS FROM THE DEPARTMENT IN ORDER TO SUBMIT A BID.

5. Proposed Trainee Plans are required. Number of required trainees is listed in the Training Special Provisions within Contract General Notices. The program(s) must be submitted within 10 Calendar Days of notification of apparent low bidder status. Contract Award will not take place until acceptable On-the-Job (OJT) program plans are received by the Civil Rights Group of the Department.

   Failure of the apparent low bidder to present copies of acceptable OJT Trainee Programs within ten (10) calendar days after the bid opening shall create a rebuttable presumption that the bid is not responsive.

6. Please note the Special Provision titled **Changes to Project Documents During Advertisement**. The Department is using an alternative method of providing bid documents for this contract.

7. **Appendix A** - Technical Specifications for Sanitary Sewer Work
   Appendix B - Technical Specifications for Waterline Work
   Appendix C - U.S. Department of Agriculture forms the awarded contractor must complete and submit prior to contract execution. It is not necessary to include these forms with your bid..

   All above Appendices shall be considered part of this proposal.

8. Please note the **Diesel Fuel Cost Price Adjustment Option** sheet for Item No. 763626 is included with the Bid Proposal Forms and must be completed and submitted along with the bid.

9. **CONTRACTOR REQUIREMENTS FOR WATER RELOCATION WORK ITEM 614508**
The Water Relocation Item listed in the contract is under the jurisdiction of the Town of Ocean View. Item 614508, Water Main and Accessories must be performed by Contractors pre-approved by Ocean View. Contractors currently approved by the Town for this item are:

A-Del Construction
Barry Baker
351 Salem Church Road
Newark, DE 19702
P: 302-453-8286

AP Croll
Scott Fowler
PO Box 748
Georgetown, DE 19947
P: 302-856-6177
F: 302-856-3482

Bunting & Murray Construction Corp.
Jay Murray
RD 1 Box 140A
Selbyville, DE 19975
P: 302-436-5144

Christiana Excavating Company, Inc.
Paul Conner
2016 Sunset Lake Road
Newark, DE 19702
P: 302-738-8660
F: 302-738-3515

Corrado Construction Company
Joe Corrado
210 Marsh Lane
New Castle, DE 19720
P: 302-652-3339
F: 302-652-2239

David A. Bramble, Inc.
Jay Silcox, PE
705 Morgnec Rd.
PO Box 419
Chestertown, MD 21620
P: 410-778-3023
F: 410-778-3427

George & Lynch, Inc.
Mike Megonigal
150 Lafferty Lane
Dover, DE 19901
P: 302-342-3128

JJID, Inc.
Jim Julian
100 Julian Lane
Bear, DE 19701
P: 302-836-0414
F: 302-836-4275

Kent Construction Co
Rick Davison
2 Big Oak Road
Smyrna, DE 19977
P: 302-653-6469
F: 302-653-2108

Melvin L. Joseph Construction Co, Inc.
Chuck Ewing
25136 DuPont Boulevard
Georgetown, DE 19947
P: 302-856-7396

Pearce & Moretto Inc.
Bill Smagala
314 Baywest Boulevard, Suite C
PO Box 272
New Castle, DE 19720
P: 302-326-0707

Teal Construction
Chad Reed
PO Box 779
Dover, DE 19901
P: 302-678-9500

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Requests to approve other firms may be submitted. Such requests shall be submitted to DelDOT Contract Administration via E-mail to **dot-ask@state.de.us** a minimum of 10 calendar days in advance of the contract bid date. The requests should include the following information:

1. Contractor name and contact information

2. Name and resume of the project superintendent that will be assigned to this project

3. List and detailed description of work on similar projects performed in the past 5 years with points of contact for the owners of the projects.

4. Any other information deemed relevant to demonstrate that the Contractor has the experience and capabilities to successfully complete the work

5. Additional information that may be requested

Approval or denial of the request shall lie solely with the Town of Ocean View. The approved Superintendent must be on-site during performance of the work. If a firm other than those listed above is being proposed, DelDOT Contract Administration will post the names of firms proposed and their approval status on the project bid page. The Contract cannot be awarded until an approved contractor for the water main item has been established.

10. **CONTRACTOR REQUIREMENTS FOR SANITARY SEWER WORK ITEMS 753516** and **753558**

The Sanitary Sewer Work Items listed in the contract are under the jurisdiction of the Sussex County Engineering Department. Item 753516, Sanitary Sewer System, and Item 753558, Relocate Force Main must be performed by Contractors pre-approved by the County. Contractors currently approved by the County for these items are:

A.P. Croll & Son, Inc. 22997 Lewes-Georgetown Hwy P.O. Box 748 Georgetown, DE 19947	Phone: 302-856-6177 FAX: 302-856-3482 Web Address: www.actionenv.com Contact: Gus Croll
Bunting & Murray Construction Corp. 2924 Lighthouse Rd. R.D.1, Box 140 Selbyville, DE 19975	Phone: 302-436-5144 FAX: 302-436-1753 Contacts: Jay Murray / Jody Murah
George & Lynch, Inc. 150 Lafferty Lane Dover, DE 19901	Phone: 302-736-3031 FAX: 302-734-9743 Contact: Dennis Dinger
Teal Construction, Inc. 612 Mary Street P.O. Box 779 Dover, DE 19903	Phone: 302-678-9500 FAX: 302-678-9715 Email: cr1647@tealconstruction.com Web Address: www.ecieng.com Contact: Chatty Reed

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The live taps and bypass work required for Item 753558 (Breakout Items C-3 through C-9) are considered to be highly specialized work and must be performed only by the following firms or an approved equal:

Garrison Enterprise, Inc.
211 W. Elmer Road
Vineland, NJ 08360-6309
PHONE: (856) 692-6696
FAX: (856) 692-1883
Elbert@basolis.com
www.garrisonenterprie.com

TDW Services, Inc.
261 Quigley Blvd, Suite 18
New Castle, DE 19720
PHONE: (302) 594-9880
FAX: (302) 594-9884

Furmanite America, Inc.
1224 Forest Parkway
Suite 120
Paulsboro, NJ 08066
PHONE: (800) 828-0044
FAX: (856) 423-3955

Requests to approve other firms for the general sewer work and the specialized taps and bypass may be submitted to DelDOT Contract Administration via E-mail to **dot-ask@state.de.us** a minimum of 10 calendar days in advance of the contract bid date. The requests should include the following information:

1. Contractor name and contact information.

2. Name and resume of the project superintendent that will be assigned to this project.

3. List and detailed description of work on similar projects performed in the past 5 years with points of contact for the owners of the projects.

4. Any other information deemed relevant to demonstrate that the Contractor has the experience and capabilities to successfully complete the work.

5. Additional information that may be requested.

Approval or denial of the request shall lie solely with the Sussex County Engineering Department. The approved Superintendent must be on-site during performance of the work. If a firm other than those listed above is being proposed, DelDOT Contract Administration will post the names of firms proposed and their approval status on the project bid page. The Contract cannot be awarded until approved contractors for the sanitary sewer items and the specialized taps and bypass operations have been established.

11. Contractors are advised there is a possibility that all or a portion of Item 753516, Sanitary Sewer System may be deleted from the contract, depending on the successful bidder's price. Should the item, or any portion thereof, be deleted from the contract, no additional costs of any kind related to the deletion will be considered by the Department. The Department will not request any adjustment to contract time as a result of such deletion. Such deletion, if applicable, will be made by Change Order following award of the contract.

12. In the interest of safety and for coordination of Sussex County inspection, the Contractor is requested to perform as much as possible of the work included in items 753516 and 753558 during daylight hours when allowed by contract traffic restrictions. The work shall also be performed continuously from start to finish unless specifically approved otherwise by DelDOT. Requests to suspend and subsequently resume work on Items 753516 and/or 753558 must be submitted for approval to the Department and Sussex County indicating the benefit to the contract schedule or other betterment to the overall contract.

13. Specialty Items. Items 614508 (Water Main and Accessories), 753516 (Sanitary Sewer System), and 753558 (Relocate Force Main) are designated in the Contract as "Specialty Items" and may be performed by subcontract and the cost of any such specialty items so performed by subcontract may be deducted from the original total bid price before computing the amount of work required to be performed by the Contractor with its own organization, per Section 108.01 of the Standard Specifications..

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CONSTRUCTION ITEMS UNITS OF MEASURE

English Code	English Description	Multiply By	Metric Code	Metric Description	Suggested CEC Metric Code
ACRE	Acre	0.4047	ha	Hectare	HECTARE
BAG	Bag	N/A	Bag	Bag	BAG
C.F.	Cubic Foot	0.02832	m^3	Cubic Meter	M3
C.Y.	Cubic Yard	0.7646	m^3	Cubic Meter	M3
EA-DY	Each Day	N/A	EA-DY	Each Day	EA-DY
EA-MO	Each Month	N/A	EA-MO	Each Month	EA-MO
EA/NT	Each Night	N/A	EA-NT	Each Night	EA/NT
EACH	Each	N/A	EA	Each	EACH
GAL	Gallon	3.785	L	Liter	L
HOUR	Hour	N/A	h	Hour	HOUR
INCH	Inch	25.4	mm	Millimeter	MM
L.F.	Linear Foot	0.3048	m	Linear Meter	L.M.
L.S.	Lump Sum	N/A	L.S.	Lump Sum	L.S.
LA-MI	Lane Mile	1.609	LA-km	Lane-Kilometer	LA-KM
LB	Pound	0.4536	kg	Kilogram	KG
MFBM	Thousand Feet of Board Measure	2.3597	m^3	Cubic Meter	M3
MGAL	Thousand Gallons	3.785	kL	Kiloliter	KL
MILE	Mile	1.609	km	Kilometer	KM
S.F.	Square Foot	0.0929	m^2	Square Meter	M2
S.Y.	Square Yard	0.8361	m^2	Square Meter	M2
SY-IN	Square Yard-Inch	0.8495	m^2-25 mm	Square Meter-25 Millimeter	M2-25 MM
TON	Ton	.9072	t	Metric Ton (1000kg)	TON
N.A.*	Kip	4.448	kN	Kilonewton	N.A.*
N.A.*	Thousand Pounds per Square Inch	6.895	MPa	Megapascal	N.A.*

*Not used for units of measurement for payment.

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APPENDIX A - Technical Specifications for Sanitary Sewer Work
APPENDIX B - Technical Specifications for Waterline Work
APPENDIX C - U.S. Department of Agriculture forms the awarded contractor must complete and submit prior to contract execution. It is not necessary to include these forms with your bid..

GENERAL NOTICES

SPECIFICATIONS:

The specifications entitled "Delaware Standard Specifications for Road and Bridge Construction, August, 2001", hereinafter referred to as the Standard Specifications; Supplemental Standard Specifications; the Special Provisions; notes on the Plans; this Bid Proposal; and any addenda thereto, shall govern the work to be performed under this contract.

CLARIFICATIONS:

Under any Section or Item included in the Contract, the Contractor shall be aware that when requirements, responsibilities, and furnishing of materials are outlined in the details and notes on the Plans and in the paragraphs preceding the " Basis of Payment" paragraph in the Standard Specifications or Special Provisions, no interpretation shall be made that such stipulations are excluded because reiteration is not made in the "Basis of Payment" paragraph.

ATTESTING TO NON-COLLUSION:

The Department requires as a condition precedent to acceptance of bids a sworn statement executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such contract. The form for this sworn statement is included in the proposal and must be properly executed in order to have the bid considered.

QUANTITIES:

The quantities shown are for comparison of bids only. The Department may increase or decrease any quantity or quantities without penalty or change in the bid price.

PREFERENCE FOR DELAWARE LABOR:

Delaware Code, Title 29, Chapter 69, Section 6962, Paragraph (d), Subsection (4)b

> "In the construction of all public works for the State or any political subdivision thereof, or by firms contracting with the State or any political subdivision thereof, preference in employment of laborers, workmen or mechanics shall be given to bona fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State. Each public works contract for the construction of public works for the State or any political subdivision thereof shall contain a stipulation that any person, company or corporation who violates this section shall pay a penalty to the Secretary of Finance equal to the amount of compensation paid to any person in violation of this section."

EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS:

Delaware Code, Title 29, Chapter 69, Section 6962, Paragraph (d), Subsection (7)

> "a. As a condition of the awarding of any contract for public works financed in whole or in part by State appropriation, such contracts shall include the following provisions:
>
> `During the performance of this contract, the contractor agrees as follows:
>
> 1. The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex, sexual orientation or natural origin. The contractor will take positive steps to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, sex, sexual orientation or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex or national origin.'

TAX CLEARANCE:

As payments to each vendor or contractor aggregate $2,000, the Division of Accounting will report such vendor or contractor to the Division of Revenue, who will then check the vendor or contractor's compliance with tax requirements and take such further action as may be necessary to insure compliance.

LICENSE:

A person desiring to engage in business in this State as a contractor shall obtain a license upon making application to the Division of Revenue. Proof of said license compliance to be made prior to, or in conjunction with, the execution of a contract to which he has been named.

DIFFERING SITE CONDITIONS,

SUSPENSIONS OF WORK and SIGNIFICANT CHANGES IN THE CHARACTER OF WORK:

Differing site conditions: During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract of if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before they are disturbed and before the affected work is performed.

Upon written notification, the engineer will investigate the conditions, and if he/she determines that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding loss of anticipated profits, will be made and the contract modified in writing accordingly. The engineer will notify the contractor of his/her determination whether or not an adjustment of the contract is warranted.

No contract adjustment which results in a benefit to the contractor will be allowed unless the contractor has provided the required written notice.

No contract adjustment will be allowed under their clause for any effects caused on unchanged work.

Suspensions of work ordered by the engineer: If the performance of all or any portion of the work is suspended or delayed by the engineer in writing for an unreasonable period of time (not originally anticipated, customary or inherent to the construction industry) and the contractor believes that additional compensation and/or contract time is due as a result of such suspension or delay, the contractor shall submit to the engineer in writing a request for adjustment within 7 calendar days of receipt of the notice to resume work. The request shall set fourth the reasons and support for such adjustment.

Upon receipt, the engineer will evaluate the contractor's request. If the engineer agrees that the cost and/or time required for the performance of the contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the engineer will make an adjustment (excluding profit) and modify the contract in writing accordingly. The engineer will notify the contractor of his/her determination whether or not an adjustment of the contract is warranted.

No contract adjustment will be allowed unless the contractor has submitted the request for adjustment within the time prescribed.

No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided for or excluded under any other term or condition of this contract.

Significant changes in the character of work: The engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily

complete the project. Such changes in quantities and alterations shall not invalidate the contract nor release the surety, and the contractor agrees to perform the work as altered.

If the alterations or changes in quantities significantly change the character of the work under the contract, whether or not changed by any such different quantities or alterations, an adjustment, excluding loss of anticipated profits, will be made to the contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon, then an adjustment will be made either for or against the contractor in such amount as the engineer may determine to be fair and equitable.

The term "significant change" shall be construed to apply only to the following circumstances:

(A) When the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction or

(B) When a major item of work, as defined elsewhere in the contract, is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed.

CONFLICT WITH FEDERAL STATUTES OR REGULATIONS:

Delaware Code, Title 29, Chapter 69, Section 6904, Paragraph (a)

> "If any provision of this subchapter conflicts or is inconsistent with any statute, rule or regulation of the federal government applicable to a project or activity, the cost of which is to be paid or reimbursed in whole or in part by the federal government, and due to such conflict or inconsistency the availability of federal funds may be jeopardized, such provision shall not apply to such project or activity."

FEDERAL LABOR AND EMPLOYMENT REQUIREMENTS

Federal Regulation 23 CFR § 635.117(b) Labor and employment, states:

> "No procedures or requirement shall be imposed by any State which will operate to discriminate against the employment of labor from any other State, possession or territory of the United States, in the construction of a Federal-aid project."

CONVICT PRODUCED MATERIALS:

(a) Materials produced after July 1, 1991, by convict labor may only be incorporated in a Federal-aid highway construction project if such materials have been:

(1) Produced by convicts who are on parole, supervised release, or probation from a prison or

(2) Produced in a qualified prison facility and the cumulative annual production amount of such materials for use in Federal-aid highway construction does not exceed the amount of such materials produced in such facility for use in Federal-aid highway construction during the 12-month period ending July 1, 1987.

(b) Qualified prison facility means any prison facility in which convicts, during the 12-month period ending July 1, 1987, produced materials for use in Federal-aid highway construction projects.

TO REPORT BID RIGGING ACTIVITIES:

The U. S. Department of Transportation (DOT) operates the below toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

TO REPORT BID RIGGING ACTIVITIES

CALL 1-800-424-9071

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

Goals for Minority Participation In Each Trade	Goals for Female Participation In Each Trade
12.3% (New Castle County) 14.5% (Kent & Sussex Counties)	6.9% (Entire State)

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

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

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

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is NEW CASTLE County.

REV. 11-3-80

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

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
   d. "Minority" includes:
      i. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      ii. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      iii. Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      iv. American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Program Office or from the Federal procurement contracting offices. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

   a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
   b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
   c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
   d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
   e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
   f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
   g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foreman, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
   h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
   i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
   j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
   k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
   l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel

for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontractors from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participating, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is under utilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Order of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment-related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which

establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

* * * * *

TRAINING SPECIAL PROVISIONS

This Training Special Provision supersedes subparagraph 7b of the Special Provision entitled "Specific Equal Employment Opportunity Responsibilities", (Attachment 1), and is in implementation of 23 U.S.C. 140(a). As part of the contractor's equal employment opportunity affirmative action program, training shall be provided as follows:

The contractor shall provide on-the-job training aimed at developing full journeyman in the type of trade or job classification involved.

The number of trainees to be trained under the special provision will be 2. In the event the contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year apprenticeship or training.

The number of trainees shall be distributed among the work classification on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the Department of Highways and Transportation for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent that such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Department of Highways and Transportation and the Federal Highway Administration. The Department of Highways and Transportation and the Federal Highway Administration shall approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work the classification covered by the program. It is the intention of these provisions that the training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the division office. Some off-site training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the engineer, reimbursement will be made for training persons in excess of the number specified herein. This reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other sources does not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for off-site training indicated above may only be made to the contractor where he does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training; provides the instruction of the trainee; or pays the trainee's wages during the off-site training period.

No payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainees as a journeyman, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirements of this Training Special Provision. It is normally expected that a trainee will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program. It is not required that all trainees be on board for the entire length of the contract. A contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid a least 60 percent of the appropriate minimum journeymen's rate specified in the contract for the first half of the of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees is an approved existing program are enrolled as trainees on this project. In fact case, the appropriate rates approved by the Department of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provisions.

The contractor shall furnish the trainee a copy of the program he will follow in providing the training.

The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily completed.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

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INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT & TRANSPORTATION EQUITY ACT

Recipients of Federal-aid highway funds authorized under Titles I (other than Part B) and V of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), or Titles I, III, and V of the Transportation Equity Act for the 21st Century (TEA-21) are required to comply with the regulations of 49 Code of Federal Regulations (CFR) Part 26 - Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs.

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM SPECIFICATION

The U.S. Department of Transportation (DOT) requires that the Delaware Department of Transportation continue the established Disadvantaged Business Enterprise (DBE) Program for participation in U.S. DOT programs and that the program follow the final rules as stated in 49 CFR Part 26 and the Department's approved DBE Program plan.

The following definitions apply to this subpart:

Disadvantaged Business Enterprise or DBE means a for-profit small business concern (1) that is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and, (2) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

DOT-assisted contract means any contract between a recipient and a contractor (at any tier) funded in whole or in part with DOT financial assistance, including letters of credit or loan guarantees, except a contract solely for the purchase of land.

Good Faith Efforts means efforts to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement.

Joint Venture means an association of a DBE firm and one or more other firms to carry out a single, for-profit business enterprise, for which the parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

Race-conscious measure or program is one that is focused specifically on assisting only DBEs, including women-owned DBEs.

Race-neutral measure or program is one that is, or can be, used to assist all small businesses. For the purposes of this part, race-neutral includes gender neutrality.

Small Business concern means, with respect to firms seeking to participate as DBEs in DOT-assisted contracts, a small business concern as defined pursuant to section 3 of the Small Business Act and Small Business Administration regulations implementing it (13 CFR part 121) that also does not exceed the cap on average annual gross receipts specified in 49 CFR §26.65(b).

Socially and economically disadvantaged individuals means any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is - (1) any individual who a recipient finds to be a socially and economically disadvantaged individual on a case-by-case basis; (2) any individual in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:

(i) Black Americans which includes persons having origins in any of the Black racial groups of Africa;
(ii) Hispanic Americans which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
(iii) Native Americans which includes persons who are American Indians, Eskimos, Aluets, or Native Hawaiians;
(iv) Asian-Pacific Americans which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kirbati, Juvalu, Nauru, Federated States of Micronesia, or Hong Kong;
(v) Subcontinent Asian Americans which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;
(vi) Women;
(vii) Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

DelDOT will establish specific goals for each particular DOT-assisted project which will be expressed as a percentage of the total dollar amount of contract bid.

The specific contract goals for this contract are:

Disadvantaged Business Enterprise 10 % Percent

DelDOT continues to reserve the right to approve DBE subcontractors and all substitutions of DBE subcontractors prior to award and during the time of the contract.

Bidders are required to submit with their bids the completed DBE Program Assurance portion of the Certification document which will state the bidders intent of meeting the goals established for this contract; or in the instance where a contractor cannot meet the assigned DBE Goals for this contract, he/she shall at the time of bid submit documentation required to verify that he/she has made a Good Faith Effort to meet the DBE Goals. Guidance for submitting a Good Faith Effort is identified in the next section and in the DBE Program Plan. Further, the apparent low bidder must submit to DelDOT within ten (10) calendar days after the bid opening, executed originals of each and every DBE subcontract to satisfy contract goals consistent with the DBE Program Assurance submitted as part of the bid package.

No contract work shall be performed by a DBE subcontractor until the executed DBE subcontract is approved in writing by DelDOT and the Department has issued the required Notice to Proceed. Any DBE subcontract relating to work to be performed pursuant to this contract, which is submitted to DelDOT for approval, must contain all DBE subcontractor information, the requirements contained in this contract, and must be fully executed by the contractor and DBE subcontractor.

Each contract between the prime contractor and each DBE subcontractor shall at the minimum include the following:

1. All pertinent provisions and requirements of the prime contract.
2. Description of the work to be performed by the DBE subcontractor.
3. The dollar value of each item of work to be completed by the DBE subcontractor and the bid price of each item of work to be completed by the DBE subcontractor.

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CRITICAL DBE REQUIREMENTS

A bid may be held to be non-responsive and not considered if the required DBE information is not provided. In addition, the bidder may lose its bidding capability on Department projects and such other sanctions as the Department may impose. It is critical that the bidder understands:

1. In the event that the bidder cannot meet the DBE goal as set forth in this specification, he/she shall at the time of bid submit to the Department that percentage of the DBE Goal that will be met, if any, on the written and notarized assurance made a part of this contract. The contractor shall also at the time of bid submit all documentation that the contractor wishes to have the Department consider in determining that the contractor made a Good Faith Effort to meet contract DBE Goals. The Department will not accept Good Faith Effort documentation other than on the scheduled date and time of the bid opening. However, the Department may ask for clarification of information submitted should the need arise.

2. A bid which does not contain either a completely executed DBE Program Assurance and/or Good Faith Effort documentation, where appropriate, shall be declared non-responsive and shall not be considered by the Department.

3. Failure of the apparent low bidder to present originals of all DBE subcontracts to substantiate the volume of work to be performed by DBE's as indicated in the bid within ten (10) calendar days after the bid opening shall create a rebuttable presumption that the bid is not responsive.

4. Bidders are advised that failure to meet DBE Goals during the term of the contract may subject them to Department sanctions as identified in the DBE Program Plan.

5. In the execution of this contract, the successful bidder agrees to comply with the following contract clauses:

   Prompt Payment: The prime contractor/consultant receiving payments shall, within 30 days of receipt of any payment, file a statement with the Department on a form to be determined by the Department that all subcontractors furnishing labor or material have been paid the full sum due them at the 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 and as amended. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of DelDOT. This clause applies to both DBE and non-DBE subcontractors.

   Retainage: The prime contractor agrees to return retainage to each subcontractor within 15 calendar days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of DelDOT. This clause covers both DBE and non-DBE subcontractors. As guidance, once a subcontractor has satisfactorily completed the physical work, and has given to the prime contractor a certified statement that all laborers, lower tier contractors, and materialmen who have furnished labor and materials to the subcontractor have been paid all monies due them, the prime contractor shall return retainage to the subcontractor within 15 calendar days.

6. In the execution of this contract, the successful bidder agrees to comply with the following contract assurance and will include this same language in each subcontractor contract:

   "The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such remedy as the recipient deems appropriate." 49 CFR Section 26.13

7. In addition to this specification, bidders must comply with all provisions of the rules and regulations adopted by the U.S. Department of Transportation for DBE participation in U.S. DOT and DelDOT Programs (49 CFR Part 26) and the Delaware Department of Transportation Disadvantaged Business Enterprise Program Plan; each of which is hereby incorporated and made part of this specification. Bidders are also reminded that they must be responsible and responsive bidders in all other aspects aside from the DBE Program in order to be awarded the contract.

* * * * *

GUIDANCE FOR GOOD FAITH EFFORT

When the DBE Goals established for a contract by DelDOT are not met, the contractor shall demonstrate good faith efforts to meet the DBE contract goals. The contractor shall demonstrate that the efforts made were those that a contractor actively and aggressively seeking to meet the goals established by DelDOT would make, given all relevant circumstances. Evidence of this good faith effort will be submitted with the bid at the time of the bid opening.

The contractor is expected to demonstrate good faith efforts by actively and aggressively seeking out DBE participation in the project to the maximum extent, given all relevant circumstances. Following are the kinds of efforts that may be taken but are not deemed to be exclusive or exhaustive and DelDOT will consider other factors and types of efforts that may be relevant:

1. Efforts made to select portions of the work proposed to be performed by DBEs in order to increase the likelihood of achieving the stated goal. Selection of portions of work are required to at least equal the goal for DBE utilization specified in this contract.

2. Written notification at least ten (10) calendar days prior to the opening of a bid soliciting DBE interest in participating in the contract as a subcontractor or supplier and for specific items of work.

3. Efforts made to obtain and negotiate with DBE firms for specific items of work:
   a. Description of the means by which firms were solicited (i.e. by telephone, e-mail, written notice, advertisement).
   b. The names, addresses, telephone numbers of DBE's contacted, the dates of initial contact; and whether initial solicitations of interest were followed-up by contacting the DBEs to determine with certainty whether the DBEs were interested.
   c. A description of the information provided to DBE firms regarding the plans, specifications and estimated quantities for portions of the work to be performed.
   d. A statement of why additional agreements with DBE's were not reached in order to meet the projected goal.
   e. Listing of each DBE contacted but not contracted and the reasons for not entering a contract.

4. Efforts made to assist DBEs that need assistance in obtaining bonding, insurance, or lines of credit required by the contractor.

5. Reasons why certified DBEs are not available or not interested.

6. Efforts to effectively use the services of available disadvantaged community organizations; disadvantaged contractor's groups; local, state and federal DBE assistance offices; and other organizations that provide assistance in recruitment and placement of DBEs.

The following are examples of actions that may not be used as justification by the contractor for failure to meet DBE contract goals:

1. Failure to contract with a DBE solely because the DBE was unable to provide performance and/or payment bonds.
2. Rejection of a DBE bid or quotation based on price alone.
3. Rejection of a DBE because of its union or non-union status.
4. Failure to contract with a DBE because the contractor normally would perform all or most of the work in the contract.

Administrative reconsideration:

Within five (5) days of being informed by DelDOT that it is not responsive because it has not documented sufficient good faith efforts, a bidder may request administrative reconsideration. Bidder should make this request in writing to the following reconsideration official: Director of Administration, DelDOT, P. O. Box 778, Dover, Delaware 19903. The reconsideration official will not have played any role in the original determination that the bidder did not document sufficient good faith efforts.

As part of this reconsideration, the bidder will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so. The bidder will have the opportunity to meet in person with the reconsideration official, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. The final decision made by the reconsideration official will be communicated to the bidder in writing. The result of the reconsideration process is not administratively appealable to the U.S. Department of Transportation.

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REQUIRED CONTRACT PROVISIONS - FEDERAL-AID CONSTRUCTION CONTRACTS
(Exclusive of Appalachian Contracts)

FHWA-1273 -- Revised May 1, 2012 http://www.fhwa.dot.gov/programadmin/contracts/1273/1273.docx

I. General
II. Nondiscrimination
III. Nonsegregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Compliance with Governmentwide Suspension and Debarment Requirements
XI. Certification Regarding Use of Contract Funds for Lobbying

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

   The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

   Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

   Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

    a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

    b. The contractor will accept as its operating policy the following statement:
    "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

    a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

    b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

    c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

   a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

   b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

   c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

   a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

   b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

   c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

   d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

   a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

   b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

   a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

   b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

   c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

   d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

   a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

   b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

    a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

    b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

    a. The records kept by the contractor shall document the following:
        (1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

        (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

        (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

    b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

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

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

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

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

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

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on

the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a.. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State

Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

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

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract

shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

    a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

    b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

    c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed

by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

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

   (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

   (2) the prime contractor remains responsible for the quality of the work of the leased employees;

   (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

   (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any

employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

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

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

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

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

Shall be fined under this title or imprisoned not more than 5 years or both."

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

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

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

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

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

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. **Instructions for Certification – First Tier Participants:**

   a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

   b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

   c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

   d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

   e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

   f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

   g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

   h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. **Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants**:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

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

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a

grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

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

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

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

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

   a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency,

a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

* * * * *

PREVAILING WAGES

Included in this proposal are the minimum wages to be paid various classes of laborers and mechanics 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.

REQUIREMENT BY DEPARTMENT OF LABOR FOR SWORN PAYROLL INFORMATION

Title 29 Del.C. §6960 stipulates;

> (b) Every contract based upon these specifications shall contain a stipulation that the employer shall pay all mechanics and laborers employed directly upon the site of the work, unconditionally and not less often than once a week and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the employer and such laborers and mechanics. The specifications shall further stipulate that the scale of wages to be paid shall be posted by the employer in a prominent and easily accessible place at the site of the work, and that there may be withheld from the employer so much of accrued payments as may be considered necessary by the Department of Labor to pay to laborers and mechanics employed by the employer the difference between the rates of wages required by the contract to be paid laborers and mechanics on the work and rates of wages received by such laborers and mechanics to be remitted to the Department of Labor for distribution upon resolution of any claims.
>
> (c) Every contract based upon these specifications shall contain a stipulation that sworn payroll information, as required by the Department of Labor, be furnished weekly. The Department of Labor shall keep and maintain the sworn payroll information for a period of 6 months from the last day of the work week covered by the payroll.

Bidders are specifically directed to note the Department of Labor's prevailing wage regulations implementing §6960 relating to the effective date of the wage rates, at Part VI., Section C., which in relevant part states:

> "Public agencies (covered by the provisions of 29 Del.C. §6960) are required to use the rates which are in effect on the date of the publication of specifications for a given project. In the event that a contract is not executed within one hundred twenty (120) days from the date the specifications were published, the rates in effect at the time of the execution of the contract shall be the applicable rates for the project."

PREVAILING WAGE REQUIREMENTS

It is DelDOT's understanding that the Davis-Bacon Act is not a preemptive statute in the broad sense, and does not preempt or displace State of Delaware prevailing wage requirements.

When a contract for a project contains both Federal Davis-Bacon and State of Delaware prevailing wage standards because of concurrent Federal and State coverage, the employer's minimum wage obligations are determined by whichever standards are higher.

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: (302) 451-3423

Mailing Address:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

Located at:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

PREVAILING WAGES FOR **HIGHWAY CONSTRUCTION** EFFECTIVE MARCH 15, 2013

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
BRICKLAYERS	46.83	46.83	14.51
CARPENTERS	42.64	50.06	39.82
CEMENT FINISHERS	28.79	26.13	23.29
ELECTRICAL LINE WORKERS	22.50	43.42	21.25
ELECTRICIANS	60.60	60.60	60.60
IRON WORKERS	42.20	23.87	25.35
LABORERS	28.95	26.97	26.82
MILLWRIGHTS	16.11	15.63	13.49
PAINTERS	58.07	58.07	58.07
PILEDRIVERS	66.42	23.75	26.95
POWER EQUIPMENT OPERATORS	37.00	29.47	27.16
SHEET METAL WORKERS	22.75	20.31	18.40
TRUCK DRIVERS	29.08	21.42	19.13

CERTIFIED: 7/31/13

BY: _____
ADMINISTRATOR, OFFICE OF LABOR LAW ENFORCEMENT

NOTE: THESE RATES ARE PROMULGATED AND ENFORCED PURSUANT TO THE PREVAILING WAGE REGULATIONS ADOPTED BY THE DEPARTMENT OF LABOR ON APRIL 3, 1992.

CLASSIFICATIONS OF WORKERS ARE DETERMINED BY THE DEPARTMENT OF LABOR. FOR ASSISTANCE IN CLASSIFYING WORKERS, OR FOR A COPY OF THE REGULATIONS OR CLASSIFICATIONS, PHONE (302) 451-3423.

NON-REGISTERED APPRENTICES MUST BE PAID THE MECHANIC'S RATE.

PROJECT: Federal Aid Project ESTP-S026(6) SR 26, Atlantic Avenue from Clarksville to Assaw, Sussex County

FEDERAL DAVIS-BACON WAGE RATES 05/10/2013 DE15

General Decision Number: DE20120015

STATE: Delaware

Construction Type: Highway

COUNTY: Sussex County in Delaware

HIGHWAY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	05/10/2013

SUDE2010-003 04/24/2013

	Rates	Fringes
Bricklayer	14.51	
Carpenter	39.82	
Cement Mason/Concrete Finisher	23.29	
ELECTRICIAN		
Electrician	60.60	
Line Worker	21.25	
Ironworker	25.35	
Laborer	26.82	
Millwright	13.49	
Operator: Piledriver	26.95	
Painter	58.07	
Power Equipment Operator	27.16	
Sheet Metal Worker	18.40	
Truck Driver	22.15	

WELDERS: Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for the classification. Example: PLUM0198-005 07/01/2011. The first four letters, PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rate.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union rates, LA indicated the State of Louisiana; 2004 is the year of the survey: and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Way Determination on the date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

APPLICABILITY OF DAVIS-BACON LABOR STANDARD PROVISIONS TO FLAGGERS

The U.S. Department of Labor has established that the duties of flaggers working on contracts covered by the Davis-Bacon Act, are manual and physical in nature. Accordingly, all employees performing the work of flaggers on Davis-Bacon covered contracts shall be entitled to receive applicable prevailing wage rates.

* * * * *

ALL AGENCY MEMORANDUM NO. 130
U.S. DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION
WAGE AND HOUR DIVISION
WASHINGTON, DC 20210

GUIDELINES

HIGHWAY CONSTRUCTION

Highway projects include the construction, alteration, or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction.

EXAMPLES: Alleys, Base Courses, Bituminous treatments, Bridle Paths, Concrete pavement, Curbs, Excavation and embankment (for road construction), Fencing (highway), Grade crossing elimination (overpasses and underpasses), Guard rails on highway, Highway signs, Highway bridges (overpasses, underpasses, grade separation), Medians, Parking lots, Parkways, Resurfacing streets and highways, Roadbeds, Roadways, Runways, Shoulders, Stabilizing courses, Storm sewers incidental to road construction, Street paving, Surface courses, Taxiways, and Trails.

ANY QUESTIONS REGARDING THE APPLICATION OF THE GUIDELINES ABOVE TO A PARTICULAR PROJECT OR ANY DISPUTES REGARDING THE APPLICATION OF THE WAGE SCHEDULES ARE TO BE REFERRED TO THE WAGE AND HOUR DIVISION, U.S. DEPARTMENT OF LABOR FOR RESOLUTION, AND THE INSTRUCTIONS OF THE WAGE AND HOUR DIVISION ARE TO BE OBSERVED IN ALL INSTANCES.

* ALL AGENCY MEMORANDUM NO. 130
U.S. DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION
WAGE AND HOUR DIVISION
WASHINGTON, DC 20210

SUPPLEMENTAL SPECIFICATIONS
TO THE
AUGUST 2001
STANDARD SPECIFICATIONS

EFFECTIVE AS OF THE ADVERTISEMENT DATE OF THIS PROPOSAL AND INCLUDED BY REFERENCE

The Supplemental Specifications can be viewed and printed from the Department's Website.

To access the Website;
- in your internet browser, enter; http://www.deldot.gov
- on the left side of the page under 'INFORMATION', Click; 'Publications'
- scroll down under 'MANUALS' and Click; "Standard Specifications 2001"

The full Website Link is;
http://www.deldot.gov/information/pubs_forms/manuals/standard_specifications/index.shtml

Printed copies of the Supplemental Specifications are available upon request. A printed copy of the above referenced Supplemental Specifications will be included in the final contract documents upon award.

The Contractor shall make himself aware of these revisions and corrections (Supplemental Specifications), and apply them to the applicable item(s) of this contract.

SPECIAL PROVISIONS

CHANGES TO PROJECT DOCUMENTS DURING ADVERTISEMENT

1. PRINTED PLANS AND SPECIFICATIONS NOT AVAILABLE FROM DELDOT.

The Department is not providing printed plans or specifications for this project. Bidders must contact the Department in order to receive a CD that contains all bid documents. Bidders are able to use the CD to print the plans and specifications, or have them printed from the Website. While the plans and specifications are available on-line at DelDOT's Website, the Website bid documents are not authorized for submitting bids, and the Website documents are marked as such. To receive required bid Documents on a CD, contact:

Contract Administration
Delaware Department of Transportation
P.O. Box 778, Dover, DE 19903
e-mail: dot-ask@state.de.us
Phone: (302) 760-2030
FAX: (302) 739-2254

The Department is providing a printed set of plans and specifications available for viewing in the Bidder's Room, Transportation Administration Center, 800 Bay Road, Dover, Delaware, Monday through Friday excluding holidays from 8:00A.M. through 4:15 P.M..

2. QUESTIONS AND ANSWERS

All questions pertaining to this project are to be submitted to the following e-mail address:

dot-ask@state.de.us

Questions and Answers will be dated and posted periodically on Delaware's Bid Solicitation Directory Website located at: http://www.bids.delaware.gov/

The final Questions and Answers will be posted no later than the end of the day, two working days prior to the bid date.

All Questions and Answers posted by the Department on the above Website are included by reference and become part of the contract documents. The awarded bidder will receive a hard copy of the final posted Questions and Answers.

Potential bidders that do not have access to the internet may contact Jim Hoagland, Contract Services Administrator, by telephone at (302) 760-2036 to make other arrangements.

NOTE: There is space provided on the CERTIFICATION page to insert the Posted Date of the final Questions and Answers. The Final Posted Date is the latest Posted Date of the Questions and Answers one day prior to Bid Date. This final Posted Date must be submitted on the Certification page.

3. ADDENDA

The Department is not providing printed Addendums, if issued, for this project. **All addendums will be posted on the Department's Website, and are included by reference and become part of the contract documents**. It is the responsibility of the bidder to check the Website as needed. If there are Addendums issued, the final Addendum will be posted no later than the end of the day, two working days prior to the bid date.

NOTE: There is space provided on the CERTIFICATION page to insert each issued Addendum and the date you acknowledge receipt of the addendum. Each Addendum number and date acknowledged must be submitted on the Certification page.

CONSTRUCTION ITEM NUMBERS

All construction pay items are assigned a six (6) digit number, shown as Item Number on the Plans and/or in the Special Provisions, and shall be interpreted in accordance with the following:

Standard Item Number:

The first three digits of the construction item numbers indicates the Section number as described in the Standard Specifications, and all applicable requirements of the Section shall remain effective unless otherwise modified by the Special Provisions. The last three digits of the construction item identifies the item by sequential number under that Section. Sequential numbers for all items covered under Standard Specifications range from 000 to 499. A comprehensive list of construction item numbers begins on page 421 of the Standard Specifications. Additions to this list will be made as required.

Special Provisions Item Number:

The first three digits of the construction items, covered under Special Provisions, indicates the applicable Section number of the Standard Specifications, and shall be governed fully by the requirements of the Special Provisions. The last three digit of the items covered under Special Provisions identifies the item by sequential number. Sequential numbers for Special Provision items, range from 500 to 999.

Examples

Standard Item Number - 202000 Excavation and Embankment

202 Indicates Section Number

000 Indicates Sequential Number

Special Provision Item Number - 202500 Grading and Reshaping Roadway

202 Indicates Section Number

500 Indicates Sequential Number

401502 - ASPHALT CEMENT COST ADJUSTMENT

For Sections 304, 401, 402, 403, 404, and 405, payments to the Contractor shall 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 these Special Provisions.

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 the anticipated Delaware Posted Asphalt Cement Price expected to be in effect at the time of receipt of bids.

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

Actual quantity of asphalt cement qualifying for any Asphalt Cement Cost Adjustment will be computed on the basis of weight tickets and asphalt percentage from the approved job mix formula.

For Recycled Hot-Mix the asphalt percentage eligible for cost adjustment shall be only the new asphalt cement added to the mix.

There shall be no separate payment per ton (metric ton) cost of asphalt cement. That cost shall be included in the various unit prices bid per ton (metric ton) for those bid items that contain asphalt cement (mentioned above).

The Asphalt cement cost adjustment will be calculated on grade PG 64-22 asphalt regardless of the actual grade of asphalt used. The Project Asphalt Cement Base Price for the project will be $578.33 per ton ($637.51 per metric ton).

If the Contractor exceeds the authorized allotted completion time, the price of asphalt cement on the last authorized allotted work day, shall be the prices used for cost adjustment during the time liquidated damages are assessed. However, if the industry posted price for asphalt cement goes down, the asphalt-cement cost shall be adjusted downward accordingly.

NOTE

Application of Asphalt Cement Cost Adjustment requirements as indicated above shall apply only to those contracts involving items related to bituminous base and pavements, and with bitumen, having a total of 1,000 tons (1,000 metric tons) or more of hot-mix bid quantity in case of Sections 401, 402 and 403; and 15,000 gallons (60 000 liters) or more in case of Sections 304, 404 and 405.

202528 - PIEZOMETER

Description:

Piezometer installation shall include furnishing all materials and drilling a bore hole, fabricating and placing the piezometer stand pipe, filling the annular space with filter pack and grouting material, and developing the piezometer in reasonably close conformity to the locations and typical details shown on the plans.

Materials:

Piezometer Screen: The screen shall be composed of new material and come to the site in manufacturer's plastic wrapping. The screen shall consist of schedule 40, machine slotted PVC and conform to ASTM D-1784 and ASTM F-480. Two-inch PVC flush jointed pipe shall be used for piezometer installations. The screen slot size shall be No. 10 (0.01 inches) or as specified by the Engineer, and retain at least 90% of the filter pack material. The bottom end of the screen shall be capped with a threaded PVC plug.

Filter Pack: Filter pack material shall be an artificial quartz gravel pack consisting of clean, well-rounded grains that are smooth and uniform. The uniformity coefficient of the filter pack shall not exceed 2.5 and shall have a grain size such that 90% of the material is retained by the No. 10 (0.01 inch) screen slot size or alternate slot size specified by the Engineer. Depending upon the actual soil conditions encountered, the gradation of the sand pack shall be modified as required.

Grout: The Piezometer casing shall be sealed immediately above the filter pack with 0.25-inch diameter bentonite pellets placed to a minimum depth of 12 inches and shall be activated with clean, potable water. Grout installed above the seal and used to seal the annual space and secure the protective casing, shall consist of a 94 pound bag of Portland cement (Type I) mixed with not more than 8 gallons of potable water.

Construction Methods:

Piezometer shall be installed at the location specified on the plan. The Contractor shall take every precaution to avoid damaging the piezometer during construction. The Engineer shall verify to his satisfaction the cause of the damage before any payment for replacement is made.

Each boring for piezometer installation shall have a minimum of 10-inch inner diameter. The preferred drilling methods shall be hollow stem augering or casing drilling. Any other drilling methods shall be subject to the approval of the Engineer.

Piezometers shall be installed and developed to the depths indicated by the Engineer. Each piezometer shall consist of 2-inch PVC flush jointed pipe complete with cap, bottom plug, grout, seal, cement collar, and filter pack in accordance with the requirements of these specifications.

Piezometers shall be developed soon after installation. This shall be accomplished by repeated surging and pumping of the well. The surging shall be performed by surge block approved by the Engineer. When surging in the screen, surging shall be started slowly just below the static water level and continued at a faster rate once free flow into the screen has occurred. Thereafter, the surge block can be lowered gradually into the screen area. Development shall continue until the Engineer decides that further development is unnecessary.

Method of Measurement:

The number of feet of Piezometer installation shall be the number of feet measured from the bottom of the screen to the top of the piezometer inner casing of the completed and accepted piezometer.

Basis of Payment:

Piezometer installation shall be paid at the contract price bid per foot, which price and payment shall constitute full compensation for furnishing all materials, drilling, fabricating, installing and developing piezometer, finishing in an acceptable manner, and for all labor, tools, equipment, and incidentals necessary to complete the work.

6/23/13

202560 - CONTAMINATED MATERIAL

Description:

Contaminated Material is defined as solids or liquids (including soil) potentially contaminated with a hazardous substance, requiring special handling and/or disposal per state or federal regulation.

This work describes the excavation, removal and treatment/disposal of contaminated materials resulting from project construction including utility and other types of excavation activities in accordance with the locations and notes on the Plans, and as directed by the Engineer or the Department's environmental representative. The Contractor will be notified of the Department's environmental representative at the pre-construction meeting.

Overview of Costs:

Potential contaminated solids may affect contractor's costs as follows;
Additional cost to normal excavation requirements:
-Cost of 8 mil plastic for placement under and over solid contaminated material,
-Maintaining the segregated contaminated solids staging area.
Reduced cost to normal excavation requirements:
-Not required to, or charged for, transport of contaminated material from site.
-Not required to, or charged for, disposal of contaminated soil.

Potential contaminated liquids will affect contractor’s cost as follows;
Additional cost to normal excavation requirements:
-None
Reduced cost to normal excavation requirements:
-None

Construction Methods and Responsibilities:

Contractor's Responsibilities for potential contaminated solids:

The Contractor shall be responsible for providing the appropriate equipment and personnel necessary to excavate, stage, and load contaminated material for off-site disposal, as identified from previous site environmental investigations or identified during construction activities. The work will be performed in accordance with the procedures described in the site specific "Contaminated Material and Water Removal Work Plan" prepared by the Department's environmental representative. A copy of this plan is provided in the bid package at advertisement. The Contractor shall adhere to applicable Occupational Safety and Health standards, Guidelines and/or Laws. This will include compliance with 29 CFR Part 1910.

After award of the Contract, the Contractor shall immediately be responsible for notifying the Department's HAZMAT Coordinator's office (760-2400) for scheduling coordination with the environmental representative. The contractor shall submit a proposed schedule of work to the Department for review and approval prior to any commencement of work on this site. The Contractor is required to perform to a high standard of workmanship to assure protection of workers, local water supplies, and the environment. The Contractor shall coordinate with the utility companies prior to excavation. The Department's environmental representative shall be present during all phases of work associated with the excavation and removal of potentially contaminated material. Payment will not be made for any work done when a Department approved Inspector or environmental representative is not present to provide environmental oversight.

Specific tasks to be performed by the Contractor will include excavating soil per the project specifications. The Contractor will segregate "contaminated" soil as designated by the Department or their environmental representative, from "clean" soil and place the "contaminated" soil in a designated on-site staging area constructed by the Contractor. At a minimum the staging area needs to be lined with 8-mil plastic and a berm constructed to minimize storm water run-off. The "contaminated" soil will need to be covered by the Contractor at the end of each work day. The Contractor will be responsible for loading contaminated soil onto trucks arranged by the Department's environmental representative on the days the contaminated soil is shipped off-site to a licensed disposal/treatment facility. The Contractor will backfill and compact the

excavated area(s) according to the project specifications and payment will be made under that item of the Contract.

Department's Responsibilities:

The Department is responsible for providing and paying; the environmental representative; the transportation of contaminated material for disposal; and the disposal of contaminated material.

The Department's environmental representative shall be responsible for developing and submitting a "Contaminated Material and Water Removal Work Plan" to the Department so it is included in the project specifications prior to going out for bid. The work plan will identify; the procedures to be used to excavate and stage the contaminated material; the licensed treatment/disposal facility where the Department will ship the contaminated material; the method the material will be transported to the treatment/disposal facility; and any additional health and safety requirements for site personnel.

The Department's environmental representative will conduct a health and safety briefing prior to commencement of activities on the sites to insure an understanding of all applicable standards, guidelines, laws, procedures, etc. consistent with the successful completion of this type of activity. The Department's environmental representative will conduct air monitoring during any excavation activities at the site to identify and mitigate fire, explosion and vapor hazards.

The Department's environmental representative shall coordinate the excavation activities with all applicable local, state, and federal environmental regulatory agencies. The Department's environmental representative will also oversee the excavation, removal and treatment/disposal of the material in the designated area(s) and perform such tests as field screening for soil contamination utilizing vapor monitoring techniques and collect soil samples for laboratory analysis to meet the requirements of the treatment/disposal facility, DNREC and/or the USEPA. The Department's environmental representative's personnel will subcontract with the disposal/treatment facility to provide transportation and disposal/treatment of all contaminated materials to be removed as part of the project. The Department's environmental representative is responsible for measuring the quantity of contaminated material removed, via certified scale weights, for the Department's records.

Method of Measurement:

The quantity of contaminated material will not be measured. It will be included in the excavation quantity.

Basis of Payment:

No additional payment will be made for the handling of contaminated material included in the excavation quantities. Contractor's costs for handling contaminated material as described herein are to be included in the standard excavation pay items included in this contract, and will constitute full compensation for excavation, constructing and maintaining the segregated soil staging area, placement of the contaminated soil in the staging area, providing plastic and daily covering of the segregated soil staging area, and loading of contaminated soil for removal by the Department.

This item is a contingency item and the Department reserves the right to delete from the Contract. The Contractor shall make no claims for additional compensation because of deletion of the item.

11/19/2012

207501 - SHEETING AND SHORING

Description:

This work consists of furnishing all materials, designing and constructing sheeting and shoring in accordance with the notes on the Plans, this Special Provision and as directed by the Engineer.

Materials:

The type of sheeting and shoring to be constructed shall be selected by the Contractor, however, the design and construction shall be in accordance with the applicable requirements of Section 207 of the Standard Specifications.

Construction Methods:

The Contractor shall submit to the Department for approval, the sheeting and shoring design calculations, detailed layout, working drawings and construction methods, at least thirty (30) calendar days prior to initiating its construction. The entire submission shall be signed and sealed by a Professional Engineer registered in the State of Delaware prior to submitting to the Department.

Method of Measurement:

The quantity of sheeting and shoring will not be measured.

Basis of Payment:

The quantity of sheeting and shoring will be paid for at the Contract lump sum. Price and payment will constitute full compensation for furnishing and placing all materials, for design, submission of signed and sealed drawings, installation and removal of sheeting and shoring materials, any excavation in excess of that required for the structure as defined under Subsection 207 of the Standard Specifications, bailing, pumping and draining, for all labor, equipment, tools and incidentals required to complete the work.

10/29/02

211503 - DEMOLITION OF BUILDINGS

Description:

This work consists of the demolition and removal of the structures as specifically specified on the Plans, described herein, and as directed by the Engineer.

The demolition and/or removal of the building and structure shall consist of complete demolition and/or removal of the building including removal of equipment and fixtures, foundation walls, footings, concrete floors (including basements) porches, steps, sheds, garages, barns and other out buildings, concrete masonry and timber structures, fences (belonging to this property, unless otherwise noted) and other structures directed to be demolished; also, disconnecting and terminating utility service facilities; and refilling basements, septic tanks, cesspools and similar cavities with approved material as noted hereinafter; temporary barricading of open basements where necessary for protection of the public; the removal and disposal of materials, shrubbery and debris; final cleaning up of the site and other incidental work.

All buildings and structures to be demolished will be open for inspection, and may be seen by appointment at any time convenient to the Real Estate Section prior to the time limit for receipt of bids.

It is the responsibility of the Contractor to examine the Right-of-Way Agreements on file available for the project at the District Office, and ascertain the conditions outlined therein.

General Requirements and Construction Methods:

Time and Manner of Performance: Bidders are advised to ascertain from the Real Estate Section of the availability and vacation of buildings which are to be demolished or removed under the Contract, of the possible vacation or removal or demolition of building on the site of the Contract by other parties, and the provisions of agreements between the State and Property Owners that may relate to the bid or to the work to be performed. The Contractor shall also confer with the Real Estate Section on the above-mentioned matters immediately after award of the Contract and at such other times thereafter as may be necessary or advisable. The Contractor shall be governed by the provisions of the above mentioned Right-of-Way Agreements.

The Contractor shall not begin the work of demolition of any building until the Engineer has declared in writing that the building is available for demolition.

Damages to Existing Roadways, Sidewalks and Curbs: All damages to existing roadway, sidewalk and curb areas caused by demolition work shall be replaced or repaired by the Contractor to the satisfaction of the Engineer at the Contractor's expense.

Laws and Permits: The Contractor shall comply with all Federal, State and local ordinances, regulations and laws and secure the necessary permits for prosecuting the work of this item.

Certificates: Required certificates, if any, of satisfactory performance of the demolition work signed by local Building Inspectors must be presented to the Department of Transportation before final payment will be made.

Rodent Control: Prior to commencing demolitions, the Contractor shall present to the project District Office of the Department of Transportation a certificate, certifying that the buildings have been properly exterminated of rodents and other household pests.

Families in Vicinity: The Contractor shall note that the work described herein is also intended to assure that demolition work will be scheduled, undertaken and completed, in a manner which will maintain to the maximum extent possible existing levels of public convenience services, and health and safety conditions, for the individuals or families in the immediate vicinity, including those whose homes and businesses are in the process of acquisition as a part of the highway project.

Permits: A demolition permit will be required. Please note that a demolition permit and building permit are required for moving a building.

Construction Methods:

Trees and shrubbery may be removed as necessary to remove the structure. Any small shrubbery bordering the structure shall be removed. Where party walls are involved the Contractor shall take particular precautions to insure that the work will be executed under accepted standard practices and procedures; and that Article 12, "Protection of Work and Property of A.I.A., General Conditions of Contract", shall be adhered to. The remaining adjoining wall of properties shall be made secure and safe by the installation of proper footings. All party walls must be braced during demolition as required and as directed in order to maintain structural stability and safety.

Party walls that become exposed are to be furred, wire lathed, and plastered for water protection including basement walls as required.

Roof lines shall be carefully repaired with proper cornices and painting of exposed woodwork due to the demolition.

Also, additional supplement to the foregoing requirements concerning protection of party walls during demolition, the BOAC Basic Code, Section 13, and Article 13, "Precautions During Building Operations", of the Building Code of New Castle County (when job is located in New Castle County; for the Contract in Kent and Sussex Counties, the Contractor shall contact the proper County officials for such regulations), shall be adhered to.

All utilities must be notified in writing. A demolition permit will not be issued until all utilities have given written confirmation of disconnection and/or capping.

Building's which are required to be demolished or removed under the Contract, shall be torn down or moved to a new location outside the right-of-way of the project. No new location shall be used if the Contractor is notified by the State during the permit process that the location is proposed or contemplated for acquisition by the State. In lieu of demolition, the buildings may be used for the purpose of fire training by a local fire department in strict accordance with County Ordinances and the regulations and limitations established by DNREC and the State Fire Marshall's office. If this option is desired by the Contractor, he/she shall be required to submit a Value Engineering Proposal to the Department for approval. The Contractor will also be responsible for all damages from such burning to adjacent properties, utilities and roadways.

It shall be the responsibility of bidders to ascertain, by their own inspection and investigation, the sizes and condition of buildings, their types of construction, data concerning equipment and fixtures in, or a part of the building, whether or not such information be shown or given in the Plans, specifications, or other Contract documents, and to make such other investigations that may be necessary for a complete understanding of the work to be performed. Bids shall be based on the bidders' own findings.

The Department of Transportation does not guarantee that the condition and contents of buildings will be the same at the time of starting work, as they were when bidders inspected the site or prepared their bids; neither does the Department of Transportation assume any responsibility for destruction or loss due to fire, theft, or vandalism that may occur prior to the time that the Contractor takes possession of the buildings for demolition. The Contractor shall accept buildings in the condition prevailing at the time they are made available to him/her for demolition.

All building materials, fixtures and equipment in, attached or belonging to, the buildings at the time they are declared available for demolition shall become the property of the Contractor unless otherwise providing in the Right-of-Way Agreement with the owners.

Prior to and throughout the demolition process, the Contractor shall visibly inspect premises and structures for asbestos containing materials. If at anytime during the demolition process the Contractor suspects or finds asbestos containing materials, he/she shall stop operations on the site where the suspect material is found and immediately notify the Engineer. The Contractor is responsible for all materials (including asbestos) hauled from the site, and all costs associated with the disposal of materials.

Materials and debris shall not be placed or stored within the limits of any existing street. The parking, loading and operation of trucks on existing highways or streets shall be governed by existing laws, ordinances and regulations and by the pertinent provisions of Section 107.07 of the Standard Specifications.

Basements of buildings demolished or removed by the Contractor, septic tanks, cesspools (including field drains or tile field) and similar cavities shall be cleared of unsuitable materials by a licensed septic hauler and disposed of in accordance with state laws . Copies of hauling bills will be supplied to DelDOT. All such cavities after inspected by DELDOT shall be backfilled with material conforming to Borrow Type C of subsections 209.02 and 209.04, placed and compacted to a density of not less than 95 percent as specified in subsection 202.05, and graded to drain at surrounding grade levels. The furnishing of backfill shall be included in the lump sum price for the Contract or on construction Contracts shall be incidental to this item.

All depressed curb sections of driveway entrances are to be replaced with curb of the type consistent with the curb adjacent to it unless otherwise directed. Behind the curb shall be backfilled and the area graded to drain.

If the Contract requires the abandonment of wells as noted on the Plans, the wells shall be abandoned in accordance with the procedures set forth in the DNREC's Regulations Governing the Construction of Water Wells dated January 20, 1987. All wells to be abandoned shall be sealed only by a licensed well Contractor, well driller, or well driver. The Contractor or Contractor Team must be licensed by DNREC to perform this work. Copies of the above referenced material can be obtained from the Water Supply Section of DNREC's Division of Water Resources.

The Contractor shall adhere to Section 9 of DNREC's Regulations Governing the Construction of Water Wells regarding the abandonment of the monitoring wells and other wells as noted on the Plans. Within thirty (30) days of abandonment of the wells, the Contractor must submit to DNREC, a Well Abandonment Report signed by the licensed Contractor/driller/driver in charge of on-site supervision of the well abandonments. The report form can be obtained from the Water Supply Branch of DNREC's Division of Water Resources. A copy of the completed report shall be provided to the Department's inspector at the time of submission to DNREC.

To supply security to the site during the performance of this Agreement/Contract the Contractor shall as soon as possible after award post "No Trespassing" signs on all sides of the site. Wherever necessary for protection of the public or where required by State or local laws, regulations or ordinances, the Contractor shall construct and maintain substantial temporary barricades or fences closing off open cellars. At no time shall there be any void left uncovered and not posted.

Prior to the demolition of any buildings, the Contractor shall provide for the disconnection and removal from the building to the R/W of all water, sewer, gas, electric, telephone service facilities and other buried or overhead cables. All removals shall be done in accordance with the requirements of municipalities and utility companies owning or controlling them. The Contractor shall notify the municipalities and utility companies of the time any such disconnections may need to be made, and he/she shall perform the work according to their standard practices and requirements and under their supervision, or arrange for its performance by their forces. The cost
of any and all such utility work including charges, if any, made to the municipalities and utility companies, shall be borne by the Contractor and shall be included in the price bid for the item "Demolition of Buildings".

Prior to acceptance of the Contract, small shrubbery in the way of mowing,all materials and debris accumulated from demolition of buildings and from other work in connection therewith, shall be removed from the site and shall be disposed of by the Contractor. The ground surface shall be graded, if necessary, to eliminate water pockets, then the area shall be covered with 6" (150 mm) of topsoil and seeded in accordance with Sections 732, 734 and 735. The site of each demolished building shall then be cleaned up and left in a condition satisfactory to the Engineer.

Breakdown of Lump Sum Price and Right of Department to Delete Demolition of One or More Buildings:

The attention of bidders is directed to the fact that in the Proposal, a lump sum bid for Demolition of Buildings will be made for all Buildings to be demolished. However, each bidder will be required to show an analysis of the lump sum price bid for Demolition of Buildings by listing the price of each individual building on a separate sheet to be attached to and submitted with the Proposal form.

The Department of Transportation reserves the right to delete from the Contract the demolition of any of the individual buildings shown on the Plans, and the lump sum price to be paid for Demolition of Buildings will be reduced in accordance with the Contractor's itemized attachment to the Proposal. The Contractor shall make no claims for additional compensation because of deletion of any of the individual buildings from this

Contract and the corresponding reduction in the Lump Sum Price Payment.

Method of Measurement:

The quantity of building demolition will not be measured.

Basis of Payment:

The quantity of building demolition will be paid for at the Contract lump sum. Price and payment shall be full compensation for the cost of furnishing all materials, and for all labor, equipment, tools, permits, certificates, and incidentals necessary to complete the work of this item as specified, including any excavation, Type "C" Borrow, backfilling and compaction, topsoil and grading required. The item shall include the cost of abandoning the wells, if such condition exists in the Contract.

The price bid for this item shall also include the removal of sidewalks, drives, patios, trailer parking pads, replacement of curb and other miscellaneous items as required and/or as directed. At the option of the Engineer, each separate work area will be accepted when completed as the entire work progresses.

The lump sum price bid for the item shall be reduced based on the analysis of the lump sum price for individual buildings submitted by the Contractor, in the event one or more of the buildings designated for demolition is/are deleted from the Contract.

12/14/01

265500 - STREAM DIVERSION

Description:

The Contractor shall be responsible for maintaining the stream flow within the Contract limits of the project at all times for the duration of the Contract. Diversion of the stream flow is intended to minimize erosion and sediment transport and permit construction under dry site conditions. The devices and methods used for diversion and maintenance of the stream flow shall be in accordance with those described in these Special Provisions together with the notes and details shown on the Plans and as directed by the Engineer.

In order to minimize permit modification requests, the design shown in the Plans was based on the most conservative stream diversion approach (i.e., the largest footprint needed to complete this work) anticipated at the time of bid. The Contractor should therefore make every effort to implement the intended design within the limits shown on the Plans without any increased impacts to the stream or wetland as depicted on the Environmental Compliance sheet(s).

If the Contractor elects to develop a stream diversion different from the one in the Plans, alternative plans to maintain stream flow during construction shall be prepared and submitted in accordance with Section 110.06 of the Standard Specifications. Any such alternate plans shall provide sufficient detail to demonstrate the adequacy of the materials, methods, and equipment in providing stream diversion and erosion and sediment control, to the satisfaction of Engineer. The plan shall include an itemized list of all materials and equipment that will be used in the stream diversion operation.

The alternate plan shall include scaled drawings of the proposal overlaid on the Environmental Compliance sheet(s) in the Plans and a table of any increased temporary impacts to wetlands and open waters. The plan shall be signed and sealed by a Professional Engineer licensed to practice in the State of Delaware.

If the Contractor finds that additional stream and/or wetland impacts are necessary, the Contractor shall submit a preliminary layout of the impacts to the Engineer and obtain written permission to proceed forward with a final design submittal. The Contractor shall submit three (3) copies of the final alternative stream diversion plan, supporting computations, maps, tables, etc. to the Engineer. The Engineer will forward the Contractor's alternative plan to the Department's Environmental Studies Office and the Department's Stormwater Engineer.

The Department's Environmental Studies Office will make application for permit modifications through the appropriate permitting authorities. It shall be the Contractor's responsibility to provide all necessary supporting paperwork required for the submission of the modification request to the appropriate permitting agency. The Environmental Studies Office will advise the Engineer of any missing or additional information needed to process the permit modification.

In preparing the proposed alternative stream diversion plan, it is the Contractor's responsibility to comply with all applicable hydrologic and hydraulic engineering standards in effect regarding capacity of the system and potential surface water impacts upstream and downstream of the stream diversion. The Contractor shall adhere to all requirements in the Delaware Erosion & Sediment Control Handbook, latest edition. The Contractor's proposed alternative stream diversion plan shall be reviewed and approved by the Department's Stormwater Engineer prior to installation or initiation of work on the stream diversion system.

The Department does not warrant or guarantee the approval of any Contractor's proposed alternative stream diversion plan by any permitting authority including the Department's Stormwater Engineer. Denial of the Contractor's alternate plan, long review times, or multiple submissions to any or all permitting authorities to gain approval shall not relieve the Contractor from its obligation to complete the project within the timeframes established in the Contract. The contractor should anticipate a two-month turnaround time between contractor submission and permitting agency approval of the permit modification(s). No additional time or payment shall be made for delays resulting from the Contractor failing to allow for proper turnaround time for permit modification approval.

Dewatering of the work area shall be accomplished in accordance with Sections 110 & 111 of the Standard Specifications. The Contractor shall acquire any dewatering or well permits needed to complete the work and provide a copy of the permit to the Engineer prior to the initiation of any pumping of groundwater.

Materials and Construction Methods:

The Contractor shall install and test the approved stream diversion system to demonstrate its effectiveness to the satisfaction of the Engineer prior to any disturbance of the existing structure. This shall also include proper erosion and sediment control in accordance with the plans and all laws, regulations, policies, guidelines, and permits. Any deficiencies found by the Engineer shall be corrected by the Contractor at no additional cost to the Department.

All Material and Construction requirements for components used in the stream diversion system such as sand bags, geotextiles, steel sheet piles, stone, etc. which are otherwise described in the Standard Specifications are incorporated herein by reference and shall conform to the requirements in the appropriate Section of the Standard Specifications.

Method of Measurement:

The quantity of Stream Diversion will not be measured.

Basis of Payment:

The quantity of stream diversion will be paid for at the Contract lump sum price. Price and payment will constitute 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 shall remain the property of the Contractor after removal. Payment shall also include 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.

Payment for dewatering of the work area shall be in accordance with Sections 111 & 207 of the standard specifications.

7/26/2010

272500 - SKIMMER DEWATERING DEVICE

Description:

The work consists of furnishing all materials, constructing, installing and maintaining skimmer dewatering device(s) in accordance with notes and details on the Plans, the Standard Construction Details, these specifications and as directed by the Engineer.

Materials and Construction Methods:

Materials and construction methods shall be as specified in the Standard Construction Details.

The skimmer dewatering device(s) shall be maintained in proper operational condition while required on the project.

At the completion of the project, or when directed by the Engineer, the Contractor shall remove the skimmer dewatering device(s) from the project site.

Method of Measurement:

The quantity of skimmer dewatering devices will be measured as the actual number of devices constructed, installed and accepted.

Basis of Payment:

The quantity of skimmer dewatering devices will be paid for at the Contract unit price per each for skimmer dewatering devices. Price and payment will constitute full compensation for furnishing all materials; for constructing, installing, maintaining, and removing the devices; and for all labor, tools, equipment and incidentals required to complete the work.

12/14/01

272502 - ENERGY DISSIPATOR

Description:

This work consists of constructing a baffle - wall energy dissipator to the size and dimensions as shown on the Plans and these specifications. The baffle - wall energy dissipator shall be constructed at the locations, lines and grades as indicated on the Plans.

Materials and Construction Method:

The baffle - wall energy dissipator shall conform to the applicable requirements of the following sections of the Standard Specifications:

Section No.	Description
207	Excavation and Backfill for Structures
209	Borrow Type "C"
210	Furnishing Borrow Type "B" and Type "C" for Pipe, Utility, Trench, and Structure Backfill
602	P.C.C Masonry
604	Bar Reinforcement, Epoxy Coated

Method of Measurement:

The quantity of energy dissipator will be measured as the number of baffle - wall type energy dissipator constructed and accepted.

Basis of Payment:

The quantity of energy dissipators will be paid for at the Contract price per each. Price and payment will constitute full compensation for all sheeting, excavation, backfill, compaction, form work, concrete reinforcement, and material, labor, equipment, tools and all other incidental required to complete the work.

1/29/02

302514 – MILLED HOT-MIX BASE COURSE

Description:

It is the intent of this Special Provision to qualify the use of milled hot-mix asphalt pavement material in lieu of graded aggregate as a base course. All requirements of Section 302 shall remain in effect except as modified below:

Materials:

The material used to construct milled hot-mix asphalt pavement base courses shall be uniformly graded with a maximum size of 1 1/2 (38 mm).

Subgrade Preparation:

The subgrade shall be properly constructed in accordance with Subsection 202.06. No base course material shall be placed until the subgrade has been approved by the Engineer.

Placement:

a. *Equipment.* The milled material shall be spread uniformly by an approved spreading machine or box in such a manner that no segregation occurs. A conventional motor grader will not be approved for placement of milled material on mainline roadway sections.

   Where it is not possible to use a spreading machine or box in patching or other tight areas, other approved methods can be used only in such manner that no segregation occurs. Compaction shall be uniformly attained by approved rollers or compactors. No milled materials shall be placed until approved equipment is on the Project site and is operational.

b. *Spreading and Compacting.* Milled material shall be placed in successive layers. Each layer shall be placed in a level, uniform cross-section not to exceed 12 (300 mm) in depth, loose measurement, unless otherwise approved by the Engineer. The milled material shall be deposited and spread parallel to the centerline and the layer shall extend to the full width as shown on the Plans. The milled material shall be handled so that no segregation of fine or coarse particles occurs. No more than 1,000 (300 m) of material, as measured along the roadway centerline, shall be spread in advance of compaction operations. Each layer shall be properly compacted as specified, before starting the next layer.

   Compaction or rolling shall be performed parallel to the roadway centerline starting at the edges and progressing toward the center. It shall continue until each layer is thoroughly and uniformly compacted to the full width as shown on the Plans.

   The milled material shall be compacted by the following method: a sheepsfoot roller (minimal 50 ton static roller) shall make the required number of passes on the base material to achieve the target density followed by a back-drag by either a bulldozer or a motor grader. After the pavement base material has been placed, a 15 ton/1800 vpm (minimum) vibratory steel wheel roller shall compact the base material. Compaction will be measured per subsection *Performance* below. In small areas where the above noted equipment cannot be used, the contractor must request approval from the Department to place the millings with other equipment. The Department reserves the right to reject or approve the areas for placement of millings as determined by the Engineer.

   After compaction, all voids in the surface of each layer will be filled with millings and compacted (with the vibratory steel wheel roller) until the layer of base material is well bonded and firm, as determined by the Engineer.

   In no case shall vehicles be allowed to travel in a single track or to form ruts in the base course. If any sharp irregularities are formed int he subgrade or base course material, the affected area shall be scarified to a depth of 6 (150 mm) and compacted to conform to the requirements of Section 202 or this Section.

c. *Performance.* Compaction of milled hot-mix asphalt pavement base courses will be monitored by

measuring the in-place density using a nuclear density gauge and comparing it to a control strip target density. The mean base compaction shall be at least 98% of the control strip target density and sufficiently uniform that individual test results are at least 96% of the control strip target density, the base course represented by the test will be considered defective and the Contractor shall further compact the area. After further compaction, the original test site and one other randomly selected site within the area will be tested. The average of two test results will be included in the mean density for that day's placement.

To determine the control strip target density, a control strip with a minimum length of 300 (90 m) shall be constructed at the beginning of work on each pavement base. Each control strip is to remain in place and become a section of the completed roadway. A control strip shall have an area of at least 400 yd² (325 m²). For small areas, the Contractor may request to have a test strip waived. This request shall be submitted to the Engineer for review.

Upon completion of the rolling, the mean density of the control strip will be determined by averaging the results of ten nuclear density tests taken at randomly selected sites within the control strip. The mean density of the control strip shall be the target density for the remainder of the pavement base course which it represents. Compaction shall be expressed as a percentage of the target density.

The finished surface of the graded aggregate base course shall not vary from that required on the Plans by more than 1/2 (13 mm) when tested with a 10 (3.048 m) straightedge applied to the surface parallel to the centerline of the pavement and when tested with a template cut to the cross-section of the pavement. The actual thickness of the graded aggregate base course shall not be more than 1/2 (13 mm) less than the thickness shown on Plans. Those portions of completed base course not meeting these performance requirements shall be completely removed and replaced with proper material placed in accordance with this Section.

A straightedge meeting the approval of the Engineer shall be supplied by the Contractor at each placement operation. The straightedge shall be constructed of rigid materials that resist warping and bending.

Method of Measurement:

The quantity of milled hot-mix base course will be measured by the cubic yard (cubic meter) and will be paid for under Item 302007 - Graded Aggregate Base Course. The volume of cubic yards (cubic meters) will be measured as the number of square yards (square meters) of surface area of milled hot-mix base course, placed and accepted, multiplied by the depths shown on the Plans. If the depth of milled hot-mix base course, placed and accepted, is greater than the depth shown on the Plans, the Plan depth will be used to measure the quantity of payment.

If the limits of measurement for pay quantities for milled hot-mix base course are designated on the Plans, the quantity of milled hot-mix base course measured for payment will be the number of square yards (square meters) of surface area multiplied by the depth placed within the payment lines and grades shown on the Plans. If the limits are not designated on the Plans, or have been changed by the Engineer, in-place dimensions of the accepted milled hot-mix base course will be established. The computation of quantity will be made from cross-sections taken after the completion of work under this Section.

Materials placed beyond the designated lines and grades as shown on the Plans or beyond the limits established by the Engineer will not be measured for payment.

There will be no separate payment made for filling voids with millings as required under Placement subsection (b) *Spreading and Compaction*.

Basis of Payment:

Millings used for Base Course will be paid at the unit bid price for Item 302007 - Graded Aggregate Base Course, Type B. All costs to bring the millings into compliance with the requirements of 302514 are incidental to Item 302007. No payment will be made under this item 302514.
Price and payment will constitute full compensation for hauling, stockpiling (includes any double handling of material), preparing the subgrade, placing and compacting the materials, and for all labor, equipment, tools and incidental required to complete the work.

No additional compensation will be made to the Contractor to crush, screen or otherwise modify the milled hot-mix base course to meet the necessary gradation.

No payment will be made for materials placed beyond the designated lines and grades as shown on the Plans or beyond the limits established by the Engineer.

10/31/05

401580 – RIDE QUALITY OF HOT-MIX PAVEMENT

Description:

The purpose of this Special Provision is to modify Standard Specification Section 401.13 to change the method of determining an acceptable riding surface. This Special Provision replaces the entire existing wording in Section 401.13.

The Contractor shall be responsible for providing smoothness characteristics that will meet the requirements of the Contract. The Contractor shall be responsible for providing equipment, maintenance of traffic (MOT) as required by the Delaware MUTCD, and performing testing in accordance to the processes and procedures set forth in this Special Provision. All costs for testing and MOT shall be incidental to this item. Both the International Roughness Index (IRI) and deviations located within a 10' straightedge are used to characterize smoothness in this Special Provision.

Definitions:

Class 1 Project - a project that is full depth construction based on contract documents and document modifications.

Class 2 Project - a project in which a minimum of two smoothness opportunities are performed based on contract documents and document modifications.

Class 3 Project - a project that only one smoothness opportunity is performed based on contract documents and document modifications.

Deviation – a hump or depression found to exceed the tolerances defined in this Special Provision within a 10' straightedge.

ERD File – a file storing numbers in tabular form for plotting and processing purposes. The ERD file format was developed by the Engineering Research Division of the University of Michigan Transportation Institute (UMTRI).

Full Depth Construction – a project that consists of a hot mix asphalt wearing surface placed on a hot-mix asphalt base / binder course or Portland cement concrete, on an aggregate or asphalt / cement stabilized base structure on existing or prepared subgrade materials or borrow.

Inertial Profiler – a high speed or lightweight device used to measure the pavement profile with an accelerometer to form an inertial reference and a height sensor to measure pavement height relative to that reference.

International Roughness Index (IRI) – a statistic, based on computations from a measured longitudinal profile using a quarter-car simulation, calculated to represent the amount of roughness in a pavement surface.

Rolling Ten Foot Straightedge - a rigid 10' straightedge mounted to measurement wheels and used to indicate both high and low deviations.

Smoothness Opportunity – a smoothness opportunity is roadway milling, placement of a leveling course, in place recycling, or placement of a lift of Hot Mix Asphalt. Full depth reclamation is not considered in this Special Provision as a smoothness opportunity. The final wearing surface is considered one smoothness opportunity.

Equipment:

The Contractor shall have available, at all times during paving operations, an approved 10' straightedge. The Contractor shall also have available a high speed or lightweight inertial profiling system meeting the standards set forth in AASHTO MP-11 that is capable of collecting data in both wheelpaths simultaneously. Data collected using the inertial profiling system shall be used to calculate both IRI and deviation locations using on-board computer software. Deviations, as defined in this Special Provision, shall be calculated using a rolling 10' straight edge simulation program capable of isolating deviations greater than or equal to 0.25"

in 10'. If software is not available to calculate the parameters for a rolling 10' straight edge simulation, the Contractor may be permitted to use, at the Engineer's discretion, a rolling 10' straightedge capable of isolating deviations greater than or equal to 0.25" in 10'.

Documentation Required

Prior to the start of corrective actions (milling, overlaying, recycling, etc.), the Contractor shall provide to the Engineer:
1. Manufacturer, Make, and Model of the test system,
2. Equipment Owner,
3. Relevant Certifications,
4. Manufacturer Calibration Procedures, and
5. Relevant Operator Training information.

Testing cannot take place until the Engineer has received this information and provided approval of the proposed test equipment and MOT plan.

Calibration

Prior to testing, the Contractor shall verify that the inertial profiling equipment is calibrated by following the manufacturer's calibration procedure in the presence of the Engineer. Vertical and longitudinal calibrations shall be performed. The Engineer will provide calibration blocks for the Contractor's use at the time of calibration. If the equipment does not pass the calibration procedure, it will not be permitted for use.

Testing:

Testing of the pavement surface includes measurement and calculation of the IRI parameters and deviations in the longitudinal direction. The Contractor shall notify the Engineer at least three (3) working days prior to data collection for both initial and final testing.

Transverse Deviations / Cross Slope

After final rolling and at the Engineer's discretion, the Contractor shall test the surface of each lift and the final wearing surface for deviations in the transverse direction. The Contractor shall have available at all times, and use appropriately, an approved 10' straightedge to be placed perpendicular to the centerline for checking cross slope. Deviations in the transverse direction shall not equal or exceed 0.25". The discount charge for deviations in the transverse direction is described in Section 'Acceptance and Payment' of this Special Provision. Deviations in the transverse direction shall require corrective actions or will be assessed a deviation discount charge at the discretion of the Engineer.

General Testing Requirements for IRI Data Collection

Data used for calculation of the IRI shall be measured in each wheel path using an approved inertial profiling system. Data collected for IRI calculation shall have longitudinal spacing no greater than 6 inches. Wavelengths exceeding 300 feet shall be removed using long wavelength filters. The International Roughness Index shall be calculated using this data and reported in 0.1 mile (528 foot) segments. Three (3) passes shall be made in each lane and direction requiring testing. The filename given to the data set shall include the contract number, the location number, the lane tested and direction tested. For example, the Eastbound left lane of Contract XX-XXX-XX, Location 1, run 3 shall be named:

XXXXXXXLoc1LEBr3

Testing shall be performed within seven (7) days of the completion of project paving operations.
Areas not subject to IRI testing for all Classes of projects include:

1. 50 feet before the first bridge deck expansion joint to 50 feet after the last expansion joint if the bridge deck is excluded from the HMA overlay.
2. 20 feet longitudinally from the center of an existing obstruction located and visible in the pavement surface such as a manhole or water main. Obstructions located within the test area shall be noted as an event on report printouts using an automated event marking system and should be removed from

the calculations prior to report submission.
3. Shoulders, short acceleration and deceleration lanes, and turn lanes less than 1000 feet in length, and median crossovers.

Testing shall be performed in accordance to the following procedures.

1. Clean the roadway path to be measured of all debris and other loose material. Ensure that the roadway surface is dry and free of any standing water.
2. Locate the start of the project limits and mark them to enable automatic start sensors to be activated.
3. Locate the end of the project limits and mark them to enable automatic stop sensors to be activated.
4. Locate any obstructions in the wheelpath / test area and mark them with reflective tape to enable automatic event marking.
5. Establish a pre-test length (150' or the manufacturer's recommended pre-test length, whichever is greater) prior to the start of the project limits.
6. Position the left wheelpath sensor three feet (3') from the left edge marking of each lane tested.
7. Attain a test speed that is within the manufacturers recommendations for the equipment and maintain that test speed throughout the test.

Provide the Department the plot of one profile trace per tested lane and a summary report containing IRI values for each of the three test runs performed in each direction.

Initial Testing, IRI

The original surface for Class 3 projects shall be tested at no cost to the Department prior to performance of any smoothness opportunities in accordance to the methods and parameters in Section 'General Testing Requirements for IRI Data Collection'. Class 1 and Class 2 projects do not require initial testing. Results from initial testing for Class 3 projects shall be submitted to the Engineer within five (5) working days of test completion in the format specified by the Engineer. Results not received within the allotted time frame will be assessed a charge of $1,000.00 per day at the Engineer's discretion. Three (3) measurements shall be taken for each lane required to meet this Special Provision. No paving shall be permitted until the Contractor has performed initial testing to the satisfaction of the Engineer.

Final Testing

The final surface, after all smoothness operations have been completed, shall be tested in accordance to Section 'General Testing Requirements for IRI Data Collection'. Results of final testing for all projects shall be submitted to the Engineer within five (5) working days of test completion in the format specified by the Engineer. Results not received within the allotted time frame will be assessed a charge of $1,000.00 per day at the Engineer's discretion. Three measurements shall be taken for each lane to meet the requirements of this Special Provision.

Final Testing for Excessive Deviations

All paved areas, whether subject to IRI testing or not, must be tested to locate deviations in each wheelpath in the longitudinal direction and in the transverse direction. A deviation is considered to be a hump or depression greater than or equal to 0.25" within 10'. Longitudinal deviations shall be located using data collected by an inertial profiling system and processed through a rolling 10'- straightedge simulation, a rolling 10' straightedge, or a rigid 10' straightedge. Transverse deviations shall be located using a rigid 10' straightedge at the discretion of the Engineer. Testing shall be performed within seven (7) days of the completion of paving.

Quality Assurance Testing:

If the Engineer chooses to perform comparison testing, the Contractor shall provide a lane closure at no cost to the Engineer. The length of the lane closure shall be determined for each project location based on site conditions. The minimum closure shall be 0.25 mile and the maximum closure shall be 1 mile. The lane closure shall be at either end of the project limits and will be determined on a project basis at the Engineer's discretion.

If comparison testing indicates a difference greater than 6 in/mi in IRI measurements per 0.1-mile section, the Contractor and Engineer shall work to resolve the differences. If the differences cannot be resolved the

equipment will be rejected for use on the project and all data collected to that point will be deemed invalid for that contract. At that point, the Contractor shall propose an alternative piece of testing equipment for use.

Data Reporting:

Test results shall be provided to the Department within five (5) working days of the completion of testing. Results not received within the allotted time frame will be assessed a charge of $1,000.00 per day at the discretion of the Engineer.

The Department recognizes that inertial profiler manufacturers use different formats for reporting capabilities. Printouts on 8 ½" by 11" paper or strip charts are acceptable.

Data collected using the inertial profiling system shall be provided to the Engineer with the following information clearly displayed on the printout:

1. Profiling Company Name
2. Date of Paving
3. Date of Test
4. Parameters used in the calculation
5. Data file name
6. Testing Personnel

A printout of the pavement profile is required for one (1) of the three (3) runs for each lane and direction tested. A summary chart may be submitted for the remaining test runs. If excessive deviations are calculated using inertial profiling data runs submitted for IRI analysis a summary chart shall be submitted as well. The summary chart shall include the station and wheelpath for deviation reporting. If excessive deviations are manually determined (using a rolling ten-foot straightedge or rigid 10' straightedge), the Engineer will be present during testing and will record the data on site.

Inertial profiling systems have the capability of producing ERD files. An ERD file is requested for each run performed and can be submitted electronically (via email) or on external media (CD). More information about the format of ERD files can be obtained through the Engineer.

Acceptance and Payment:

Acceptance of the final pavement will be based on the results of IRI values and the number of deviations. A section that has an IRI value greater than 100.0 in/mi will require corrective actions. Deviations equal to or in excess of 0.25" in 10' shall be corrected at no expense to the Engineer or have a discount charge of $200.00 per deviation assessed at the discretion of the Engineer.

An IRI number in inches per mile will be used for each 0.1-mile (528 foot) section as the basis for payment of the surface courses designated by each contract. The average value of the three test runs will be used as the IRI value for payment. Payments for each section will be based on estimated tonnage calculated from plan thickness and widths using the average maximum specific gravity ("Rice") value for all surface mix used at that location. If the plan does not indicate the travel lane width, a default value of 12' will be used. The formula used for tonnage estimation is:

$$\text{Estimated Tonnage} = [(L * W * T) * \text{Rice} * 62.4\ (\text{lb/ft}^3) * (0.0005\ \text{tons}/12\ \text{in})]$$

where: L = Length Segment (ft.)
W = Width Lane (ft.)
T = Plan Thickness (in.)

The percentage of improvement for Class 3 projects will be calculated using the following equation:

$$\%\ \text{Improvement} = [(\text{Initial IRI} - \text{Final IRI}) / \text{Initial IRI}] * 100$$

The applicable pay adjustments for IRI will be taken from Table A (Class 1 and 2 Projects) and Table B (Class 3 Projects)

$$\text{IRI Bonus / Penalty} = \text{Estimated Tonnage} * UP * (PA - 100) / 100$$

where: UP = Contract Hot Mix Unit Price (Dollars)
PA = Pay Adjustment (Percent)

The total pay adjustment for paving work performed on each location will be:

$$(\sum \text{IRI Adj for each section}) - \text{Total Deviations} * 200$$

It will be possible to receive bonus for IRI measurements and a discount charge for excessive deviations on the same project. If a 528' section has an IRI value resulting in a deduction of at least 30% of the section pay (i.e. IRI >100 in/mi), the deviation discount charge for that section is disregarded and the IRI discount charge is the only action taken for that section.

Table A: Payment Adjustments for Class 1 and Class 2 Projects

	Payment Adjustments	
IRI per 0.1 mile Section (in./mi.)	**Class 1**	**Class 2**
40.0 and under	103	104
40.1 - 55.0	101	102
55.1 – 65.0	100	101
65.1 – 75.0	99	100
75.1 – 100.0	96	97
>100	70	70

Class 3 projects will be paid based on the percent improvement for each 528' section from the average of the three initial profile traces taken prior to any work action as shown in the Table B.

Table B: Payment Adjustments for Class 3 projects

Percent Improvement from Initial test	**Payment Adjustments for Class 3 Projects**
> 60.0%	103
45.1 – 60.0%	102
25.1 – 45.0%	101
0 – 25.0%	100
<0%	70

Corrections to the paving surface, such as diamond grinding with approved equipment, patching, or other measures may be taken at the Contractor's expense and at the Engineer's discretion to correct pavement surfaces assessed a discount charge. Areas corrected using these methods will not be eligible for bonus payment, but may be assessed a charge based on the resulting surface after correction. The Engineer reserves the right to require corrective actions such as remove & replace or diamond grinding if the must correct discount charge exceeds 50% of the cost of materials or the IRI exceeds 100 in/mi. The Engineer may also require corrective actions if the deviations are at a height or depth which will create a safety concern on the roadway.

3/9/09

401699 - QUALITY CONTROL/QUALITY ASSURANCE OF BITUMINOUS CONCRETE

.01 Description.

This item shall govern the Quality Control/Quality Assurance Testing for supplying hot-mix asphalt plant materials and constructing hot-mix asphalt pavements.

The Contractor shall be responsible for providing the quality level of materials and construction incorporated into the Contract that will meet the requirements of the Contract. The Contractor shall perform all necessary quality control inspection, sampling, and testing. The Engineer will evaluate all materials and construction for acceptance. The procedures for Quality Control and Acceptance are described in this Section.

.02 Definitions.

Acceptable Quality Level (AQL): That level of percent within limits (PWL) to which the Engineer will consider the work completely acceptable.
Acceptance Plan: Factors that comprise the Engineer's determination of the degree of compliance with contract requirements and value of the product. These factors include the Engineer's sampling, testing, and inspection.
Delaware Asphalt Pavement Association (DAPA): The organization representing the interests of hot-mix asphalt producers and Contractors. The Engineer has a copy of the DAPA officers' names and point(s) of contact.
Dispute Resolution: The procedure used to resolve conflicts resulting from discrepancies between the Engineer's and the Contractor's results of sufficient magnitude to impact payment. The testing will take place at a location and time mutually agreeable by both the Engineer and the Contractor.
Full Depth Construction – Construction of an adequate pavement box on a subgrade and subbase prepared by the contractor
Independent Assurance: An unbiased and independent verification of the Quality Assurance system used, and the reliability of the test results obtained in regular sampling and testing activities. The results of Independent Assurance are not to be directly used as a basis of material acceptance.
Job Mix Formula (JMF)/Mixture Identification (ID): The target values for individual aggregate size gradation percentages and the asphalt percentage, the sources of each of the component materials, the proposed proportions of component materials to be used to meet those target values, the asphalt proportion, and the mixing temperature. The Engineer will assign uniquely individual mixture identification for each JMF submitted and approved.
Lower Quality Index (QL): The index reflecting the statistic related to the lower boundary to which a sample (or sample statistic) may deviate from the target value and still be considered acceptable.
Mean: A statistical measure of the central tendency – the average value.
Operational Day: A day in which the Engineer has approved a lane closure for the Contractor to perform work within an approved MOT plan.
Percent Within Limits (PWL): That amount of material or workmanship that has been determined, by statistical method, to be within the pre-established characteristic boundary(ies).
Qualified Laboratory: A laboratory mutually agreed upon by both DAPA and the Engineer as having proper test equipment that has been calibrated in accordance to AASHTO.
Qualified Technician: Personnel mutually agreed upon by both DAPA and the Engineer as having adequate training, experience, and abilities to perform the necessary testing. The minimum qualifications are either a recognized nationally accredited or certified Superpave testing certificate or been working in hot-mix asphalt testing for at least one year.
Quality Assurance (QA): All those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality.
Quality Control (QC): The sum total of the activities performed by the Contractor in order to assure that the product meets contract requirements.
Quality Control (QC) Plan: The detailed description of the type and frequency of inspection, sampling, and testing deemed necessary to measure and control the various properties governed by the Specifications. The QC Plan must address the actions needed to keep the process in control, detect when the process is going out of control, and responses to correct the situation(s).
Quality Level Analysis: A statistical procedure that provides a method for estimating the percentage of each lot or sublot of material, product, item of construction, or completed construction that may be expected to be within specified tolerances.

Standard Deviation: A term used in statistics to indicate the value calculated from the square root of the difference between the individual measurements in a group and their average. Standard deviation is calculated by taking the square root of the sum of the squares of the differences of each of n values and the mean value, this sum first divided by (n-1).
Target Value: The acceptable value for a controlling characteristic of a product. The JMF will establish each of these values for the material.
Test Methods: Shall be AASHTO test methods. Copies of these test methods shall be available at each qualified laboratory.
Upper Quality Index (QU): The index reflecting the statistic related to the upper boundary to which a sample (or sample statistic) may deviate from the target value and still be considered acceptable.
Volumetric Properties: Air voids, voids in mineral aggregates (VMA), voids filled with asphalt (VFA), and dust to effective asphalt.

.03 Equipment.

(a) Material Production Test Equipment.

The Contractor shall establish, maintain, and operate a qualified testing laboratory at the production plant site of sufficient size and layout that will accommodate the testing operations of both the Contractor and the Engineer. The Contractor shall maintain all the equipment used for handling, preparing, and testing materials in proper operating condition. For any laboratory equipment malfunction, the Contractor shall remedy the situation within one working day or the Engineer may reject production. In the case of an equipment malfunction, and while waiting for repairs to equipment, the Engineer may elect to test the material at either another production facility or the Engineer's laboratory to obtain payment factors.

The following shall be the minimum calibrations for the referenced equipment:

- SUPERPAVE^{R} Gyratory Compactor: once every year; verified once every month by the Engineer.
- Ovens: once every three months, verified once every month.
- Vacuum Container and Gauge (Rice Bowls): once every three months, verified once every month.
- Balances and Scales: once every year, verified once every month.
- Thermometers: once a year; verified once every month.
- Gyratory Compactor molds and base plates: once every year
- Mechanical Shakers: once every year
- Sieve Verifications: once every year

All calibrations shall be documented and on file for review by the Engineer at any time.

(b) Pavement Construction Test Equipment.

The Contractor shall furnish and use in-place density gauges, or coring equipment, or both, as necessary to meet the requirements of these Specifications.

.04 Quality Control (QC) Plan.

(a) Material Production QC.

(1) Job Mix Formula – Material Production.

The Contractor shall submit for approval to the Engineer the job mix formula (JMF) design of the component materials and target characteristic values for each mixture proposed for use. Once the JMF is submitted to the Engineer, the Engineer will have up to three weeks to review the submitted information. However, a provision for a more timely approval is available to the Contractor; first, the Contractor shall submit the proper documentation on Pinepave mixture design software for the Engineer's approval. After that approval from the Engineer, the Contractor shall produce the new mixture for a non-Department project. The Engineer will test the material, by taking three series per the specifications. If the Engineer's test results are within the specifications, then the mixture will be approved by the Engineer for Department projects.

The component materials design shall include designating the source and the expected proportion (within 1 percent for the aggregate components, and within 0.1 percent for the other components) of each component to be used in order to produce workable hot-mix asphalt having the specified properties. For plant component

feed adjustments, RAP can be considered in the same manner as an individual aggregate component. The JMF target characteristic values include the mixing temperature range, core temperature range for gyration, the percentage of the asphalt cement component (both total and virgin), and the percentages of the aggregate amounts retained on the sieves to be addressed by the JMF as shown in Table 1.

The Contractor shall provide an ignition oven correction number for each JMF. The Contractor shall also supply to the Engineer weighed material of each JMF so correction numbers can be established for the Engineer's equipment for Dispute Resolution samples.

Prior to starting production of a new mixture, the Contractor shall submit a JMF. For any mixture that has a 20% or greater failure rate on any combined volumetric criteria, the JMF will not be approved for use on Department contracts. In order to be approved, a re-design of the mixture will have to be completed by the Contractor for review and approval by the Engineer. The Contractor shall uniquely title each JMF. The Contractor shall submit test data with each JMF and tests performed by a Qualified Laboratory on representative materials, verifying the adequacy of the design. Refer to the specifications for each mix type in order to determine the design requirements. The JMF sieve percentage values shall conform to the ranges shown in Table 1.

If there is a change in the source of any of the component materials, other than asphalt, if there is a change in the proportions of the aggregate components or the percent passing for each sieve by more than 5 percent from the submitted JMF, or if there is a change in the percentage of the asphalt cement component by 0.2 percent or more, which causes the volumetrics to change from the originally submitted JMF, a new JMF is required. Also, if the asphalt cement target percentage is lowered, all volumetric criteria must still be achieved.

According to the Contractor's QC Plan, the Contractor shall inform the Engineer of any proposed changes to an existing JMF. The Contractor shall notify the Engineer by electronic mail of the proposed changes. The Engineer will reply to the proposed changes within one operational day and notify the Contractor of the effective date of the changes.

Although a new JMF is not required, the Contractor must notify the Engineer of any change in the proportions of the components. This notification shall include the total change made from the approved JMF proportions, and the effective time of the change.

All submitted JMF's shall correspond to the Pinepave mixture design software. The Engineer, for evaluation of the submitted JMF, will use the first three test samples. These test results acquired during production shall be within the following range compared to the submitted JMF on the Pinepave mixture design software: G_{mm}: + / -0.030 and G_{mb}: + / - 0.040

Table 1 - Aggregate Gradation - JMF and Control Point Information

Sieves to be addressed by JMF/Range values are percentages passing by weight

Sieve Size mm (inch)	4.75 mm	4.75mm Range	9.5 mm	9.5mm Range	12.5 mm	12.5mm Range	19.0 mm	19.0mm Range	25.0 mm	25.0mm Range
37.5(1.5)	No		No		No		No		Yes	100
25.0(1.0)	No		No		No		Yes	100	Yes	90-100
19.0 (3/4)	No		No		Yes	100	Yes	90-100	Yes	20-90
12.5(1/2)	Yes	100	Yes	100	Yes	90-100	Yes	23-90	Yes	
9.5 (3/8)	Yes	95-100	Yes	90-100	Yes	28-90	Yes		Yes	
4.75(#4)	Yes	90-100	Yes	32-90	Yes		Yes		Yes	
2.36(#8)	Yes		Yes	32-67	Yes	28-58	Yes	23-49	Yes	19-45
(#16)	Yes	30-60	Yes		Yes		Yes		Yes	
(#30)	Yes		Yes		Yes		Yes		Yes	
(#50)	Yes		Yes		Yes		Yes		Yes	

Table 1 - Aggregate Gradation - JMF and Control Point Information										
Sieves to be addressed by JMF/Range values are percentages passing by weight										
Sieve Size mm (inch)	**4.75 mm**	**4.75mm Range**	**9.5 mm**	**9.5mm Range**	**12.5 mm**	**12.5mm Range**	**19.0 mm**	**19.0mm Range**	**25.0 mm**	**25.0mm Range**
(#100)	Yes		Yes		Yes		Yes		Yes	
.075(#200)	Yes	6-12	Yes	2-10	Yes	2-10	Yes	2-8	Yes	1-7

(2) Process Control – Material Production.

The Contractor shall submit in writing (letter or electronic mail) a QC Plan from each proposed production plant to the Engineer; no hot-mix asphalt material will be accepted until the Engineer approves the QC Plan. This plan must be submitted to the Engineer on an annual basis for review and approval prior to material production. The Engineer will send a signed copy back to the Contractor stating that it is approved. The approved QC Plan shall govern contractor operations.

The following are considered significant violations to the Contractor's QC Plan:

Using testing equipment that is knowingly out of calibration or is not working properly.
Reporting false information such as test data, JMF information, or any info requested by DelDOT
When the Contractor fails to comply to their approved QC Plan in reference to materials testing
Substantial deviations to AASHTO or DelDOT procedures when running tests, sampling stockpiles, or testing hot mix.
The use of any material not listed in the JMF.
The use of the wrong PG graded asphalt.
If samples fall within the Contractors action points in the QC Plan but the Contractor fails to take the corrective action in the approved QC Plan

If a Contractor is found in violation of any of these items, they will receive a written warning for their first violation. If the Contractor is found in violation a second time on any of the criteria, they will forfeit any bonus from that day's production. If the Contractor is found in violation a third time on any of the criteria, they will receive a five percent (5%) deduction for that day's production. If the Contractor is found in violation a fourth time, the plant will not be approved for production until such time that the Contractor addresses the violation of the QC plan to the satisfaction of the Engineer. If the Engineer approves the changes in advance, the Contractor may make changes to the QC Plan. All changes shall be submitted and approved in writing by the Engineer.

The QC Plan shall include actions that will assure all materials and products will conform to the specifications, whether manufactured or processed by the Contractor, or procured from suppliers, subcontractors, or vendors. The Contractor shall perform the inspection and tests required to substantiate product conformance to contract requirements. The Contractor shall document QC inspections and tests, and provide copies to the Engineer when requested. The Contractor shall maintain records of all inspections and tests for at least one year. The records shall include the date, time, and nature of deficiency or deficiencies found; the quantities of material involved until the deficiency was corrected; and the date, time, and nature of corrective actions taken.

In the QC Plan, the Contractor shall detail the type and frequency of inspection, sampling, and testing deemed necessary to measure and control the various properties of material and construction governed by the Specifications. The QC Plan shall include the following elements as a minimum:

Production Plant – make, type, capacity, and location.
Production Plant Calibration – components and schedule; address documentation.
Personnel – include name and telephone number for the following individuals:
- Person responsible for quality control.
- Qualified technician(s) responsible for performing the inspection, sampling, and testing.
- Person who has the authority to make corrective actions on behalf of the Contractor.

Testing Laboratory – state the frequency of accuracy checks and calibrations of the equipment used for testing; address documentation.
Locations where samples will be obtained and the sampling techniques for each test
Load number of QC samples (1-10 if QA sample is not within trucks 1-10)
Tests to be performed and their normal frequency; the following, at a minimum, shall be conducted:
Mixture Temperature: each of the first five trucks, and each load that is sampled for QC or acceptance testing.
Gradation analysis of aggregate (and RAP) stockpiles – one washed gradations per week for each aggregate stockpile; RAP: five gradations and asphalt cement contents for dedicated stockpiles where new material is not being added; one gradation and asphalt cement content test per week for stockpiles where material is continually being added to the stockpile.
Gradation analysis of non-payment sieves
Dust to effective asphalt calculation
Moisture content analysis of aggregates – daily.
Gradation analysis of the combined aggregate cold feed – one per year per mixture.
Bulk specific gravity and absorption of blended material – one per year per mixture.
Ignition Oven calibration – one per year per mixture.
Hot-Bins: one per year per mixture.
Others, as appropriate.
Procedures for reporting the results of inspection and tests (include schedule).
Procedures for dealing with non-compliant material or work.
Presentation of control charts. The Contractor shall plot the results of testing on individual control charts for each characteristic. The control charts shall be updated within one working day as test results for each sublot become available. The control charts shall be easily and readily accessible at the plant laboratory. The following parameters shall be plotted from the testing:
Asphalt cement content.
Volumetrics (air voids, voids in mineral aggregates [VMA])
Gradation values for the following sieves:
- 4.75 mm (#4).
- 2.36 mm (#8).
- 0.075 mm (#200).

Operational guidelines (trigger points) to address times when the following actions would be considered:
Increased frequency of sampling and testing.
Plant control/settings/operations change.
JMF adjustment.
JMF change (See Section .04(a)(1)).
Change in the source of the component materials.
Calibration of material production equipment (asphalt pump, belt feeders, etc.).
Rejection of material.

When any point of non-compliance with the QC plan, or material not meeting the Specifications, comes to the attention of either the Contractor or the Engineer, the other party shall be notified immediately, and the Contractor shall take appropriate corrective actions. Failure to take corrective actions immediately shall be cause for rejection of material or work by the Engineer.

(b) Pavement Construction – Process Control.

The Contractor shall perform Quality Control of pavement compaction by testing in-place pavement with a density gauge or by testing cores extracted from the pavement. The use of the nuclear density gauge shall conform to ASTM D2950; the use of other density gauges shall be as per the manufacturer's recommendations and approved by the Engineer. The Contractor may use any method to select locations for the Quality Control.

.05 Acceptance Plan.

(a) Material Production – Tests and Evaluations.

The Engineer will conduct acceptance tests. The Engineer will directly base acceptance on the acceptance test results, the asphalt cement quality, the Contractor's QC Plan work, and the comparisons of the acceptance test results to the QC test results. The Engineer may elect to utilize test results of the Contractor in some

situations toward judging acceptance. All acceptance tests shall be performed by qualified technicians at qualified laboratories following AASHTO or DelDOT procedures, and shall be evaluated using Quality Level Analysis.

The Contractor shall supply, capture, and mark samples, as directed, from delivery trucks before the trucks leave the production plant. The sample shall represent the material produced by the Contractor, and shall be of sufficient size to allow the Engineer to complete all required acceptance tests. The Engineer will direct the Contractor when to capture these samples, on a statistically random, unbiased basis, established before production begins each day based upon the anticipated production tonnage. The captured sample shall be from the Engineer specified delivery truck; if the Contractor visually observes the specified delivery truck sample and does not want this sample to be sampled and tested for acceptance, that delivery truck will not be sent to a Department project. The next visually acceptable delivery truck to the Contractor shall be sampled for acceptance testing.

The first sample of the production day will be randomly generated by the Engineer between loads 0 and 12 (0-250 tons). Subsequent samples will be randomly generated by the Engineer on 500-ton sub-lots for the production day. Unacceptable samples may be a basis for rejection of material if the QC plan is not followed as approved for sample retrieval. If the Contractor wishes to perform parallel tests with the Engineer, or to capture samples to be retained for possible Dispute Resolution, each of the samples for these purposes shall be obtained at the same time and location as the acceptance test sample. Either splitting a large sample or getting multiple samples that equally represent the material is acceptable. The Engineer will perform all splitting and handling of samples after they are obtained by the Contractor.

The Engineer will evaluate and accept the material on a lot basis. All the material within a lot shall have the same JMF (mixture ID). The lot size shall be targeted for 2000 tons or a maximum period of three days, whichever is reached first. If the 2000th ton target lot size is achieved during a production day, the lot size shall extend to the end of that production day. The Contractor may interrupt the production of one JMF in order to produce different material; this type of interruption will not alter the determination of the size or limits of material represented by a lot. The Engineer will evaluate each lot on a sublot basis. The size for each sublot shall be 100 to 500 tons and testing for the sub lots will be completed on a daily basis. For each sublot, the Engineer will evaluate one sample.

The target size of sub-lots within each lot, except for the first sample of the production day, is equal-sized 500 ton sub lots and will be based upon anticipated production, however, more or fewer sublots, with differing sizes, may result due to the production schedule and conditions. If the actual production is less than anticipated, and it's determined a sample will not be obtained (based upon the anticipated tonnage), a new sample location will be determined on a statistically random, unbiased basis based upon the new actual production. If the actual production is going to be 50 tons or greater over the anticipated sub lot production, a new sample location will be determined on a statistically random, unbiased basis based upon the new actual production. The Engineer will combine the evaluation and test results for all of the applicable sublots in order to evaluate each individual lot.

If the Engineer is present, and the quantity exceeds 25 tons, a statistically random sample will be used for analysis. When the anticipated production is less than 100 tons and greater than 25 tons, and the Engineer is not present, the contractor shall randomly select a sample using the Engineer's random location program. The captured sample shall be placed in a suitable box, marked to the attention of the Engineer, and submitted to the Engineer for testing. A box sample shall also be obtained by the contractor at the same time and will be used as the Dispute Resolution sample if requested by the Engineer. The contractor shall also obtain one liquid asphalt sample (1 pint) per grade of asphalt used per day and properly label it with all pertinent information.

The Engineer will conduct the following tests in order to characterize the material for the pavement compaction quality, and to judge acceptance and the pay adjustment for the material:

AASHTO T312 – Preparing a mixture samples using a gyratory compactor.
AASHTO T166, Method C (Rapid Method) – Bulk specific gravity of compacted samples.
AASHTO T308 – Asphalt cement content.
AASHTO T30 – Aggregate gradations, using samples from the asphalt cement content test.
AASHTO T209 – Theoretical maximum specific gravity.
ASTM Provisional Test Method – Rapid Drying of Compacted and Loose Bituminous Asphalt Specimens using Vacuum Drying Method

(b) Pavement Construction – Tests and Evaluations.

The Engineer will directly base acceptance on the compaction acceptance test results, and on the inspection of the construction, the Contractor's QC Plan work, ride smoothness as referenced in the contract documents, lift thickness as referenced in the contract documents, joint quality as referenced in the contract documents, surface texture as referenced in the contract documents, and possibly the comparisons of the acceptance test results to the independent test results. For the compaction acceptance testing, the Engineer will sample the work on a statistically random basis, and will test and evaluate the work using lots.

Prior to paving a road segment, the Contractor shall notify the Engineer of any locations within that road segment that may not be suitable to achieve minimum (93%) compaction due to existing conditions. The Contractor shall schedule and hold a meeting in the field with the Engineer in order to discuss all areas that may potentially be applicable to Table 5a before paving starts. Areas that will be considered for Table 5a will be investigated in accordance to the method described in Appendix B. If this meeting is not held prior to paving, no areas will be considered for Table 5a. Areas of allowable exemptions that will not be cored include the following: partial-depth patch areas, driveway entrances, paving locations of less than 100 tons, areas around manholes and driveway entrances, and areas of paving that are under 400 feet in continuous total length and/or 5 feet in width.

The exempt areas around manholes will be a maximum of 4 feet transversely on either side from the center of the manhole, and 20 feet longitudinally on either side from the center of the manhole. The exempt areas around driveway entrances shall be the entire width of the driveway, and 3 feet from the edge of the longitudinal joint next to the driveway. Areas of exemption that will be cored for informational purposes only shall include: areas where the mat thickness is less than three times the nominal maximum aggregate size as directed by the Engineer, violations of Section 401.08 in the Standard Specifications as directed by the Engineer, and areas shown to contain questionable subgrade properties as proven by substantial yielding under a fully legally loaded truck. Failure to obtain core samples in these areas will result in zero payment for compaction regardless of the exempt status.

The Engineer will evaluate and accept the compaction work on a daily basis. Payment for the compaction will be calculated by using the material production lots as referenced in **.05 Acceptance Plan (a) Material Production – Tests and Evaluation** and analyzing the compaction results over the individual days covered in the material production lot. The compaction results will be combined with the material results to obtain a payment for this item.

The minimum size of a compaction lot shall be 100 tons. If the compaction lot is between 101 and 1000 tons, the Engineer shall randomly determine four compaction acceptance test locations. If the compaction lot is between 1001 and 1500 tons, the Engineer shall randomly determine six compaction acceptance test locations. If the compaction lot is between 1501 and 2000 tons, the Engineer shall randomly determine eight compaction acceptance test locations. If the compaction lot is greater than 2000 tons, the Engineer shall randomly determine two compaction acceptance test locations per 500 tons.

If a randomly selected area falls within an Engineer approved exemption area, the Engineer will select one more randomly generated location to be tested per the requirements of this Specification. If that cannot be accomplished, or if an entire location has been declared exempt, the compaction testing shall be performed as per these Specifications but a note will be added to the results that the location was an Engineer approved exempt location.

Testing locations will be a minimum of 1.5 feet from the newly placed longitudinal joint and 50 feet from a new transverse joint. If the Contractor chooses to cut companion cores, they shall be located within one foot of the Engineers cores along the longitudinal direction and in-line with the Engineers cores in the longitudinal plane.

Exactly at the locations marked by the Engineer, the Contractor shall cut a core, 6 inches in diameter, through the full lift depth. Cores submitted that are not from the location designated by the Engineer will not be tested and will be paid at zero pay.

The Contractor shall notify the Engineer prior to starting paving operations with approximations of the tonnage to be placed. The Contractor is then responsible for notifying the appropriate Engineer test personnel within 12 hours of material placement. The Engineer will then have 24 hours to mark the core locations. After determination of locations, the Contractor shall complete testing within two operational days of the locations

being marked. If the cores are not cut within two operational days, the area in question will be paid at zero pay for compaction testing.

The Contractor shall provide any traffic control required for the structural number investigation, sampling, and testing work at no additional cost to the Department.

The Contractor shall cut each core with care in order to prevent damaging the core. The pavement shall have a maximum temperature of 140 F when cores are cut from it. Immediately upon removal of a core from the roadway, the Contractor shall adequately label it. The Contractor shall protect the core by supplying a 6-inch plastic concrete cylinder mold, or an approved substitute, and placing the core in it. If more than one core is in the same mold, the Contractor shall place paper between them. The Contractor shall attach a completed QC test record for the representative area to the corresponding core. The Engineer will also complete a test record for areas tested for the QA report and provide to Materials & Research. At the end of every production day, the Contractor shall deliver the cores to the Engineer for testing, processing, and report distribution.

The Contractor shall repair the core hole per Appendix A, Repairing Core Holes in Hot-Mix Asphalt Pavements. Core holes shall be filled immediately. Failure to repair core holes at the time of coring will result in zero pay for compaction testing for the area in question.

The Engineer will conduct the following tests on the applicable portion of the cores in order to evaluate their quality:

AASHTO T166, Method C (Rapid Method) – to determine the bulk specific gravity of the cores.
AASHTO T209 – to calculate the theoretical maximum specific gravity and the density of the non-compacted mixtures.
ASTM Provisional Test Method – Rapid Drying of Compacted and Loose Bituminous Asphalt Specimens using Vacuum Drying Method.

The Engineer will use the average of the last five test values of the same JMF (mixture ID) material at the production plant in order to calculate the average theoretical maximum specific gravity of the cores. The average will be based on the production days test results and as many test results needed from previous days production to have an average of five samples. If there are less than five values available, the Engineer will use the JMF design value in addition to the available values to calculate the average theoretical maximum specific gravity.

.06 Payment and Pay Adjustment Factors.

The Contractor shall include the costs for all materials, labor, equipment, tools, and incidentals necessary to meet the requirements of this specification in the bid price per ton for the hot-mix asphalt. Payment to the Contractor for the hot-mix asphalt item(s) will be based on the Contract price per ton and the pay adjustments described in this specification. The Engineer will determine pay adjustments for the hot-mix asphalt item(s) based on the Acceptance Plan. The Engineer will determine both a pay adjustment for the material and a pay adjustment for the pavement construction. Note that the material portion of the total pay adjustment is 70 percent and the pavement construction portion is 30 percent. For replaced material or work, the Engineer will not apply the Pay Adjustment applicable to the material or work replaced; a new Pay Adjustment will be calculated based on the qualities of the new material. Even if one portion of the pay adjustment (material or construction) is not applied, the Engineer may apply the pay adjustment to the other portion. All adjustments (bonus or penalty) shall be paid under this item number in the contract.

(a) Material Production – Pay Adjustment.

The Engineer will determine the material pay adjustment by evaluating the production material based on the following parameters:

Gradation of the 2.36 mm (#8) sieve.
Gradation of the 0.075 mm (#200) sieve.
Asphalt cement content.
Air void content

Using the JMF target value, the single test tolerance (from Table 3), and the test values, the Engineer will

use the following steps to determine the material pay adjustment factor for each lot of material:

1. For each parameter, calculate the mean value and the standard deviation of the test values for the lot to the nearest 0.1 unit.
2. For each parameter, calculate the Upper Quality Index (QU):
   QU = ((JMF target) + (single test tolerance) – (mean value)) / (standard deviation).
3. For each parameter, calculate the Lower Quality Index (QL):
   QL = ((mean value) - (JMF target) + (single test tolerance)) / (standard deviation).
4. For each parameter, locate the values for the Upper Payment Limit (PU) and the Lower Payment Limit (PL) from Table 2 – Quality Level Analysis by the Standard Deviation Method. (Use the column for "n" representing the number of sublots in the lot. Use the closest value on the table when the exact value is not listed).
5. Calculate the PWL for each parameter from the values located in the previous step:
   PWL = PU + PL – 100.
6. Calculate each parameter's contribution to the payment adjustment by multiplying its PWL by the weight factor shown in Table 3 for that parameter.
7. Add the calculated adjustments of all the parameters together to determine the Composite PWL for the lot.
8. From Table 4, locate the value of the Pay Adjustment Factor corresponding to the calculated PWL.
9. For each lot, determine the final material price adjustment:

Final Pay Adjustment =
(Lot Quantity) x (Item Bid Price) x (Pay Adjustment Factor) x 70%. This final pay calculation will be paid to the tenth of a percent.

In lieu of being assessed a pay adjustment penalty, the Contractor may choose to remove and replace the material at no additional cost to the Department. If the PWL of any single material characteristic is below 60, the Engineer may require the removal and replacement of the material at no additional cost to the Department.

The test results from the Engineer on production that is less than 100 tons will be combined with the two most recently completed Engineer tests with the same Mixture ID to calculate payment for the lot encompassing the single test. If that cannot be accomplished, the approved JMF will be used to calculate payment for the lot encompassing the single test. Payment for previously closed lots will not be affected by the analysis.

When a sample is out of the acceptable tolerance for any Materials pay criteria, that sample will be isolated. For payment purposes, the test result of the out of acceptable tolerance sample will be combined with the two previous acceptable samples of the same JMF and analyzed per this specification. The material that is considered out of the acceptable tolerance will only include the material within the represented sub-lot (i.e., a maximum of 500 tons). If the previous acceptable test result is from the previous production day, only the material produced on the second production day will be considered out of tolerance. All future sub lots will not include the isolated test.

If, during production, a QA sample test result does not meet the acceptable tolerances and the Contractors QC sample duplicates the QA sample test result, the Contractor can make an appropriate change to the mixture (within the JMF boundaries), and request to have that sample further isolated. If this request is approved, and the Contractor has made a change, the third load after the change will be tested. If that sample test result shows compliance with the specifications, the material that is considered out of the acceptable tolerance will include the material from the previous acceptable test result to the third load after the initially sampled and tested sample. If the sample does not meet the specification requirements, the Engineer will no longer accept material. Production may resume when changes have been made and an acceptable sample and test result is obtained.

Table 2 – Quality Level Analysis by the Standard Deviation Method

PU or PL	QU and QL for "n" Samples						
	n = 3	n = 4	n = 5	n = 6	n = 7	n = 8	n = 9
100	1.16	1.50	1.79	2.03	2.23	2.39	2.53
99		1.47	1.67	1.80	1.89	1.95	2.00

Table 2 – Quality Level Analysis by the Standard Deviation Method							
PU or PL	QU and QL for "n" Samples						
	n = 3	n = 4	n = 5	n = 6	n = 7	n = 8	n = 9
98	1.15	1.44	1.60	1.70	1.76	1.81	1.84
97		1.41	1.54	1.62	1.67	1.70	1.72
96	1.14	1.38	1.49	1.55	1.59	1.61	1.63
95		1.35	1.44	1.49	1.52	1.54	1.55
94	1.13	1.32	1.39	1.43	1.46	1.47	1.48
93		1.29	1.35	1.38	1.40	1.41	1.42
92	1.12	1.26	1.31	1.33	1.35	1.36	1.36
91	1.11	1.23	1.27	1.29	1.30	1.30	1.31
90	1.10	1.20	1.23	1.24	1.25	1.25	1.26
89	1.09	1.17	1.19	1.20	1.20	1.21	1.21
88	1.07	1.14	1.15	1.16	1.16	1.16	1.17
87	1.06	1.11	1.12	1.12	1.12	1.12	1.12
86	1.04	1.08	1.08	1.08	1.08	1.08	1.08
85	1.03	1.05	1.05	1.04	1.04	1.04	1.04
84	1.01	1.02	1.01	1.01	1.00	1.00	1.00
83	1.00	0.99	0.98	0.97	0.97	0.96	0.96
82	0.97	0.96	0.95	0.94	0.93	0.93	0.93
81	0.96	0.93	0.91	0.90	0.90	0.89	0.89
80	0.93	0.90	0.88	0.87	0.86	0.86	0.86
79	0.91	0.87	0.85	0.84	0.83	0.82	0.82
78	0.89	0.84	0.82	0.80	0.80	0.79	0.79
77	0.87	0.81	0.78	0.77	0.76	0.76	0.76
76	0.84	0.78	0.75	0.74	0.73	0.73	0.72
75	0.82	0.75	0.72	0.71	0.70	0.70	0.69
74	0.79	0.72	0.69	0.68	0.67	0.66	0.66
73	0.75	0.69	0.66	0.65	0.64	0.63	0.63
72	0.74	0.66	0.63	0.62	0.61	0.60	0.60
71	0.71	0.63	0.60	0.59	0.58	0.57	0.57
70	0.68	0.60	0.57	0.56	0.55	0.55	0.54
69	0.65	0.57	0.54	0.53	0.52	0.52	0.51
68	0.62	0.54	0.51	0.50	0.49	0.49	0.48
67	0.59	0.51	0.47	0.47	0.46	0.46	0.46
66	0.56	0.48	0.45	0.44	0.44	0.43	0.43
65	0.52	0.45	0.43	0.41	0.41	0.40	0.40
64	0.49	0.42	0.40	0.39	0.38	0.38	0.37

Table 2 – Quality Level Analysis by the Standard Deviation Method							
PU or PL	QU and QL for "n" Samples						
	n = 3	n = 4	n = 5	n = 6	n = 7	n = 8	n = 9
63	0.46	0.39	0.37	0.36	0.35	0.35	0.35
62	0.43	0.36	0.34	0.33	0.32	0.32	0.32
61	0.39	0.33	0.31	0.30	0.30	0.29	0.29
60	0.36	0.30	0.28	0.27	0.27	0.27	0.26
59	0.32	0.27	0.25	0.25	0.24	0.24	0.24

Table 3 - Material Parameter Weight Factors		
Material Parameter	Single Test Tolerance (+/-)	Weight Factor
Asphalt Content	0.4	0.30
#8 Sive (19 mm or >)	7.0	0.30
#8 Sieve (12.5 mm or <)	5.0	0.30
#200 Sieve (0.075 mm) Sieve	2.0	0.30
Air Voids (4.0% Target)	1.5	0.10

Table 4 - PWL Pay Adjustment Factors	
PWL	Pay Adjustment Factor (%)
100	+5
99	+4
98	+3
97	+2
96	+1
95	0
94	(-1)
93	(-2)
92	(-3)
91	(-4)
PWL (when <91)	(PWL - 100)

(b) Pavement Construction – Pay Adjustments.

The Engineer will determine the pavement construction pay adjustment by evaluating the construction of the pavement, based on the following parameter:

Degree of compaction of the in-place material

Using the test values for the cores, the Engineer will use the following steps to determine the pavement construction pay adjustment for each lot of work. Note that the material portion of the total pay adjustment is 70 percent and the pavement construction portion is 30 percent.

1. Calculate the average density values from the sublot tests values, to the nearest 0.1 unit.
2. Calculate the Degree of Compaction:
   Degree of Compaction =
   ((Core Bulk Specific Gravity) / (Theoretical Maximum Specific Gravity)) x 100%.
3. The average compaction for the sublots shall be averaged together for the compaction level of the lot. The lots compaction test level shall be averaged to the whole percent.
4. Locate the value of the Payment Adjustment Factor corresponding to the calculated degree of compaction from Table 5 or Table 5a.
5. Determine the pavement construction price adjustment by using the following formula:
   Pay adjustment = (Lot Quantity) x (Bid Price) x (Pay Adjustment Factor) x 30%.

Table 5: Compaction Price Adjustment Highway Locations

Degree of Compaction (%)	Pay Adjustment Factor (%)
>97	-100*
96	-3
95	0
94	0
93	+5
92	0
91	-15
90	-25
89	-30
≤88	-100*

* or remove and replace it at Engineer's discretion

Table 5a: Compaction Price Adjustment Other[1] Locations

Degree of Compaction (%)	Pay Adjustment Factor (%)
>96	-100*
95	-2
94	0
93	+3
92	0
91	0
90	0
89	-1
88	-5
87	-15
86	-25
85	-30
84	-100*

* or remove and replace at Engineer's discretion

[1] This chart is to be used for areas where the structural value of the area to be paved is less than 1.75 as determined by the Engineer. See Appendix B – Method for Obtaining Cores for Determination of Roadway Structure. This chart is applicable to rehabilitation work only; full depth construction will not be considered for Table 5a.

.07 Dispute Resolution.

Disputes or questions about any test result shall be immediately brought to the attention of the Contractor and the Engineer. When there is a significant alleged discrepancy regarding the Engineer's acceptance test results, the Contractor must claim a dispute within two operational days of the test date. The following dispute resolution procedures will be used.

The Engineer and the Contractor will review the sample quality, the test method, the laboratory equipment, and the laboratory technician. If these factors are not the cause of the dispute, a third party dispute resolution will be used.

For third party resolution testing, it can be either at another Contractor's laboratory, the Engineer's laboratory, or an independent accredited laboratory. Unless otherwise mutually agreed upon by DAPA and the Engineer, the Engineer's qualified laboratory in Dover and qualified personnel shall conduct the necessary testing for third party Dispute Resolution after the Engineer has provided reasonable notice to allow the Contractor to witness this testing.

When disputes over production testing occur, the samples used for Dispute Resolution testing will be those samples the Contractor properly captured, labeled, and stored, as described in the second paragraph of the section of these specifications titled **.05 Acceptance Plan, (a) Material Production – Tests and Evaluations**. If no samples are available, the original testing results will be used for payment calculations.

Dispute Resolution samples for air void content will be heated by a microwave oven.

If there is a discrepancy between the Engineer's acceptance test result and the Contractor's test result, the Contractor may ask for the Dispute Resolution sample to be tested. If the Dispute Resolution sample substantiates the original acceptance test result, the Contractor, after two such Dispute Resolution samples, will be charged a fee of $125 for all further Dispute Resolution cores that substantiate the acceptance test result. If the Dispute Resolution sample substantiates the Contractor's test result, the Contractor will not be charged a fee.

When disputes over compaction core test results occur, the Engineer's acceptance core will be used for the dispute resolution sample. The Contractor will be advised on when the testing will occur as referenced above to witness the testing.

The results of the dispute resolution testing shall replace all of the applicable disputed test results for payment purposes.

7/28/11

Appendix A - Repairing Core Holes in Hot-Mix Asphalt Pavement

Description.

This appendix describes the procedure required to acceptably repair core holes in a bituminous concrete pavement.

Materials and Equipment.

The following material shall be available to complete this work:

Patch Material –A DelDOT approved High Performance Cold Patch material shall be used.

The following equipment shall be available to complete this work:

Sponge or other absorbent material – Used to extract water from the hole.
Compaction Hammer – Shall be mechanical, with a flat, circular tamping face smaller than 6 inches in diameter. The tamping head shall be connected to an electrical, pneumatic, or gasoline driven tamping device.

Construction Method.

After core removal from the hole, remove all excess water from within the hole, and prevent water from re-entering the hole.

Place the patch material in lifts no greater than 3 inches. If the hole is deeper than 3 inches, use two lifts of approximately equal depths so that optimum compaction is achieved. Make sure that the patch surface matches the grade of the existing roadway. Make every effort to achieve the greatest possible compaction

Performance Requirements.

The Engineer will judge the patch on the following basis:

The patch shall be well compacted
The patch surface shall match the grade of the surrounding roadway surface.

Basis of Payment.

No measurement or payment will be made for the patching work. The Contractor must gain the Engineer's acceptance of the patching work before the Engineer will accept the material represented by the core.

Appendix B - Method for Obtaining Cores for Determination of Roadway Structure

The Contractor is responsible for obtaining cores in areas that they propose are eligible for compaction price adjustments according to Table 5a in this specification. Table 5a is not applicable for new full-depth pavement box construction. Cores submitted for this process shall be obtained according to the following process.

1. Contact Materials & Research (M&R) personnel to determine if information about the area is already available. If M&R has already obtained cores in the location that is being investigated, the contractor may opt to use the laboratory information for the investigation and not core the area on their own.

2. If M&R does not have information concerning the section of the roadway, the contractor needs to contact M&R to arrange for verification of coring operations. Arrangements shall be made to allow for an individual from M&R to be on the site when the cores are obtained. Cores will be turned over to M&R for evaluation.

3. The contractor is responsible for providing all traffic control and repairing core holes in accordance to 401699 Appendix A – Repairing Core Holes in Hot-Mix Asphalt Pavements.

4. Cores are to be taken throughout the entire project for the area in question. Cores will be spaced, from the start of the project in increments determined based on field and project specifics. Cores will be evenly distributed throughout the project location. The cores will be taken in the center of the lane in question.

5. Additional cores may be taken at other locations, if surface conditions indicate that there may be a substantial difference in the underlying section. The location of these cores should be documented and submitted to M&R.

6. Cores shall be full depth and include underlying materials. If there is a stone base included in the pavement section, at a minimum 1 core must have information concerning the thickness of the base. This is determined by augering to the subgrade surface.

7. The calculations used to determine the structural capacity of the roadway is as follows. If the contractor finds, upon starting the coring process, that the areas are of greater thickness than applicable to Table 5a, they may terminate the coring process on their own and retract the request.

Structural Number Calculations

Each pavement box material is assigned a structural coefficient based upon AASHTO design guides. The structural coefficient is used to determine the total strength of the pavement section.

Materials used in older pavement sections are assigned lower structural coefficients to compensate for aging of the materials. The coefficients used to determine the structural number of an existing pavement are:

Existing Material	Structural Coefficient
HMA	0.32
Asphalt Treated Base	0.26
Soil Cement	0.16
Surface Treatment (Tar & Chip)	0.10
GABC	0.14
Concrete	0 - 0.7*

* The Structural Coefficient of Concrete is dependent upon the condition of the concrete. Compressive strengths & ASR analysis are used to determine condition – contact the Engineer if this situation arises.

Newly placed materials use a different set of structural coefficients. They are as follows:

New Material	Structural Coefficient
HMA	0.40
Asphalt Treated Base (BCBC)	0.32
Soil Cement	0.20
GABC	0.14

Example:

Location includes placement of a 1.25" Type C overlay on 2.25" Type B. Existing roadway is cored and is shown to consist of 2" HMA on 7" GABC.

Calculation:

For the Type B lift the calculation would be:

Existing HMA	2 * 0.32	=	0.64
GABC	7 * 0.14	=	0.98
			1.62

For the Type C lift the calculation would be:

Newly Placed B	2.25 * 0.4	=	0.90
Existing HMA	2 * 0.32	=	0.64
GABC	7* 0.14	=	0.98
			2.52

401752 – SAFETY EDGE FOR ROADWAY PAVEMENT

Description:

This work consists of the construction of safety edge(s) along bituminous concrete pavement or P.C.C. pavement in accordance with the details and notes on the Plans and as directed by the Engineer.

Construction Methods:

The safety edge shall not be constructed adjacent to curb or in front of guardrail sections.

In bituminous concrete pavement sections, prior to the construction of the safety edge, the fill or in situ material at the edge of pavement shall be compacted so that it is level with the top of the pavement, prior to the final surface overlay.

In bituminous concrete pavement sections, the contractor shall attach a device to the screed of the paver unit that confines the material at the end of the gate and extrudes the asphalt material in such a way that results in a compacted wedge shape pavement edge of 32 degrees (+/- 2 degrees). Contact shall be maintained between the device and the road shoulder surface. The device shall be manufactured so that it can be easily adjusted to transition at cross roads, driveways and obstructions without stopping the paver unit. The device's shape shall constrain the asphalt and cause compaction, as well as increase the density of the extruded profile.

In bituminous concrete pavement sections, the Transtech Shoulder Wedge Maker, Advant-Edge or an approved equal shall be used to produce the safety edge. Contact information for these wedge shape compaction devices is listed below:

Transtech Systems, Inc.
1594 State Street
Schenectady, NY 12304
1-800-724-6306
www.transtechsys.com

or

Advant-Edge Paving Equipment, LLC
33 Old Niskayuna Road
Loudonville, NY 12211
1-814-422-3343
www.advantedgepaving.com

or an approved equal.

In P.C.C. pavement sections, the paver screed shall be modified to provide a chamfer at the end of the P.C.C. pavement in accordance with the details and notes on the Plans, or as directed by the Engineer.

Method of Measurement:

Safety Edge will not be measured for payment.

Basis of Payment:

The cost associated with the construction of safety edge(s), including but not limited to the wedge device, preparation and compaction of the fill or in situ material, and placement of the safety edge in accordance with the Plans and Details shall be incidental to the bituminous concrete pavement or P.C.C. pavement item being placed.

1/21/2011

401800 - WMA, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 64-22 (CARBONATE STONE)
401801 - WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22 (CARBONATE STONE)
401802 - WMA, SUPERPAVE, TYPE C, 205 GYRATIONS, PG 64-22 (CARBONATE STONE)

401803 - WMA, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 70-22 (CARBONATE STONE)
401804 - WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 70-22 (CARBONATE STONE)
401805 - WMA, SUPERPAVE, TYPE C, 205 GYRATIONS, PG 70-22 (CARBONATE STONE)

401806 - WMA, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 76-22 (CARBONATE STONE)
401807 - WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 76-22 (CARBONATE STONE)
401808 - WMA, SUPERPAVE, TYPE C, 205 GYRATIONS, PG 76-22 (CARBONATE STONE)

401809 - WMA, SUPERPAVE, TYPE B, 115 GYRATIONS, PG 64-22
401810 - WMA, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 64-22
401811 - WMA, SUPERPAVE, TYPE B, 205 GYRATIONS, PG 64-22

401812 - WMA, SUPERPAVE, TYPE B, 115 GYRATIONS, PG 70-22
401813 - WMA, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 70-22
401814 - WMA, SUPERPAVE, TYPE B, 205 GYRATIONS, PG 70-22

401815 - WMA, SUPERPAVE, TYPE B, 115 GYRATIONS, PG 76-22
401816 - WMA, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 76-22
401817 - WMA, SUPERPAVE, TYPE B, 205 GYRATIONS, PG 76-22

401818 - WMA, SUPERPAVE, BITUMINOUS CONCRETE BASE COURSE, 115 GYRATIONS, PG 64-22
401819 - WMA, SUPERPAVE, BITUMINOUS CONCRETE BASE COURSE, 160 GYRATIONS, PG 64-22
401820 - WMA, SUPERPAVE, BITUMINOUS CONCRETE BASE COURSE, 205 GYRATIONS, PG 64-22

401821 - WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING
401822 - WMA, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 64-22, PATCHING
401823 - WMA, SUPERPAVE, BITUMINOUS CONCRETE BASE COURSE, 160 GYRATIONS, PG-64-22, PATCHING

401824 - WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG-64-22, WEDGE
401825 - WMA, SUPERPAVE, TYPE B, 160 GYRATIONS, PG-64-22, WEDGE

401826 - WMA, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 64-22, (NON-CARBONATE STONE)
401827 - WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, (NON-CARBONATE STONE)
401828 - WMA, SUPERPAVE, TYPE C, 205 GYRATIONS, PG 64-22, (NON-CARBONATE STONE)

401829 - WMA, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 70-22, (NON-CARBONATE STONE)
401830 - WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 70-22, (NON-CARBONATE STONE)
401831 - WMA, SUPERPAVE, TYPE C, 205 GYRATIONS, PG 70-22, (NON-CARBONATE STONE)

401832 - WMA, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 76-22, (NON-CARBONATE STONE)
401833 - WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 76-22, (NON-CARBONATE STONE)
401834 - WMA, SUPERPAVE, TYPE C, 205 GYRATIONS, PG 76-22, (NON-CARBONATE STONE)

401835 - THIN WMA, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 64-22
401836 - THIN WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22
401837 - THIN WMA, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 70-22

401838 - THIN WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 70-22
401839 - THIN WMA, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 76-22
401840 - THIN WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 76-22

Description:

Warm mix asphalt (WMA) is the generic term used to describe the reduction in production, paving, and compaction temperatures achieved through the application of one or more WMA technologies.

WMA may be produced by one or a combination of several technologies involving asphalt foaming processes and equipment or additives that facilitate the reduction of the temperature at which the mix can be placed and satisfactorily compacted thereby permitting the mix to be produced at reduced temperatures from a comparable mix without the Warm Mix Technology.

The following Subsections of the Standard Specifications shall be applicable: 401.01, 401.03 - 401.10, 401.12, and 401.13. All other subsections have been modified herein.

The Contractor shall read and thoroughly understand the requirements of the QA/QC specification as defined in item 401699. It is the responsibility of the Contractor to determine all costs associated with meeting these requirements and to include them in the per ton bids for the various Superpave bituminous concrete items. The Contractor shall also be aware that the pay adjustment factors in item 401699 will be applied to the Superpave item payments to determine the bonus or penalty for the item.

Materials:

If the Contractor proposes to use a combination of materials that are not covered by this Specification, the mix design shall be submitted and reviewed by the Engineer 30 calendar days prior to use.

Conform to the requirements of Subsections 823.01, 823.05- 823.17, and 823.25 - 823.28 of the Standard Specifications and the following for bituminous materials:

Asphalt Binder:

The asphalt binder shall meet the requirements of Superpave performance-grade asphalt binder, as referenced in the Plans, according to M 320 [1], Table 1 and tested according to AASHTO R29 with the following test ranges:

TEST PROCEDURE	AASHTO REFERENCE	SPECIFICATION LIMITS
Temperature, °C	M 320	Per Grade
Original DSR, G*/sin (δ)	T 315	1.00 - 2.20 kPa
RTFO DSR, G*/sin (δ)	T 315	>/= 2.20 kPa
PAV DSR, G* sin (δ)	T 315	</=5000 kPa
BBR Creep Stiffness, *S*	T 313	</= 300.0 kPa
BBR *m*-value	T 313	>/=0.300

Note 1: The exception to M 320 is that the original DSR shall be 1.00 to 2.20 kPa

Substitution of a higher temperature grade will require prior approval by the Engineer.

The highest low temperature grade virgin binder to be used is -22.

Depending on the level of RAP used, the low temperature properties, per T 313, may be different than stated in M 320 or the previous table.

Recycled Materials:

The percentage allowance of recycled asphalt pavement shall be controlled through the use of the Materials & Research recycled mixture program available through the Materials & Research Section. The program can be used by the Contractor to determine which materials and combinations of materials can be

used to meet the specified material on the contract.

No recycled asphalt shingles shall be used in WMA.

Mineral Aggregate:

Conform to Section 805 and the following criteria. These criteria apply to the combined aggregate blend.

DESIGN ESAL'S (MILLIONS)	COARSE AGGREGATE ANGULARITY[1] (% MIN)		FINE AGGREGATE ANGULARITY[2] (% MIN)		CLAY CONTENT[3] (% - MIN)	FLAT AND ELONGATED [4] (% - MAX)
	≤ 100 mm	> 100 mm	≤ 100 mm	> 100 mm		
< 0.3	55/-	-/-	-	-	40	-
0.3 to < 3	75/-	50/-	40	40	40	10
3 to <10	85/80[5]	60/-	45	40	45	
10 < 30	95/90	80/75	45	40	45	
30	100/100	100/100	45	45	50	

[1]Coarse Aggregate Angularity is tested according to D5821.
[2]Fine Aggregate Angularity is tested according to TP33.
[3]Clay Content is tested according to T176.
[4]Flat and Elongated is tested according to D4791 with a 5:1 aspect ratio.
[5] 85/80 denotes that 85% of the coarse aggregate has one fractured face and 80% has two or more fractured faces.

The following source properties apply to the individual aggregates in the aggregate blend for the proposed JMF.

TEST METHOD	SPECIFICATION LIMITS
Toughness, T96 Percent Loss, Maximum	40
Soundness, T104 Percent Loss, Maximum for five cycles	20
Deleterious Materials, T112 Percent, Maximum	10
Moisture Sensitivity, T283 Percent, Minimum	80

Supply all polish values to the Engineer upon request. The polish value of the composite aggregate blend for any roadway with a minimum average daily traffic volume (ADT) of 8000 vehicles and a posted speed of 35 mph (60 kph) or greater shall be greater than 8.0 when tested according to Maryland State Highway Administration 'MSMT 411 - Laboratory Method of Predicting Frictional Resistance of Polished Aggregates and Pavement Surfaces'. RAP shall be assigned a value of 4.0.

Mineral Filler:

Conform to M17.

Warm Mix Additives:

For any WMA technology requiring addition of any material by the producer during production, the following information will be submitted with the proposed JMF for review and approval at least 30 calendar days prior to production:

1. WMA technology and/or additive information.
2. WMA technology manufacturer's recommendation for usage.

3. WMA technology target dosage rate and tolerance envelope. Support tolerance envelope with test data demonstrating acceptable mix production properties conforming to all sections of this specification.
4. WMA technology manufacturer's material safety data sheets (MSDS).
5. Documentation of past WMA technology field application including points of contact.
6. Temperature ranges for mixing and compacting.
7. Laboratory test data, samples, and sources of all mix components, and asphalt binder viscosity-temperature relationships.

The contractor shall follow the manufacturer's recommendation for incorporating additives and WMA technologies into the mix. The contractor shall also comply with the manufacturer's recommendation regarding receiving, storage, and delivery of additives.

If the producer performs blending of the WMA technology in their tank, a separate Quality Control plan shall be submitted by the producer to the Department for review and approval at least 30 calendar days prior to production.

Mixture Requirements:

Mix Design. Develop and submit a job mix formula for each mixture according to R35. Each mix design shall be capable of being produced, placed, and compacted as specified. Apply all mix design requirements for Superpave to the development of the WMA mix design.

Gradation: The FHWA Superpave 0.45 Power Chart shall be used to define permissible gradations for the specified mixture. Type C shall be either a No.4 (4.75 mm), 3/8" (9.5 mm), or 1/2" (12.5 mm) Nominal Maximum Aggregate Size Hot-Mix. Unless otherwise noted in the Plans, the Type C shall meet the 3/8" (9.5 mm) Nominal Maximum Aggregate Size. Type B Hot-Mix shall be the 3/4" (19.0 mm) Nominal Maximum Aggregate Size and the Bituminous Concrete Base Course (BCBC) shall be the 1" (25.0 mm) Nominal Maximum Aggregate Size. Target values for percent passing each standard sieve for the design aggregate structure shall comply with the Superpave control points and should avoid the restricted zone. Percentages shall be based on the washed gradation of the aggregate according to T11.

Thin WMA, Type C shall be a No. 4 (4.75 mm) Nominal Maximum Aggregate Size Only.

In addition to the results of the material requirements specified above, the following material properties shall be provided by the Contractor: bulk specific gravity $G_{sb,}$ apparent specific gravity G_{sa}, and the absorption of the individual aggregate stockpiles to be used, tested according to T84 and T85 and reported to three decimal places along with the specific gravity of the mineral filler to be used, tested according to T100 and reported to three decimal places.

Superpave Gyratory Compactive (SGC) Effort:

The Superpave Gyratory Compaction effort employed throughout mixture design, field quality control, or field quality assurance shall be as indicated below. All mixture specimens tested in the SGC shall be compacted to N_{Max} Height data provided by the SGC shall be employed to calculate volumetric properties at $N_{INITIAL}$, N_{DEISGN}, and N_{MAX}

Superpave Gyratory Compactive (SGC) Effort:

DESIGN TRAFFIC LEVEL (MILLION ESAL'S)	$N_{INITIAL}$	N_{DESIGN}	N_{MAX}
0.3 to < 3	7	75	115
3 to < 30	8	100	160
30	9	125	205

Volumetric Design Parameters. The design aggregate structure at the target asphalt cement content shall satisfy the volumetric criteria below:

DESIGN ESAL'S (MILLION)	REQUIRED DENSITY (% OF THEORETICAL MAXIMUM SPECIFIC GRAVITY)			VOIDS-IN-MINERAL AGGREGATE (% - MINIMUM) NOMINAL MAX. AGGREGATE (mm)					VOIDS FILLED WITH ASPHALT (% - MINIMUM)
	$N_{INITIAL}$	N_{DESIGN}	N_{MAX}	25.0	19.0	9.5	12.5	4.75	
0.3 to < 3	≥90.5	96.0	≤ 98.0	12.5	13.5	15.5	14.5	16.5	65.0 - 78.0
3 to < 10	89.0								65.0 - 75.0[1]
10 < 30									
30									

Air voids (V_a) at N_{design} shall be 4.0% for all ESAL designs. Air voids (V_a) at N_{max} shall be a minimum of 2.0% for all ESAL designs

The dust to effective binder ratio for the mix having aggregate gradations above the Primary Control Sieve (PCS) Control Points shall be 0.6-1.2. For aggregate gradations below the PCS Control Points, the dust to binder ratio shall be 0.8-1.6. For the No. 4 (4.75 mm) mix, the dust to binder ratio shall be 0.9-2.0 whether above or below the PCS Control Points.

For 3/8" (9.5 mm) Nominal Maximum Aggregate Size mixtures, the specified VFA range shall be 73.0% to 76.0% and for 4.75 mm Nominal Maximum Size mixtures, the range shall be 75 % to 78% for design traffic levels 3 million ESALs.

Gradation Control Points:

The combined aggregates shall conform to the gradation requirement specified in the following table when tested according to T11 and T27.

Nominal Maximum Aggregates Size Control Points, Percent Passing										
	25.0 mm		19.0 mm		12.5 mm		9.5 mm		4.75 mm	
SIEVE SIZE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
37.5 mm	100	-	-	-	-	-	-	-	-	-
25.0 mm	90	100	100	-	-	-	-	-	-	-
19.0 mm	-	90	90	100	100	-	-	-	-	-
12.5 mm	-	-	-	90	90	100	100	-	100	-
9.5 mm	-	-	-	-	-	90	90	100	95	100
4.75 mm	-	-	-	-	-	-	-	90	90	100
2.36 mm	19	45	23	49	28	58	32	67	-	-
1.18 mm	-	-	-	-	-	-	-	-	30	60
0.075 mm	1	7	2	8	2	10	2	10	6	12

Note: The aggregate gradation for each sieve must fall within the minimum and maximum limits.

Gradation Classification:

The Primary Control Sieve (PCS) defines the break point of fine and coarse mixtures. The combined aggregates shall be classified as coarse graded when it passes below the Primary Control Sieve (PCS) control point as defined below. All other gradations shall be classified as fine graded.

PCS CONTROL POINT FOR MIXTURE NOMINAL MAXIMUM AGGREGATES SIZE (% PASSING)					
Nominal maximum Aggregates Size	25.0 mm	19.0 mm	12.5 mm	9.5 mm	4.5 mm

PCS CONTROL POINT FOR MIXTURE NOMINAL MAXIMUM AGGREGATES SIZE (% PASSING)					
Primary Control Sieve	4.75 mm	4.75 mm	2.36 mm	2.36 mm	1.18 mm
PCS Control Point	40	47	39	47	30-60

Plant Production Tolerances:

Volumeric Property	Superpave Criteria
Air Voids (V_a) at (%) N_{max} Air Voids (V_a) at N_{design} (%)	2.0 (min) 5.5 (max)
Voids in Mineral Aggregate (VMA) at N_{design} 25.0 mm Bituminous Concrete Base Course 19.0 mm Type B Hot-Mix 12.5 mm Type C Hot-Mix 9.5 mm Type C Hot-Mix 4.5 mm Type C Hot-Mix	 -1.2 +2.0

Design Evaluation:

The contractor shall furnish a Job Mix Formula (JMF) for review and approval. The Engineer may elect to evaluate the proposed JMF and suitability of all materials. All materials requested by the Engineer shall be provided at the contractor's expense to the Central Laboratory in Dover in a timely manner upon request. To verify the complete mixture design and evaluate the suitability of all materials, the following approximate quantities are required:

5.25 gal (20 liters) of the asphalt binder;
0.13 gal (0.5 liters) sample of liquid heat-stable anti-strip additive;
254 lb. (115 kg) of each coarse aggregate;
154 lb. (70 kg) of each intermediate and fine aggregate;
22 lb. (10 kg) of mineral filler; and
254 lb. (115 kg) of RAP, when applicable.

The proposed JMF shall include the following:

Plot of the design aggregate structure on the FHWA Superpave 0.45 power chart showing the maximum density line, Superpave control points, and recommended restricted zone.

Plot of the three trial asphalt binder contents at ±0.5% gyratory compaction curves where the percent of maximum specific gravity (% of G_{mm}) is plotted against the log base ten of the number of gyrations (log (N)) showing the applicable criteria for $N_{initial}$, N_{design}, and $N_{max.}$

Plot of the percent asphalt binder by total weight of the mix (P_b) versus the following:

% of G_{mm} at N_{design}, VMA at N_{desgin}, VFA at N_{design}, Fines to effective asphalt binder (P_{be}) ratio, and unit weight (kg/m²) at both N_{design} and N_{max}.

Summary of the consensus property standards test results for the design aggregate structure, summary of the source property standards test results for the individual aggregates in the design aggregate structure, target value of the asphalt binder content, and a table of G_{mm} of the asphalt mixture for the four trial asphalt binder contents determined according to T209.

The JMF shall also include the NCAT Ignition Oven calibration for the specific materials utilized for this mix.

Construction:

Production Plants. The contractor shall modify and/or operate their production plant as required by the manufacturer to introduce the WMA technology.

Weather Limitations. Place mix only on dry, unfrozen surfaces.

The minimum ambient temperature shall be 32 degrees F.

The following table of ambient temperatures for various binder grades and lift thicknesses for placement with the following parameters:

- Minimum surface temperature of 32 degrees F
- Maximum production temperature of 275 degrees F
- Maximum wind speed of 8 miles per hour

Lift Thickness (in)	**PG Binder**		
	76-22	**70-22**	**64-22**
1.50	50F	45F	40F
2.00	40F	38F	35F
3.00	32F	32F	32F

Construction outside of these conditions will be at the discretion of the Engineer.

Compaction:

Compaction shall be tested and paid per Item 401699 - Quality Control/Quality Assurance of Bituminous Concrete .05 (b) Pavement Construction - Tests and Evaluations.

Method of Measurement and Basis of Payment:

Method of Measurement and Basis of Payment will be in accordance with Subsections 401.14 and 401.15 of the Standard Specifications.

The item 401699, will define adjustment factor to be applied to the bituminous concrete payments for bonus or penalty.

9/6/11

602506 - PRECAST CONCRETE CULVERT (L.S.)
602522 - PRECAST CONCRETE CULVERT (L.F.)

Description:

This work consists of furnishing, fabricating, and constructing complete in place the precast reinforced concrete culvert(s) and other associated precast structures (footings, wingwalls, parapets, etc.) as specified on the Plans, as described herein and as directed by the Engineer.

Materials:

1. Concrete

   Concrete shall conform to Section 812 of the Standard Specifications except as amended herein. Minimum 28 days strength for precast concrete shall be 5000 psi (35 MPa). The Contractor shall develop his own concrete mix design, according to ACI 211.1-81, Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete, which shall be submitted to the Engineer for approval. The cement content shall not be less than 700 lb. per cubic yard (415 kg per cubic meter). Portland Cement shall be Type I or Type II (ASTM C 150). In a salt water environmental Type II Cement shall be used.

2. Reinforcing Steel

   Reinforcing steel for the wingwalls shall meet the requirements of AASHTO M 31/M 31M, Grade 60 (Grade 400) (AASHTO M 31) and the requirements of Section 603 of the Standard Specifications.

   Reinforcing steel in the culvert shall be as per ASTM C1577 - Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers Designed According to AASHTO LRFD.

3. Backfill

   Borrow Type "B" and/or Borrow Type "C" as required by the plans shall conform to Section 209 of the Standard Specifications.

Design:

The precast concrete culvert shall be constructed in accordance with the notes in the plans and the details provided in ASTM C1577 - Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers Designed According to AASHTO LRFD. The precast concrete wingwalls shall be constructed in accordance with the details in the plans.

If the structural details for the culvert and wing walls differ from those in ASTM C1577 and the plans, the Contractor shall submit design calculations and load ratings (culvert only) for the changed design; and shop drawings showing all pertinent dimensions or reinforcement, reinforcement size and location to the Engineer for approval. The design shall be in accordance with the AASHTO LRFD Bridge Design Specifications, latest edition. The calculations shall be certified by a registered Professional Engineer in the State of Delaware.

Fabrication Plant:

The fabrication plant for precast concrete culvert shall be a National Precast Concrete Association (NPCA) certified plant and pre-approved from the Department.

Fabrication:

1. General

   All materials, equipment, processes of manufacture, and the finished sections, including handling, storage, and transportation, shall be subject to inspection and approval. Any defective construction, which may adversely affect the strength or performance of a section, shall be cause for rejection. Rejected sections shall be replaced at no expense to the Department.

2. Forms

The forms used shall be sufficiently rigid and accurate to maintain the culvert dimensions within the tolerances hereinafter specified. The culverts forms shall be matched so that the internal dimensions from one precast section to the next adjacent section shall not vary by more than 1/2" (13 mm). They shall be well constructed, carefully aligned, substantial and firm, securely braced and fastened together, sufficiently tight to prevent leakage of mortar, and strong enough to withstand the action of mechanical vibrators. All the casting surfaces shall be of a smooth material.

Form ties shall be either the threaded type or the snap-off type, so that no form wires or metal pieces will be left at the surface of the finished concrete. Corners and angles shall be mitered or rounded.

Joints between panel forms shall be made smooth and tight.

3. Curing

The culvert shall be cured for a sufficient length of time so that the concrete will develop the specified compressive strength in 28 days or less. Any one of the following methods of curing or combinations thereof shall be used for culvert sections:

Steam Curing - The culvert sections may be low pressure, steam-cured by a system that will maintain a moist atmosphere.

Water Curing - The culvert sections may be water cured by any method that will keep the sections moist.

Forms Left in Place - An accelerated overnight cure accomplished through the use of an external heat source may be used, provided moisture loss from exposed surfaces is minimized.

The maximum temperature increase or decrease shall be 40° F (22° C) per hour. The initial application of the heat shall be two hours after the final placement of concrete to allow the initial set to take place.

4. Testing Requirements

Test Specimen - Concrete compressive strength shall be determined from compression tests made on cylinders. Acceptance of the concrete culvert sections with respect to compressive strength will be determined on a basis of production lots. A production lot is defined as a group of culvert sections representing 10 culvert sections or a single day's production, whichever is less.

During the production of the culvert sections, the manufacturer shall randomly sample the concrete in accordance with AASHTO T 141. A single compressive strength sample shall consist of a minimum of 4 cylinders randomly selected for every production lot. Cylinders for compressive strength tests shall be 4" x 8" or as specified by the Engineer prepared and tested in accordance with AASHTO T 23 and T 22, respectively. For every compressive strength sample, a minimum of 2 cylinders shall be cured in the same manner as the culvert sections and tested at approximately 7 days. The average compressive strength of these cylinders will determine the initial strength of the concrete. In addition, 2 cylinders shall be cured in accordance with AASHTO T 23 and tested at 28 days. The average compressive strength of these two cylinders will determine the compressive strength of the production lot.

Acceptability by Cylinder Tests - The compressive strength of the concrete for each production lot as previously defined is acceptable when the compressive strength is equal to or greater than the design concrete strength.

When the compressive strength of any production lot is less than the design concrete strength, the production lot shall be rejected. The rejection shall prevail unless the manufacturer, at his/her own expense, obtains and submits evidence of a type acceptable to the Engineer that the strength and quality of the concrete placed within the culvert sections of the production lot are acceptable. If the evidence consists of tests made on cores taken from the culvert sections within the production lot, the cores shall be obtained and tested in accordance with the requirements of AASHTO T 24. The core holes shall be plugged and sealed by the manufacturer in a manner such that the culvert section will meet all of the test requirements of this Special Provision. Culvert sections so sealed shall be considered satisfactory for use.

5. Tolerances

Internal Dimensions - The internal dimension shall vary not more than -0"/+1/4" (-0 mm/+25 mm) from the design dimensions.

Top Slab and Wall Thickness - The top slab and wall thickness shall not be less than the design dimensions by more than 5 percent. A thickness more than that required shall not be cause for rejection.

Length of Opposite Surfaces - Variations in laying lengths of two opposite surfaces of the culvert sections shall not be more than 1/8"/foot (10 mm/m) of internal span, with a maximum of 5/8" (16 mm) for all sizes through 7' (2100 mm) internal span, and a maximum of 3/4" (19 mm) for internal spans greater than 7' (2100 mm).

Length of Section - The under run in length shall not be more than 1/8"/foot (10 mm/m) of length with a maximum of 1/2" (13 mm) in any box section.

Position of Reinforcement - The maximum variation in the position of the reinforcement shall be ±3/8" (± 10 mm), except the minimum cover over the reinforcement for any surface of the box culvert shall not be less than 1" (25 mm). The above tolerances or cover requirements do not apply to mating surfaces of the joint. The minimum cover over the reinforcement for any surface of the wing walls shall not be less than 2" (50 mm).

Area of Reinforcement - The areas of steel reinforcement shall be the design steel areas per linear foot (linear meter). Steel areas greater than those required shall not be cause for rejection. The permissible variation in diameter of any reinforcement shall conform to the tolerances prescribed in the ASTM specification for that type of reinforcement.

Construction Methods:

The foundation on which the footings are to be placed shall be a layer of the type of coarse aggregate as specified on the Plans. The bedding areas on which the coarse aggregate will be placed shall be approved by the Engineer. Coarse aggregate shall be carefully placed and tamped to form a solid, unyielding mass with the exposed surface conforming to the form and dimensions shown on the Plans.

Precast sections shall be assembled in accordance with the recommendations of the manufacturer and as approved by the Engineer in the field. The culvert sections shall be so formed that when they are laid together they will make a continuous line of culverts with a smooth interior free of appreciable irregularities, and compatible with the permissible tolerances of this Special Provision.

Care shall be exercised to insure proper matching and aligning of joints of adjacent sections. The joints shall consist of mortar filled shear keyways. The keyway surfaces shall be given a medium abrasive grit blast, 2000 psi (14 MPa) waterblast or a thorough wire brushing at the plant within four days prior to leaving the plant. Mortar for the keyway shall be a non-shrinking, non-metallic mortar having a minimum compressive strength at 28 days of 5000 psi (35 MPa). Before applying the mortar, the surfaces shall be clean of all dirt, dust, and other foreign matter. The surfaces shall be wetted, but no free water shall be allowed to remain in the keyway. The mortar shall be prepared, placed, and cured in accordance with the manufacturers recommendations.

The joint exterior shall be covered with a minimum of a 9" (225 mm) wide wrap centered on the joint. The external wrap shall be as per ASTM C-877. Care shall be exercised to keep the joint wrap in its proper location during backfilling.

The section length shall not exceed that which permits lifting, moving, and placing of the section without any bending, distortion, or stress being induced therein. Devices or holes shall be permitted in each culvert section for the purpose of handling. However, not more than four holes may be cast or drilled in each section. The holes shall be tapered unless drilled, and before backfilling, the tapered holes shall be filled with portland cement mortar, or with precast concrete plugs which shall be secured with portland cement mortar or other approved adhesive. Drilled holes shall be filled with portland cement mortar. Holes shall be covered on the exterior with the joint wrap material previously specified. This wrap shall have a minimum length and width of 9" (225 mm).

No construction equipment except for compaction shall be permitted to pass over the culvert until the fill height has reached the bottom of the pavement subbase. Hauling of materials over the culvert shall be limited as directed, and in no case shall legal load limits specified in Section 105.12 of the Standard Specifications be exceeded unless permitted in writing.

Method of Measurement:

The quantity of item 602506 - Precast Concrete Culvert will not be measured.

The quantity of item 602522 - Precast Concrete Culvert will be measured as the number of linear feet (linear meters) of Precast Concrete Culvert installed and accepted.

Basis of Payment:

The quantity of Precast Concrete Culvert will be paid for at the Contract lump sum price for item 602506 and/or at the Contract unit price per linear foot (linear meter) for item 602522. Price and payment will constitute full compensation for furnishing all materials related to the precast units, designing, fabricating and installing the units on site for all labor, tools, equipment and necessary incidentals to complete the work. Price and payment will also constitute full compensation for all materials, labor, tools, equipment and incidentals necessary to construct structures associated with the culvert (footings, wingwalls, parapets, etc.) as specified on the Plans. Excavation, backfill, backfilling, and coarse aggregate will be paid separately under their respective bid items of this contract.

3/21/11

602537 - RETAINING WALL

Description:

The work under this section shall consist of constructing the Reinforced Portland Cement Concrete Retaining Wall detailed in the plans.

Construction Methods:

Concrete shall be formed and placed per Standard Specifications 602.08 and 602.10. The concrete surfaces shall receive an "ordinary finish" per section 602.17(b). Curing shall be performed as outlined in Section 602.18.

Bar reinforcement shall be placed in accordance with Standard Specification Section 603.05.

Method of Measurement:

The number of square feet of Retaining Wall to be paid for under this section shall be the number of square feet in place, complete and accepted.

The vertical height to be measured shall be from the top of footing to the top of the wall as depicted on the plans. The horizontal measurement shall be made along the front face of the retaining wall.

The rear face, top surface and footing shall not be measured nor paid for directly but shall be considered incidental to the construction of the retaining wall.

Basis of Payment:

Section 602537 shall be paid for at the contract square foot price bid for Retaining Wall, which price and payment shall constitute full compensation for furnishing all labor, materials and equipment including concrete, epoxy coated reinforcing steel, excavation, backfilling, backfill, coarse aggregate foundation material, and all incidentals necessary to complete the item.

5/15/13

602615 - MODULAR BLOCK RETAINING WALL

Description:

This work consists of furnishing all materials and constructing a modular block retaining wall in accordance with the locations, notes, details on Plans and as directed by the Engineer.

Acceptable modular block retaining walls are:

1. "Allan Block Retaining Wall Systems" style AB Three as manufactured by Fizzano Bros., Inc., 1776 Chester Pike, Crum Lynne, PA 19022 (Telephone (610)833-1100).

2. "Keystone Retaining Wall Systems", standard unit with straight face as manufactured by Anchor Concrete Products, Inc., P. O. Box 601, Bridgeport, NJ 08014 (Telephone (609)241-1544).

3. Approved equal.

Working Drawings:

General - Submit an acceptable preliminary conceptual design at least 90 Calendar Days in advance of retaining wall construction. Furnish, at no expense to the Department, detailed design engineering calculations, construction drawings, and erection methods. Provide approved drawings using DelDOT drafting standards.

Include the following information on the drawings: type of wall, location, length, top elevations(s), proposed bottom of footing or leveling pad elevation(s), modular blocks, and cross sections including backfill material type and limits, and quantities. Also show, as required, any details for parapets, coping, barriers, conduit, or other attachments to the wall. Show complete layout plans and fabrication details, including reinforcement and attachments, for the modular blocks, footings or leveling pads, and step by step erection instructions.

Any fabrication done before acceptance of the drawings will be at the Contractor's risk.

All design information shown on the Contract Plans are conceptual. The proprietary wall vendor takes full responsibility for the engineering theory and calculations and ensuring that all design assumptions are presented in their drawings and specifications.

Any delay in submission and acceptance of a proposed design will not extend the Contract time.

Experimental or demonstration-type design concepts; or products, structures, or elements not preapproved by the Department for general usage, will not be permitted in the alternate design.

Show, on the design, the seal of a P.E. registered in the State of Delaware, a valid signature in ink, the date signed, a business name, and a business address.

Perform required design of the retaining wall in accordance with 1998 AASHTO LRFD Bridge Design Specifications with current interims, and the DelDOT Bridge Design Manual with current updates unless otherwise indicated or specified. Current design practice includes the use of all applicable codes and Department design specifications, publications, policies, and procedures in effect on the date bids are opened.

Submit shop drawings to the Department for review and acceptance. The Department will in no way be responsible for work done without approved shop drawings.

Design the retaining wall to be within the limits of allowable foundation bearing pressures as indicated for the conceptual design. Do not change the bottom of footing elevation, unless approved by the Department.

Materials and Construction Methods:

At the time of submitting the shop drawings, the Contractor shall also submit for approval the material requirements and construction methods for the modular block retaining wall.

Method of Measurement:

The quantity of modular block retaining wall will be measured as the actual number of square feet (square meters) of vertical wall surface above the footer or foundation material.

Basis of Payment:

The quantity of modular block retaining wall 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, excavation, footer if required, backfill, backfillings, hauling, fabrication and erection, for all labor, tools, equipment and incidentals necessary to complete the work. Rock, if encountered, shall be paid under Item 206000.

5/23/13

602646 - SILICONE ACRYLIC CONCRETE SEALER

Description:

This work consists of surface preparation, furnishing all materials, and application of a silicone acrylic concrete sealer to any concrete surface. The work shall be performed as indicated on the Plans, in accordance with these Specifications, and as directed by the Engineer.

Materials:

The concrete sealer shall consist of methyl methacrylate-ethyl acrylate copolymer resins and toning pigments suspended in solution of all times by a chemical suspension agent and solvent. Laminar silicates, titanium dioxides, and inorganic oxides may be used for toning pigments. Use of vegetable or marine oils, paraffin materials, stearates or organic pigments in the formulation shall not be permitted.

The Sealer shall be opaque, non-film forming, and penetrating silicone acrylic compound. The sealer shall pass NCHRP 244 Series-2, salt spray resistance requirements. The materials must be local OTC-VOC compliant.

The contractor shall provide Materials and Research Section one (1) quart sample from each batch of the silicone acrylic sealer compound supplied for chemical identification and testing.

The manufacturer shall supply a Materials Safety Data Sheet and a letter of certificate compliance of batch & lot of each shipment of the concrete sealer materials. The contractor shall also provide a manufacturer analysis report of the materials used with the specified batch shipped to the job site.

The color of the compound shall be off white (Federal Color #37925 of FED-STD-595B) or as specified on the plans.

Surface Preparation:

All new concrete surfaces, texturing, saw cutting, repointing and grooving shall be completed before the surface is prepared for sealer. All concrete that is to be sealed shall be cured for at least 28 days after casting or for the length of time specified in the manufacturer's instruction, which ever is longer. After 28 days, concrete surface shall be lightly sand or shot blasted, followed by vacuum cleaning in accordance with ASTM D 4258 & SSPC-SP-13 requirement to completely remove any applied curing compound, and to make surface lightly rough for penetration of sealer.

For existing concrete, all previous sealers and paints, all salt, efflorescence, laitance, and other foreign matter, and all loose material shall be completely removed using one or a combination of different preparation methods as specified in ASTM D-4258 and SSPC-SP 13.

In addition, both new and existing concrete shall receive a high pressure (3000-5000 psi) water washing at a flow of more than 4 gallons per minute, with zero degree of rotary nozzle. The contractor shall also allow the surface to dry for a minimum of 24 hours prior to the coating application after high-pressure washing. All surface preparation work shall be completed and approved by the Engineer before sealer the application can commence.

Construction Methods:

The sealer shall be used as supplied by the manufacturers without thinning or alteration unless specifically required in the manufacturer's instructions and verified by Engineer.

The silicone acrylic concrete sealer shall be applied to all exposed concrete surfaces as shown on the plans.

Concrete curing compounds, form release agents, and concrete hardeners may not be compatible with recommended coatings. Check for compatibility by applying a test patch of the recommended coating system, covering at least 20 to 30 square feet.

The concrete sealer material shall be applied using coverage rate and equipment in accordance with the manufacturer's recommendations.

A minimum of two coats shall be applied; all applications shall be performed under dry conditions with application-spread rate as recommended by the manufacturers.

The sealer shall be applied within the ambient temperature range as recommended by the manufacturer, when no rain is expected within a minimum of 12 hours following the application, and there are no high winds that would cause an improper application. If rain has preceded the application, the surface shall be allowed to dry at least 24 hours before waterproofing application begins.

Follow manufacturers recommendation for coating thickness. No drips, runs, or sags will be allowed during application. Natural bristle brush, roller, or spray can be used to perform the application. Follow manufacturers recommendation during application. No thinning of materials is permitted; all application procedures, and drying time between coats must be as per manufacturers recommendations.

The Contractor shall perform surface preparation and application of the concrete sealer material so as not to endanger any private and/or public property, pedestrians, workmen, and vehicles on, beneath or adjacent to the structure.

Method of Measurement:

The quantity of "Silicone Acrylic Concrete Sealer" will be measured by the square feet of area treated and accepted.

Basis of Payment:

The quantity of "Silicone Acrylic Concrete Sealer" will be paid for at the Contract unit price per square foot. Price and payment will constitute full compensation for furnishing all materials, furnishing and removing scaffolding as required, surface preparation, application of the concrete sealer material, disposal of discarded materials, and for all labor, tools, equipment, and all necessary incidentals to complete the work.

2/1/07

606504 - ALUMINUM HANDRAIL

Description:

This work consists of furnishing and installing coated aluminum handrail as shown on the Construction Plans. It includes furnishing and installing the aluminum rail and all required connectors, anchors, and hardware.

Materials:

Coated aluminum rail, internal pickets, anchor bolts, and base plates shall meet the requirements detailed on the plans.

The stainless steel anchor bolts shall be installed using an epoxy adhesive system (Hilti, Kelken-Gold, or approved equal).

Construction Methods:

Shop drawings sealed by a Professional Engineer licensed in the State of Delaware shall be submitted for approval.

Anchors for the fence posts shall be installed using an approved adhesive system after the concrete cap has reached a compressive strength of at least 3,000 psi.

Method of Measurement:

The quantity of aluminum handrail will be measured as the number of linear feet (linear meters) of aluminum handrail installed and accepted.

Basis of Payment:

The quantity of aluminum handrail will be paid for at the Contract unit price per linear foot (linear meter). Price and payment shall constitute full compensation for furnishing and installing all materials necessary to complete the item as detailed on the plans and approved shop drawings.

5/15/13

614508 - WATER MAIN AND ACCESSORIES

Description:

This work consists of furnishing and installing all materials to relocate 12 inch PVC and DIP Waterlines, including Taps, Tie-ins, Fittings, and Valves; relocate fire hydrants; and other related items as shown on the plans and meeting the requirements of the applicable DelDOT Standard Specifications, these Special Provisons and the applicable Technical Specifications. The relocations are located between sta 164+00 +/- and sta 207+50 +/-

Any requirements included in the Technical Specifications that are not addressed on the plans or by these Special Provisions, shall be performed in accordance with the applicable sections of the Appendix B Technical Specifications. The Contractor is advised to obtain and be fully acquainted with the applicable specifications of the Owner. Costs to comply are considered incidental to Item 614508.

The Owner of the water line on this project is the Town of Ocean View, Delaware, and their Technical Specifications are included in this contract as Appendix B to the Special Provisions. When referenced in these Special Provisions, or the Technical Specifications, the Owner is intended to be represented by an employee of the Town of Ocean View and/or Tidewater Utilities, Inc.

All work on this item shall be performed by a contractor prequalified by and acceptable to the Town of Ocean View.

A “Breakout Sheet” is included in the contract to establish unit prices for the items listed below. The total of these unit prices multiplied by the estimated quantities will establish the total Lump Sum price to be submitted with the bid. Each listed item will be measured as a unit price item in the field. The final Lump Sum payment for Item 614508 will be adjusted by change order, either plus or minus, to match the final totals of all unit price items established in the Breakout Sheet. Failure to complete and submit the Breakout Sheet with the bid will cause the bid to be considered unresponsive.

Breakout Item	Description
W-1	Furnish and Install one 12" x 6" Hydrant Tee and 6" Valve @ SR 26 Connection point near Lord Baltimore School (Sta 164+00 +/-) [Lump Sum]
W-2	Relocate hydrant and hydrant valve box near Ocean View / Tidewater connection point (sta 164+00 +/-) with new lateral [Lump Sum]
W-3	Furnish and Install new C-909, CL 150 PVC water main at connection point (sta 164+00 +/-) and/or connect with Tidewater system using appropriate valves, fittings, etc. [Lump Sum]
W-4	Relocate hydrants at station 168+67, 174+50, 180+50, 184+75, 200+38, and 207+57; include any new lateral piping, bends, fittings, and adjust valve box lids to future grade [6 ea]
W-5	Furnish and Install wet tap on existing 10" DIP water main at West Ave. sta 361+38; include 10" valve, 10" to 12" increaser, and other necessary fittings or appurtenances [Lump Sum]
W-6	Furnish and Install new 12" Ductile Iron (DIP) water main, a 12" x 6" DIP Hydrant Tee, a 6" Hydrant Valve, and any necessary fittings [30 LF]
W-7	Relocate hydrant & valve box onto new main at Sta. 189+78; also abandon existing 6" valve in place and install cap [Lump Sum]
W-8	Furnish and Install 12-inch C-909 CL150 PVC water main, tie-in with existing main; include any necessary fittings & appurtenances [275 LF]
W-9	Furnish and Install 2-inch blow off on end of new main [Lump Sum]
W-10	Abandon existing 12-inch water main by cutting and capping all ends between Stations 189+50 to 192+50 [Lump Sum]
W-11	Perform a main deflection per detail sheet A-9 [1 EA]

W-12 Perform a water service lateral and meter box adjustment [1 EA]

W-13 Wet-tap a new hydrant tee with valve and new valve box, include new lateral piping (C909 PVC), and any fittings to connect relocated hydrant [1 EA]

W-14 Paint Fire Hydrant [1 EA]

General Requirements:

As listed in the Appendix B Technical Specifications 01000, 01300, 01400, and 01600.

Any and all emergency repairs required during the period of this Contract shall be the responsibility of the Contractor. In the event the Owner or Engineer is unable to contact the Contractor for the immediate emergency repair items of work, or in the event the Contractor does not take action when contacted within a reasonable length of time, the Owner of the utility reserves the right to attend to any and all emergency repair work items and to resubmit the costs directly to the Contractor for complete payment.

An inspector representing the Owner must be present during any service connections. All service connections must be performed by a Licensed Plumber.

Specifications:

DelDOT Standard Specification Sections 208.04, 209.04, 708.08, 708.14, 812.02, and 812.03 (Class B),

Technical Specification Sections 01000, 01300, 01400, 01600, 02221, 02222, 02600, 02661, 02662, and 02663

Contract Plans and Details

These Special Provisions

Submittals:

In addition to the as-built drawings outlined in Technical Specification Section 01300, the Contractor shall submit sources of supply and catalog cuts to DelDOT for all materials furnished as part of Item 614508 as required by Standard Specification Section 106.

The Contractor shall submit for review and approval by the Engineer a detailed plan for dewatering the work zone prior to beginning any water relocation work. It is intended to place all pipe and appurtenances in a “dry trench”. Refer to Technical Specification Section 02222, Article 3.1 for additional bedding details.

The Contractor shall submit the proposed materials, procedure, and sequence of operations for review and approval by the Engineer and Owner prior to beginning work on any “wet taps”.

Materials:

Requirements for all materials related to the water main work are as listed in the plan details and Article 2.1 of Technical Specification Sections 02660, 02662, and 02663. Note that material required for water services (Section 02662) will be provided by Tidewater Utilities, Inc. as needed. All materials for the water main work shall be made in America unless specifically approved otherwise.

Cast-in-place Concrete shall meet the requirements of Section 812, Class B of the Delaware Standard Specifications.

Borrow, Type C, or existing material meeting Borrow, Type C for backfilling shall conform to the requirements of Section 209.04 of the DelDOT Standard Specifications.

Pipe foundation bedding shall meet Borrow, Type B, or existing material meeting Borrow, Type B requirements in accordance with Section 209.04 of the DelDOT Standard Specifications.

Construction Methods:

Furnish and Install one 12" x 6" Hydrant Tee and 6" Valve @ SR 26 Connection point near Lord

Baltimore School (Sta164+00 +/-); (Breakout Item W-1) -

Excavate, dewater if necessary, furnish, and install the hydrant tee and valve as indicated on the plans and in accordance with Technical Specifications Sections 02221, 02222, Part 3 of Technical Specification 02660 and the applicable Ocean View Water Typical Details. Backfill the area following approval by the Owner and Engineer.

Relocate hydrant and hydrant valve box near Ocean View / Tidewater connection Point (sta 164+00 +/-) with new lateral (Breakout Item W-2) –

Excavate, dewater if necessary, relocate an existing fire hydrant, and hydrant valve box as shown on the plans and in accordance with Article 3.2 of technical Specification 02663 and the applicable Ocean View Water Typical Details. Before being accepted, the relocated hydrant shall be pressure tested for one hour at system pressure and approved by the Owner. Backfill the area following approval by the Owner and Engineer. Tidewater connection point (sta 164+00 +/-)

Furnish and Install new C-909, CL 150 PVC water main at connection point (sta 164+00 +/-) and/or connect with Tidewater system using appropriate valves, fittings, etc. (Breakout Item W-3) –

Excavate, dewater if necessary, furnish, and install necessary 12" PVC pipe and/or fittings to tie-in the Ocean View water main to the Tidewater Utilities main. The work also includes, but is not limited to, furnishing and installing a 12" Gate Valve and Box, temporary blow-off, required testing, and any related work to successfully tie together the Ocean View and Tidewater mains in accordance with the plans, Technical Specification Sections 02221, 02222, Part 3 of Technical Specification 02660, and the applicable Ocean View Water Typical Details. Backfill the area following approval by the Owner and Engineer.

Relocate hydrants at station 168+67, 174+50, 180+50, 184+75, 200+38, and 207+57; include any new lateral piping, bends, fittings, and adjust valve box lids to future grade (Breakout item W-4) –

Excavate and relocate existing hydrants including fittings and new lateral pipe. Also included are adjustments to valve boxes. The work shall be performed in accordance with the plans, Technical Specification Sections 02221, 02222, Part 3 of Technical Specifications 02660, 02663 and the applicable Ocean View Water Typical Details. Before being accepted, all relocated hydrants shall be pressure tested for one hour at system pressure and approved by the Owner. Backfill the areas following approval by the Owner.

Wet tap existing 10-inch DIP water main at West Ave. Station 361+38 including 10-inch tapping sleeve and valve, 10-inch to 12-inch expander and any other necessary fittings or appurtenances (Breakout Item W-5) -

Furnish and install a 10" Tapping Sleeve and Valve on existing DIP water main as shown on the plans. Also furnish and install a 10" to 12" DIP expander. A cut sheet for the proposed Tapping Sleeve and Valve assembly shall be submitted to the Engineer for review and approval. The Contractor shall submit the proposed procedure and sequence of operations for review and approval by the Engineer and Owner prior to beginning the wet tap.

Furnish and Install new 12-inch Ductile Iron water main, a 12-inch x 6-inch D.I. hydrant tee, and 6-inch hydrant valve; include any necessary fittings (Breakout Item W-6) -

Excavate, dewater if necessary, furnish and install 12" Ductile Iron water main pipe as shown on the plans, including all required testing of the line. Also furnish and install a new hydrant tee and valve. This work to be done in accordance with Technical Specification Sections 02221, 02222, Part 3 of Technical Specifications 02660, 02663 and the applicable Ocean View Water Typical Details. Backfill the area following approval by the Engineer and Owner.

Relocate hydrant & valve box onto new main at Sta. 189+78; also abandon existing 6" valve in place and install cap (Breakout Item W-7) –

This work includes relocating an existing hydrant and valve box onto the new water main at the interface between the ductile iron and PVC pipe. Abandoning and capping the existing 6" valve is also included. The work shall be performed in accordance with the plan details, Part 3 of Technical Specification 02663 and the applicable Ocean View Water Typical Details. Before being accepted, the relocated hydrant shall be pressure tested for one hour at system pressure and approved by the Owner.

Furnish and Install 12-inch C-909 CL150 PVC water main, tie-in with existing main; include any necessary fittings & appurtenances (Breakout Item W-8) –

Excavate, dewater if necessary, and install 12" PVC water main pipe as shown on the plans between sta 189+50 +/- and sta 192+50 +/- in accordance with Technical Specification Sections 02221, 02222, Part 3 of Technical Specification 02660, and the applicable Ocean View Water Typical Details. The work also includes tying into the existing 12" DIP water main with a transition fitting and removal of a temporary 2" blow-off. Perform all required testing of the line and backfill following approval of the Owner.

Install 2-inch blow off on end of new main (Breakout Item W-9) –

Furnish and Install a temporary 2" blow-off valve at sta 192+50 +/- in accordance with Article 3.4 of Technical Specification 02660 and the applicable Ocean View Water Typical Details.

Abandon existing 12-inch water main by cutting and capping all ends between Stations 189+50 to 192+50 (Breakout Item W-10) –

Complete the abandonment of the existing 12" water main by cutting, capping, and removing portions of water main as necessary in accordance with the applicable Ocean View Water Typical Details and as directed by the Owner and Engineer in the field. In accordance with technical Specifications 02221 and 02222, all excavation, backfill, backfilling, and dewatering if necessary are also included.

Perform a main deflection per detail sheet A-9 (Breakout Item W-11) -

This item shall be utilized to avoid a conflict between water mains and storm sewer pipes or other Utility lines. The work includes all excavation, dewatering if necessary, backfill, and backfilling. Furnishing and installing water line pipe, bends, restraints, fittings, thrust blocks, and any other required appurtenances are also included. Temporary support of existing lines in conflict to be provided if needed. The work shall be performed in accordance with Technical Specification Section 02221, 02222, Part 3 of Technical Specification 02660 and Ocean View Water Typical Detail A-9.

Perform a water service lateral and meter box adjustment (Breakout Item W-12) –

This item shall be utilized to avoid conflicts between existing water services and new storm sewer pipes, other utility lines, or to accommodate changes in finished surface elevations due to new road construction. Work includes excavation, dewatering if necessary, backfill, backfilling, installation of service piping and related materials (materials for this item to be supplied by the Owner), in order to avoid the conflict and successfully reconnect the service. Final connections must be made by a Licensed Plumber; witnessed and approved by a representative of the Owner. The work shall be performed in accordance with Technical Specification Sections 02221, 02222, Part 3 of Technical Specification 02662 and applicable Ocean View Water Typical Details.

Wet-tap a new hydrant tee with valve and new valve box, include new lateral piping (C909 PVC), and any fittings to connect relocated hydrant (Breakout Item W-13) –

This item to be used if directed in the field by the Owner. The work includes excavation, backfill, backfilling, furnishing and installing a new hydrant tee and valve box, lateral PVC piping and fittings in accordance with Technical Specifications 02221, 02222, 02663 and the applicable Ocean View Water Typical Details.

Paint Fire Hydrant (Breakout item W-14) –

If directed by the Owner, the Hydrants in question shall be painted in accordance with Article 3.3 of Technical Specification 02663. The work includes cleaning and preparing the hydrant for painting, furnishing and applying the specified paint.

<u>Measurement and Payment:</u>

General Requirements –

Price and payment for all breakout items listed as part of Item 614508 include excavation, dewatering, furnishing, installing, and removing sheeting, shoring, or trench boxes to meet OSHA requirements; backfill (including furnishing Type B and/or Type C Borrow), backfilling, and Testing to meet the requirements of the Owner. Also included in all items are, where necessary, concrete thrust blocks and restraints, tracing wire,

and detector tape per Owner's requirements.

Any excavation and backfill below the originally designed elevations due to unsuitable material shall be addressed in accordance with Article 3.2C of Technical Specification 02660.

Pavement Sawcutting, Roadway Patching materials (GABC and warm mix), removal of existing concrete, topsoil, seeding, and all Maintenance of Traffic items will be paid for separately under their respective bid items.

Furnish and Install one 12" x 6" Hydrant Tee and 6" Valve @ SR 26 Connection point near Lord Baltimore School (Sta164+00 +/-); (Breakout Item W-1) -

In addition to the General Requirements, the Lump Sum price and payment shall include furnishing and installing the 12" x 6" Hydrant Tee and 6" Valve, and all labor, equipment, and incidentals needed to complete the item.

Relocate hydrant and hydrant valve box near Ocean View / Tidewater connection Point (sta 164+00 +/-) with new lateral (Breakout Item W-2) –

In addition to the General Requirements, the Lump Sum price and payment shall include relocating and reinstalling an existing hydrant and valve box; furnishing and installing necessary new lateral pipe and all labor, equipment, and incidentals needed to complete the item.

Furnish and Install new C-909, CL 150 PVC water main at connection point (sta 164+00 +/-) and/or connect with Tidewater system using appropriate valves, fittings, etc. (Breakout Item W-3) –

In addition to the General Requirements, the Lump Sum price and payment shall include furnishing and installing necessary 12" PVC pipe and/or fittings to tie-in the Ocean View water main to the Tidewater Utilities main. Payment also includes furnishing and installing a 12" Gate Valve and Box, temporary blow-off, and any related work to successfully tie together the Ocean View and Tidewater mains.

Relocate hydrants at station 168+67, 174+50, 180+50, 184+75, 200+38, and 207+57; include any new lateral piping, bends, fittings, and adjust valve box lids to future grade (Breakout item W-4) –

In addition to the General Requirements, the price per each shall include removing, relocating, and reinstalling an existing Fire Hydrant along with furnishing and installing new lateral piping, bends and fittings. Lateral piping and valve box adjustments are incidental to the price per each. Payment also includes all labor, equipment, and incidentals needed to complete the item.

Wet tap existing 10-inch DIP water main at West Ave. Station 361+38 including 10-inch tapping sleeve and valve, 10-inch to 12-inch expander and any other necessary fittings or appurtenances (Breakout Item W-5) –

In addition to the General Requirements, the Lump Sum price and payment shall include furnishing and installing the tapping sleeve, valve, expander, and other required fittings; submitting the tapping procedure and sequence of operations, and all labor, equipment, and incidentals needed to complete the item.

Furnish and Install new 12-inch Ductile Iron water main, a 12-inch x 6-inch D.I. hydrant tee, and 6-inch hydrant valve; include any necessary fittings (Breakout Item W-6) –

In addition to the General Requirements, the price per linear foot shall include furnishing and installing the Ductile Iron Pipe, hydrant tee, hydrant valve and fittings. Measurement will be made from end to end of the final length of installed pipe and fittings. Measurement will be made through any fittings with no deduction. Payment also includes all labor, equipment, and incidentals needed to complete the item.

Relocate hydrant & valve box onto new main at Sta. 189+78; also abandon existing 6" valve in place and install cap (Breakout Item W-7) –

In addition to the General Requirements, the Lump Sum price and payment shall include removing, relocating, and reinstalling an existing Fire Hydrant and valve box. The item also includes abandoning and capping the existing 6" valve near the original hydrant location. Payment also includes all labor, equipment, and incidentals needed to complete the item.

Furnish and Install 12-inch C-909 CL150 PVC water main, tie-in with existing main; include any necessary fittings & appurtenances (Breakout Item W-8) –

In addition to the General Requirements, the price per linear foot shall include furnishing and installing the PVC Pipe, fittings including a 12" PVC to DIP Transition, and appurtenances. Measurement will be made from end to end of the final length of installed pipe and fittings. Measurement will be made through any fittings with no deduction. Removal of a temporary 2" blow-off is to be performed under this item with payment incidental to the linear foot price. Costs to tie-in the new line to existing line are incidental to the price per linear foot. Payment includes all labor, equipment, and incidentals needed to complete the item.

Install 2-inch blow off on end of new main (Breakout Item W-9) –

In addition to the General Requirements, the Lump Sum price and payment shall include furnishing and installing a 2-inch blow-off valve as shown on the plans. Payment also includes all labor, equipment, and incidentals needed to complete the item.

Abandon existing 12-inch water main by cutting and capping all ends between Stations 189+50 to 192+50 (Breakout Item W-10) –

In addition to the General Requirements, the Lump Sum price and payment shall include cutting, capping, and removal of any excess materials. Payment includes furnishing and installing the caps and any related hardware.

Perform a main deflection per detail sheet A-9 (Breakout Item W-11) -

In addition to the General Requirements, the price per each shall include furnishing and installing all materials to resolve an alignment conflict between a water main and storm sewer or other Utility pipe. Also included is any required temporary support of the pipe in conflict with the water main. Payment also includes all labor, equipment, and incidentals needed to complete the item.

Perform a water service lateral and meter box adjustment (Breakout Item W-12) –

In addition to the General Requirements, the price per each shall include installation of necessary service lateral pipe, labor and equipment necessary to adjust an existing service connection and/or meter box. Any new materials required will be furnished by the Owner. Also included in the price per each is the cost to have any service connections performed by a Licensed Plumber.

Wet-tap a new hydrant tee with valve and new valve box, include new lateral piping (C909 PVC), and any fittings to connect relocated hydrant (Breakout Item W-13) –

In addition to the General Requirements, the price per each shall include furnishing and installing a new hydrant tee with valve and valve box, new lateral piping and fittings as needed, performing a hydrant wet tap, and for all labor and equipment necessary to complete the item.

Paint Fire Hydrant (Breakout item W-14) –

In addition to the General Requirements, the price per each shall include cleaning and preparing the existing hydrant for painting; furnishing and applying by brush all required paint, and for all labor and equipment necessary to complete the item.

Payment Clarification –

A percentage of the total Lump Sum bid price will be paid based on the work performed in each pay period. The percentage will be calculated by multiplying the total units of each completed Breakout Item times the appropriate unit price; then adding the total dollars of completed work, divided by the total Lump Sum bid price for item 614518, Water Main and Accessories. Final payment may result in less than 100% of the total Lump Sum based on actual work performed. Should the Lump Sum total be exceeded, additional funds will be added by Change Order based on the best available estimate at the time. Failure to fully complete the Breakout Sheet for this Item will result in the bid being declared non-responsive.

705528 - TEMPORARY CURB RAMP

Description:

This item shall consist of furnishing, erecting and installing Temporary Curb Ramps at the required location(s) and in accordance with the notes and details on the Plans and as directed by the Engineer.

After the completion of the project, the Temporary Curb Ramps shall become the property of the Contractor and shall be removed from the project site.

Materials and Construction Methods:

The Temporary Curb Ramps shall be used as required during maintenance of traffic and pedestrians during construction as directed by the Engineer. Curb ramps must be provided wherever an accessible pedestrian route crosses a curb or experiences a change of grade requiring a temporary curb ramp. The smallest possible slope should be used for all ramps and the maximum slope is 1:12. Transitions from ramps to walks or streets should be flush without abrupt changes. The adjoining landing areas, within three (3) feet of temporary curb ramps, shall not exceed 1:20. Temporary curb ramps must have a minimum width of 36", exclusive of flared sides. Temporary curb ramp surfaces must be stable and slip resistant. Changes in surface level up to ¼ inch may be vertical without edge treatment. Changes in surface level greater than ¼ inch must use a ramp. If a curb ramp is located where pedestrians must walk across the ramp or where the ramp is not shielded by handrails or guardrails, it must have flared sides. The maximum slope of the flare shall be 1:10.

The Contractor shall submit the locations of temporary curb ramps to be used during each stage of construction to the Engineer as part of the maintenance of pedestrian access plan for approval. The Engineer shall approve the Temporary Curb Ramp materials including the posts and methods of fabrication prior to installation.

Due to space limitations, the Contractor may be required to move the temporary curb ramps and/or reposition curb ramps from time to time so that adjacent construction activities and pedestrian access can coexist within the project site simultaneously as required. No payment shall be made for such relocation and the cost shall be incidental to the item.

Method of Measurement:

Temporary Curb Ramps shall be erected by the Contractor as required with payment to be made on an each (EA) used basis for the duration of the contract for temporary curb ramps actually furnished and used as required and approved by the Engineer.

Basis of Payment:

The number of temporary curb ramps measured as described above, shall be paid for at the contract unit price bid per each as required by the Contract. Price and payment shall be full compensation for furnishing, placing, maintaining, repositioning, preparation and cleaning the curb ramp area, removal and disposal of the temporary curb ramps and related accessories, furnishing all labor, materials, equipment, tools and all incidentals necessary to complete the work. Temporary Curb Ramps stolen or damaged shall be replaced at the Contractor's expense.

12/18/08

708512 - DRAINAGE INLET, SPECIAL I
708513 - DRAINAGE INLET, SPECIAL II
708514 - DRAINAGE INLET, SPECIAL III
708515 - DRAINAGE INLET, SPECIAL IV
708516 - DRAINAGE INLET, SPECIAL V
708517 - DRAINAGE INLET, SPECIAL VI
708518 - DRAINAGE INLET, SPECIAL VII
708653 – DRAINAGE INLET, SPECIAL VIII
708654 – DRAINAGE INLET, SPECIAL IX
708655 – DRAINAGE INLET, SPECIAL X
708656 – DRAINAGE INLET, SPECIAL XI
708657 – DRAINAGE INLET, SPECIAL XII

Description:

This work consists of furnishing all materials and constructing special drainage inlets (catch basins) in accordance with locations, notes, details on Plans and as directed by the Engineer.

Materials and Construction Methods:

Materials and construction methods for special drainage inlets shall conform to the applicable requirements of Section 708 of the Standard Specifications, and notes with details on the Plans.

Method of Measurement and Basis of Payment:

Measurement and payment for the special drainage inlets shall be made in accordance with the Subsections 708.15 and 708.16 of the Standard Specifications.

10/29/01

708563 - PERSONAL GRATE FOR PIPE INLET

Description:

This work consists of furnishing all materials, fabricating, delivering and constructing personal grates for pipe inlets as shown on the details on the Plans, as directed by the Engineer and as required by these Special Provisions.

Materials:

Materials shall conform to the requirements of Sections 603 and 612 and shall be galvanized in accordance with Subsection 826.07 including all rebar, hardware and fasteners as shown on the Plans.

Working drawings shall be submitted in accordance with Subsection 105.04.

Construction Methods:

Personal grates for pipe inlets shall be constructed based on the details shown on the Plans and at the size and locations shown on the Plans.

Method of Measurement:

The quantity of personal grate for pipe inlet will not be measured.

Basis of Payment:

The quantity of personal grate for pipe inlet will be paid for at the Contract unit price lump sum. Price and payment will constitute full compensation for furnishing, hauling and installing materials, including bar reinforcement; for excavating including removal and disposal of existing end sections, backfilling, and compacting; for cribbing, shoring, sheeting, coating, and paving; and for all labor, materials, equipment, tools, and incidentals required to complete the work. Design services for the personal grate for pipe inlet including the preparation and submittal of working drawings shall be incidental to this item.

Note:

The breakout sheet attached to the Bid Proposal shows all personal grate for pipe inlets proposed for this Contract. The Contractor shall fill in the per each unit price and the cost (unit price times the proposed quantity) for each size listed. The lump sum price bid for item 708563-Personal Grate for Pipe Inlet shall be in the sum of the total cost for all sizes listed. The completed breakout sheet shall be attached to the Bid Proposal. Failure to submit the breakout sheet will result in the Bid Proposal as being declared non-responsive and rejected.

The Department reserves the right to delete from the Contract the furnishing and installing of one or more of the sizes listed and the right to add or subtract from the quantity of each size listed. The lump sum to be paid will be adjusted in accordance with the Contractor's unit prices as required above. There will be no extra compensation to the Contractor if such additions and/or deletions are made.

3/14/05

708582 – MANHOLE, SPECIAL I

Description:

This work consists of furnishing materials and constructing a manhole as specified on the Plans, and as directed by the Engineer. It includes connecting to new and/or existing pipe(s), concrete masonry, reinforcing and forms, all in conformity with the details on the Plans and these Specifications.

Materials and Construction Methods:

Materials and construction of the manhole shall conform to the applicable subsections of Section 708 of the Standard Specifications. Concrete shall conform to Class A, Section 812, of the Standard Specifications. Bar reinforcement shall conform to Sections 603 and 604 of the Standard Specifications.

Method of Measurement:

The quantity of special manholes will be measured as the actual number of manholes constructed, complete in place and accepted.

Basis of Payment:

The quantity of special manholes will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for furnishing and placing materials, including bar reinforcement, removal of portions of existing pipe, frame and grate and/or cover, and for all labor, equipment, tools, and incidentals necessary to complete this item. The excavation and backfilling for the special manhole shall be made under the item 207000 of this contract. The furnishing and placing of the #57 stone base shall be made under the item 302012 of this contract. The furnishing of Borrow Type C for structure backfill shall be made under the item 210000 of this contract.

708585 - JUNCTION BOX, 48" X 30"
708586 - JUNCTION BOX, 48" X 48"
708587 - JUNCTION BOX, 66" X 30"
708588 - JUNCTION BOX, 66" X 48"
708589 - JUNCTION BOX, 66" X 66"

Description:

This work consists of furnishing materials and constructing a junction box of the type specified on the Plans, and as directed. It includes excavation, placing of pipe, concrete masonry, reinforcing and forms all in conformity with the Standard Construction Details, the Plans, and these specifications.

Materials:

Materials used in the construction of the junction box shall conform to Subsections 708.02, 708.03, and 708.04 of the Standard Specifications.

Construction Methods:

Construction methods shall conform to Standard Construction Details and applicable requirements of Section 708 of the Standard Specifications.

Method of Measurement:

The quantity of junction boxes will be measured as the actual number of junction boxes constructed in accordance with these special provisions, complete in place and accepted.

Basis of Payment:

The quantity of junction boxes will be paid for at the Contract unit price for each. Price and payment shall constitute full compensation for furnishing and placing all materials, including bar reinforcement; for all excavation and backfilling around the structures, for the disposal of surplus materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

6/27/01

709518 - SANITARY CLEANOUT

Description:

This item shall consist of furnishing all materials and constructing sanitary cleanouts on existing sewer laterals if required in the field. Cleanouts constructed as part of Item 753516 will be included as specified in that item.

Materials and Construction Methods:

Materials and construction methods shall conform to the applicable requirements of Section 709 of the Standard Specification, requirements of the utility owner, and the notes and details on the Plans. All materials required for the completion of the sanitary cleanout shall be furnished and installed under this item, including wyes, riser pipes, covers, handholes, elbows, ferrules, plugs, gravel, and concrete for anchors and pads.

Basis of Payment:

The payment for the sanitary cleanout shall be made at the contract unit price bid per Each and constructed and accepted in place in accordance with the Plans and Special Provisions. Price and payment shall constitute full compensation for furnishing and installing all materials, excavation, backfill, backfilling, disposal of surplus materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

7/19/13

710501 - CONVERTING EXISTING CATCH BASIN TO MANHOLE

Description:

This work consist of furnishing all materials, and constructing a manhole from an existing catch basin in accordance with the locations, notes and details shown on the Plans, and as directed by the Engineer.

Materials and Construction Methods:

Materials and construction methods shall conform to the applicable requirements of Section 708 of the Standard Specifications, and as specified on the Plans.

Portland Cement Concrete shall meet the requirements of Class B, Section 812 of the Standard Specifications.

Method of Measurement:

The quantity of catch basins converted to manholes will be measured as the number of catch basins converted to manholes and accepted.

Basis of Payment:

The quantity of catch basins converted to manholes will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for constructing the manhole from the existing catch basin, for all materials including reinforcing steel, cover & frames and for all labor, equipment, tools, and incidentals necessary to complete the item. The cost for salvaging and delivering gratings to the location as specified on the Plans shall be included in the unit price bid for the item.

7/9/02

710506 - ADJUST AND REPAIR EXISTING SANITARY MANHOLE

Description:

This work consists of adjusting and repairing existing sanitary manholes in accordance with notes and details on the Plans and as directed by the Engineer.

Materials and Construction Methods:

Materials and construction methods shall conform to the applicable requirements of Section 710 of the Standard Specifications, and the Standard Specifications of the owner of the sewer system. If there is a conflict between the Department's Specifications and the Specifications of the owner, the latter will prevail.

Method of Measurement and Basis of Payment:

The method of measurement and basis of payment for the item shall be made in accordance with Subsections 710.09 and 710.10 of the Standard Specifications.

8/28/01

710507 - ADJUST AND REPAIR EXISTING SANITARY CLEANOUTS

Description:

This work consists of adjusting and repairing the existing sanitary cleanouts in accordance with the notes and details on the Plans and as directed by the Engineer.

Materials and Construction Method:

Portland cement concrete shall be Class B and shall conform to the requirements of Section 812 of the Standard Specifications. Pipe and other materials required for the cleanouts shall be similar to the original structure.

Covers of the cleanouts shall be removed, and masonry found to be in poor condition, shall be rebuilt using materials conforming with the original structure. Top of the cleanouts shall be adjusted to the proper grade prior to the paving operations.

Method of Measurement:

The quantity of sanitary cleanouts adjusted and repaired will be measured as the actual number of sanitary cleanouts adjusted, repaired and accepted.

Basis of Payment:

The quantity of sanitary cleanouts adjusted and repaired will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for adjusting and repairing the cleanouts, for all materials; for excavation, backfill and backfilling; for all labor, equipment, tools and necessary incidentals to complete the work.

6/19/06

712506 - GABIONS

Description:

The item shall consist of furnishing all materials and assembling, filling open wire baskets with aggregate forming gabions of the type indicated on the Plans and as directed by the Engineer.

Materials:

Materials for the gabions include stone, wire baskets and filter cloth.

Stone for gabions shall be hard, durable, angular in shape; resistant to weathering and to water action; free from overburden, spoil, shale, slate and organic material; and shall meet the size requirements below:

Gabion Height	Aggregate Size
Less than 1 ft	3 - 5 inch
1 ft or over	4 - 8 inch

QUALITY REQUIREMENTS

Test and Method	Specification Limits
Apparent Specific Gravity, AASHTO T 85, min.	2.50
Absorption, AASHTO T 85, % max.	3.00
Sodium Sulfate Soundness, 5 cycles, 63-37.5 mm (2 1/2 - 1 1/2 in.) Aggregate - AASHTO T 104, % max. loss	12.00

Wire for gabions shall have a minimum tensile strength of 60,000 psi when tested in accordance with ASTM A370. The netting shall have a minimum 12 percent elongation and a minimum 4,000 lb. load bearing resistance, and shall have galvanized or zinc coating of not less than 0.8 oz/ft when tested in accordance with AASHTO T 65 and extruded with a coating of poly vinyl chloride (nominal thickness of 0.02165 inches).

Filter fabric shall be AMOCO 4551 or MIRAFI 160N or Exxon 150D or approved equal.

Construction Methods:

Excavation shall be made in reasonably close conformity with the lines and grades shown on the Plans. The subgrade shall be smooth, firm and free from protruding objects or voids that would affect the proper placement of the wire baskets or damage the filter fabric when one is specified.

When filter fabric is specified on the Plans, it shall be carefully and loosely placed on the prepared subgrade and held in place by methods acceptable to the Engineer. Adjacent strips shall be overlapped by a minimum of 8 in. Care shall be exercised in placing, stretching and holding the empty basket units in good alignment in order to avoid damage to the cloth. If the filter fabric should be torn or damaged, it shall be replaced or repaired at the Contractor's expense.

The empty wire basket units shall be set on the prepared subgrade and the vertical ends bound together with wire ties at spacings that are adequate to permit stretching of the units to remove kinks. Stretching methods shall be optional with the Contractor. The use of stakes, pins or other acceptable methods shall be used to insure a good alignment of the empty wire basket units.

The empty basket units shall be filled carefully with stone placed by hand or machine to assure good alignment with a minimum of voids between stones and to avoid bulging of mesh. The maximum height from which the stone may be dropped into the units shall be 36 in. The stone shall be so placed as to provide a minimum of two courses. Care shall be taken in placing the top layer of stone to assure a uniform surface thus avoiding any bulging of the lid mesh. After a basket unit has been filled, its lid shall be bent over until it meets the ends of the unit. The lid shall then be secured to the sides and ends with wire ties. When a complete basket unit cannot be installed on slopes or channels because of space limitations, the basket unit shall be cut to fit in the manner approved by the Engineer.

Any excavation voids existing along the edges of the completed gabions shall be backfilled to the satisfaction of the Engineer.

Method of Measurement:

The measurement of gabions, will be by the Cubic Yard of stone filled wire baskets.

Basis of Payment:

The payment for the accepted quantities of gabions as measured above, shall be at the contract unit price bid per Cubic Yard for "Gabions", complete in place, which prices and payment shall be full compensation for excavation, filter fabric, when specified, disposal of surplus materials, backfill, backfilling, as well as all labor, materials, equipment, tools and incidentals necessary to complete the work.

712531 - CHANNEL BED FILL

Description:

Furnish and place Channel Bed Fill to the limits specified in the construction plan set.

Materials:

Provide aggregate material meeting the following requirements:

Provide natural, rounded, unwashed and uncrushed aggregate material meeting the gradation of Table 1 when tested in accordance with AASHTO T-11 and T-27.

a. Aggregate material meeting this requirement may be located within the excavation area of the project. The Contractor may salvage this material at his/her discretion by separating and stockpiling the material meeting the requirements of Table 1 and Notes 1&2.
b. Angular quarried aggregate is unacceptable.
c. The cost of salvaging and stockpiling existing material and removing excess stockpiled material is incidental to 712531 – Channel Bed Fill.

Table 1

Percent Passing	Light [3]	Medium [4]	Heavy
5-inch	100	90-100 [1]	Gradation to be noted on plan sheets
1-inch	100 [1]	0-20[2]	
3/4-inch	30-70		
3/8-inch	0-10 [2]		

Notes:
[1] Salvaged materials may contain material exceeding this size and be acceptable.
[2] Salvaged materials may contain up to 20% passing the 3/8-inch sieve but not to exceed 10% passing the #200 sieve when tested in accordance with T-11.
[3] Unless noted otherwise on plan sheets, Light gradation shall be used in locations in Sussex County
[4] Unless noted otherwise on plan sheets, Medium gradation shall be used in locations in Kent and New Castle Counties.

Method of Measurement:

Quantity of Channel Bed Fill will be measured by cubic yards of material acceptably placed.

Basis of Payment:

The quantity of Channel Bed Fill will be paid for at the Contract unit price per cubic yard. Price and Payment will constitute full compensation for all labor, equipment, and other incidentals required to salvage, stockpile, maintain, furnish, haul, place, and remove and dispose of all material necessary to complete the work.

Excavation of existing streambed material will be paid under its respective item.

4/10/12

715502 - TEMPORARY DRAINAGE PIPE, 30"
715503 - TEMPORARY DRAINAGE PIPE, 48"
715505 - TEMPORARY DRAINAGE PIPE, 15"
715506 - TEMPORARY DRAINAGE PIPE, 24"
715507 - TEMPORARY DRAINAGE PIPE, 36"
715508 - TEMPORARY DRAINAGE PIPE, 18"
715510 - TEMPORARY DRAINAGE PIPE, 12"
715515 - TEMPORARY DRAINAGE PIPE, 60"

Description:

This work consists of furnishing, installing, and disposing of temporary drainage pipe and end sections in accordance with the locations and elevation shown on the Plans and as directed by the Engineer.

Materials:

Pipe, fittings, and end sections initially furnished under this section shall be as noted on the Plans. If material is not specified on the Plans, the Contractor may use either Corrugated Polyethylene Pipe meeting the requirements of AASHTO M 294 or reinforced concrete pipe meeting the requirements of Section 612 of the Standard Specifications, or corrugated metal pipe meeting the requirements of Sections 614 of the Standard Specifications and as noted on the Plans. End sections and fittings shall be the same material as the pipe.

The pipe provided shall have a connection systems with all necessary gaskets, sealers, clamps, etc. required to produce water tight joints.

Construction Methods:

Temporary pipe is to be placed in accordance with Standard Specification Section 208 except that in order to maintain drainage during embankment construction, it will be necessary to install the temporary pipe prior to placement of the fill.

The temporary pipes shall be installed with leak resistant joints. The Contractor shall be responsible for the repair of leaks and damage caused by such leaks.

Temporary pipe is to be backfilled utilizing suitable excavated material or material being used for construction of the embankment over the pipe.

Required compaction shall be 95% or more of the laboratory maximum density.

The Contractor shall be responsible for placing sufficient embankment over the temporary pipe prior to crossing the area with any substantial loads. Any pipe damaged due to excessive loading must be excavated, replaced and backfilled by the Contractor at his/her expense. In areas of multiple pipes, sufficient separation of the pipes shall be maintained in order that proper compaction around all pipes can be performed.

If pipes are not to be covered with fill, they shall be securely anchored to prevent movement under use.

In order to maintain stream flow at all times, it will be necessary to offset the temporary pipe location from the permanent pipe location. Necessary diversion of ditches to align the flow through the temporary pipe and then back through the permanent pipe shall also be performed under this item.

When pipe is no longer needed it shall be removed and the resulting trench shall be backfilled. Where under final roadway the backfill material shall conform to the requirements of Borrow Type C. When water is present Borrow Type B shall be used for backfill up to 12" (300 mm) above the elevation of the water.

Method of Measurement:

The quantity of temporary drainage pipe will be measured as the actual number of linear feet (linear meters) of pipe installed and accepted, measured end to end including any fittings, end sections, couplings or connecting bands which will not be measured or paid for separately.

Basis of Payment:

The quantity of temporary drainage pipe will be paid for at the Contract unit price per linear foot (linear meter). Price and payment will constitute full compensation for furnishing, hauling, and installing the pipe, fitting, and end sections, for all cribbing, shoring and sheeting, and for all materials including couplings or connecting bands, labor, equipment, tools, and incidentals necessary to complete the work. Also included in this item is the excavation, backfill, and backfilling necessary to install the pipe, remove the pipe, and fill the empty trench.

If pipes are not covered with fill, this item will include all cost for securely anchoring the pipes and all cost for complete removal of such anchoring system.

Following its removal, the temporary pipe, fittings, and end sections will be eligible for reuse at other location(s) of this Contract if approved by the Engineer and desired by the Contractor. The Engineer shall be the sole authority in determining the acceptability of the pipe, fittings, and end sections for reuse. If approved, any reuse of temporary pipe, fittings, and end sections will again be paid as if the pipe was new. All provisions outlined in this specification will apply to both new and reused pipes.

After final use of the pipes, fittings, and end sections, they shall become the Contractor's property and shall be removed from the project. However, the Contractor may use these pipes, fittings, and end sections for similar work on this job at different locations(s) or on different jobs if found to be in good condition as determined by the Engineer.

10/25/01

727510 - WOOD RAIL FENCE

Description:

This work consists of furnishing all materials and constructing wood rail fence in accordance with the plans, details and specifications at the locations shown on the Plans and as directed by the Engineer.

Material and Construction Methods:

All materials, such as fence, posts, hardware and accessories shall be new. Concrete, if necessary, shall conform to Section 812, Class B of the Standard Specifications.

Lumber shall be grade 2, conforming to Subsection 601.02 of the Standard Specifications.

Lumber shall be treated in accordance with Subsection 814 (b) water bourne preservative of the Standard Specifications.

All hardware shall conform to the requirements and Subsection 601.07 of the Standard Specifications.

Method of Measurement:

The quantity of wood rail fence will be measured by the linear feet along the actual fence constructed and accepted.

Basis of Payment:

The quantity of wood rail fence will be paid for at the Contract unit price per linear foot. Price and payment will constitute full compensation for all new materials and installing fence, concrete if required, excavation and backfilling, for all labor, tools, and incidentals necessary to complete the item.

1/16/01

727527 - CHAIN FENCE

Description:

This work consists of furnishing all materials and erecting a chain fence in accordance with notes and details on the Plans, these specifications and directions from the Engineer.

Materials:

Post shall be 2 (50 mm) O.D. block vinyl coated scheduled 40 steel pipe. End posts and corner posts shall be 4 (100 mm) O.D. black vinyl coated schedule 40 steel pipe.

Chain shall be 1/2 (6 mm) steel black poly-coated.

Sleeves shall be schedule 40 PVC with a nominal diameter of 2 (50 mm) or 4 (100 mm) when the heavier posts are specified.

Eyebolts shall be 2 1/2 x 3/8 (63 mm x 9.5 mm) with nut and 1 1/2 (38 mm) ring. For heavier post the length shall be 16 (412 mm). Eyebolts shall be painted black.

The post caps shall be black vinyl coated acorn style.

Concrete for setting sleeves of designated post shall meet the requirements of Section 812 Class B.

Construction Methods:

Sleeves shall be set plumb with the top flush with the ground/paving surface. Existing concrete or asphalt paving shall be core drilled for installation of the sleeves. Gaps between the sleeve and paving shall be neatly filled with quick setting grout. Sleeves for 4 (100 mm) posts and other post designated on the Plans shall be set in concrete.

The posts and chain shall be installed in accordance with notes and details on the Plans. The caps shall be secured to the post with an approved two part epoxy.

Method of Measurement:

The quantity of chain fence will be measured in linear feet (meters) of chain fence installed and accepted. Measurement will be made along the plan line of fence.

Basis of Payment:

The quantity of chain fence will be paid for at the Contract unit price per linear foot (meter). Price and payment will constitute full compensation for furnishing all materials, erecting the fence and for all labor, equipment, tools and incidentals required to complete the work.

6/19/03

727555 – RIGHT-OF-WAY MARKER, CAPPED REBAR

Description:

Furnish necessary materials and labor to set at the locations shown on the Plans, and as directed by the Engineer.

Materials:

Provide Right-of-Way Marker, Capped Rebar constructed in accordance with the details shown in the Standard Construction Details using materials specified in:

Bar Reinforcement	Section 603
Aluminum 2" Flat Survey Marker for Rebar	As Submitted and approved by Engineer

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 Rebar in a vertical position at depth shown on the plans;
C. Place Aluminum 2" flat survey marker on rebar taking care not to move the location of the rebar.

Method of Measurement:

Right-of-Way Marker, Capped Rebar will be measured as the actual number of Right-of-Way Marker, Capped Rebar set and accepted.

Basis of Payment:

The quantity of Right-of-Way Marker, Capped Rebar 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 Right-of-Way Marker, Capped Rebar by a Delaware Professional Land Surveyor and any incidentals necessary to complete the item. Existing Right-of-Way Marker, Capped Rebar damaged will be replaced as required by Subsection 107.09 of the Standard Specifications and will be repaired, replaced, and set at the Contractor's expense.

9/15/11

734520 - MEADOW SEEDING

Description:

This work consists of furnishing and placing meadow seed.

Materials:

Water. Water shall conform to the requirements of Section 803.

Meadow Seed. Materials shall comply with applicable requirements of Section 734. Materials used on this Contract shall be obtained by the Contractor from a dealer or manufacturer whose product is shown by analysis to fulfill the guarantee claimed by the producers.

Seeding Chart.

Meadow Seed Mix.

Grasses: Seed at 24.9 lb/acre (28 kg/hectare)		% by weight Pure Live Seed (P.L.S.)
Andropogon virginicus	Broomsedge	20
Panicum virgatum		5
Festuca ovina	Sheep Fescue	15
Lolium multiforum	Annual Rye	10
Schizachyrium scoparium	Little Bluestem	40
Sorghastrum nutans	Indian Grass	10
Wild Flowers: Seed at 15.1 lb/acre (17 kg/hectare)		
Asclepias tuberosa	Butterflyweed	8
Aster novae-angliae	New England Aster	2
Aster lateriflows 'Prince'	'Prince' Aster	2
Baptisia lanceolata	Green Wild Indigo	5
Coreopsis lanceolata	Lance-Leaf Coreopsis	5
Chysanthemum leucanthemun	Oxeye Daisy	3
Echinancea pallida	Pale Purple Cornflower	5
Echinancea purpea	Purple Cornflower	10
Eryngium yuccifolium	Rattlesnake Master	3
Heleopsis helianthyoides	Ox-Eye Sunflower	8
Helianthus annus	Sunflower	2
Liatris spicata	Spiked Blazingstar	5
Monarda fisulosa	Wild Bergamo	2
Penstemon digitalis	Smooth Penstemon	5

Ratibida pinnata	Yellow Cornflower	3
Rubdbeckia hiria	Black-Eyed Susan	5
Senecio spp.	Small-Eye Ragwort	2
Solidago altissima	Tall Goldenrod	3
Solidago gramnifolia	Narrow-Leaved Goldenrod	5
Solidago nemoralis	Grey Goldenrod	5
Solidago speciosa	Showy Goldenrod	2
Veronica fasciculata	Ironweed	10

Construction Methods:

General. This work shall consist of preparing the ground and furnishing and placing meadow seed on the areas indicated on the Plans and as specified by the Engineer. The Engineer reserves the right to stop seeding operations whenever conditions are determined to be unfavorable.

Seeding Season. Seeding shall be performed between August 15 and September 15. Twenty (20) days shall have elapsed from any herbicide application.

Seeding.

(a) Seedbed Preparation. The seedbed in the area to be seeded shall be a topdressing of topsoil not less than 1" (25 mm). The topsoil shall be original surface friable loam topsoil conforming to Section 732. The topsoil shall be of uniform quality, free from gravel and stones retained on a 2" (50 mm) sieve, heavy clay, frozen clods, lumps, roots, sticks, and foreign materials harmful to plant growth, such as 2" (50 mm) or larger fragments of hot-mix, concrete, and surface treatment.

(b) Quantities of Material. The quantity of meadow seed applied shall be in accordance with the Seeding Chart indicated above.

(c) Application Equipment. Seeding equipment to be a drill seeder (combination grass planter and land packer or pulverizer).

(d) Application of Meadow Seed. The Contractor shall seed, weather permitting, within seven days of topsoil installation. Areas to be seeded shall be reviewed with the Engineer before seeding. Seed shall not be installed if soil is excessively dry or saturated.

Meadow seed shall be mixed with 0.03 cubic yards (0.023 cubic meters) (two-thirds of a bushel) of moist vermiculite before sowing.

Seed shall be planted no deeper than 1/4" (6 mm).

Equipment shall be operated as close as possible parallel to the contours. In areas too small for the drill seeder, seed may be broadcast by hand.

After seeding, seedbed shall be compacted with a land roller, such as a cultipacker or equivalent. Water shall be applied with a fine spray.

(e) Responsibility for Seeded Areas. The Contractor shall perform seeding and mulching in accordance with this Section in the presence of the Engineer. If work as noted is performed in complete accordance with this Section to the satisfaction of the Engineer, meadow seeding so approved shall be accepted.

The Department retains the right to request that the Contractor reseed any and all areas where a satisfactory stand of meadow grass and wildflowers as determined by the Engineer does not exist at the time of the final inspection. Bare spots shall not exceed 3.16 square feet (0.3 square meters) per

spot.

If the Engineer determines that reseeding is necessary, the Contractor shall begin reseeding within five working days of an oral or written request from the Engineer.

Method of Measurement:

The quantity of meadow seeding will be measured in square yards (meters) of surface area.

Basis of Payment:

The quantity of meadow seeding will be paid for at the Contract price per square yard (meter). Price and payments will constitute full compensation for preparing the ground; for furnishing and placing materials, and for labor, equipment, tools and incidentals required to complete the work.

Payment for any and all reseeding of areas, where a satisfactory stand of meadow seed, as determined by the Engineer does not exist at the time of final inspection, will be made at the Contract unit price for seeding and mulching. If the Contractor fails to respond within five working days of the Engineer's oral or written request, no payment for such reseeding will be made.

2/27/04

734531- STREAMBANK SEED MIX

Description:

As per Section 734 – Seeding.

Materials:

Add the following after the end of 734.04 of the Standard Specifications:

Streambank Seed Mix:

Species Name Common / *(Latin)*	Max. % Weed Seeds	Min % Purity	Min % Germination	Seeding Rate lb/Ac
Turf Type Tall Fescue (*Lolium arundinacea;* formerly *Festuca arundinacea*)	0.5	98	90	200
Perennial Ryegrass (*Lolium perenne*)	0.4	90	90	20
Redtop (*Agrostis alba*)	0.75	95	90	40
Annual Rye *(Lolium multiflorum)*	0.15	98	90	15
			Total Seed Quantity (lb/Ac)	**275**

Construction Methods:

As per Section 734 Seeding with changes to methods as shown on the Plans.

The calendar dates for seeding shall be March 1 to October 31 in New Castle and Kent Counties. The calendar dates for seeding shall be March 1 to November 15 in Sussex County.

No temporary grass seeding will be substituted for this mix.

All other aspects and conditions of Section 734 – Seeding shall apply.

Method of Measurement:

As per Section 734 – Seeding.

Basis of Payment:

As per Section 734 – Seeding.

7/10/12

735501 - HERBICIDE APPLICATION, NOXIOUS WEEDS

Description:

This work consists of furnishing and applying the herbicides to vegetation on the soil surface as directed by the Engineer.

Materials:

The herbicide (s) for treatment shall be selected by the contractor. Labels and Material Safety Data Sheets for the selected materials shall be submitted with the contractors bid.

Construction Methods:

All herbicides shall be applied in accordance with the EPA approved label. The herbicides shall not be applied within six (6) hours of rainfall.

Method of Measurement:

The quantity of herbicide application will be measured by the acre (hectare) of surface area treated with herbicide material.

Basis of Payment:

The quantity of herbicide application will be paid for at the Contract price per acre (hectare). Price and payment will constitute full compensation for furnishing all materials, applying the herbicide in aqueous solution, for all labor, equipment, tools, and incidentals to complete the work.

09/09/09

735535 - SOIL RETENTION BLANKET MULCH, TYPE 5
735536 - SOIL RETENTION BLANKET MULCH, TYPE 6
735537 - SOIL RETENTION BLANKET MULCH, TYPE 7

Description:

This work consists of furnishing, placing and anchoring soil retention blanket mulch over seeded areas in accordance with notes and details on the Plans, these specifications and direction of the Engineer.

Materials:

The blanket mulch shall be one of the pre-approved products listed in the Approved Product List (APL) at the time of bid, for the type(s) of mulch required on the Plans.

Pre-approval procedures and the current APL may be obtained by writing to the Stormwater Engineer, Delaware Department of Transportation, P. O. Box 778, Dover, DE 19903 or calling (302) 760-2177 or viewing DelDOT's web page at **www.deldot.net/business**. The Contractor shall submit an 8" x 8" (200 mm x 200 mm) sample to the Stormwater Engineer to verify pre-approval. Also, the Contractor shall submit manufacturer's literature, including installation recommendations, to the Engineer.

The products on the APL have been used extensively on DelDOT projects with satisfactory results and/or have received satisfactory evaluations by the NTPEP (National Transportation Product Evaluation Program).

Soil Retention Blanket Mulch, Types 5, generally referred to as erosion control blankets (ECB), shall be composed entirely of 100% biodegradable material.

Soil Retention Blanket Mulch, Types 6 and 7, generally referred to as turf reinforcement mats (TRM), shall be composed of mostly non-degradable material.

In order for a product to be added to DelDOT's Approved Product List and be eligible for use in DelDOT's construction and maintenance works, the product must meet the above guidelines and receive a satisfactory evaluation by NTPEP. The Department will remove products from the APL when field performance is unsatisfactory.

Types of Soil Retention Blanket Mulch Application

Type 5. Top-soiled grass swale at maximum design shear stress less than or equal to 2 pounds per square foot (96 Pascals)
Type 6. Top-soiled grass swale at maximum design shear stress greater than 2 pounds per square foot (96 Pascals) and less than or equal to 6 pounds per square foot (287 Pascals)
Type 7. Top-soiled grass swale at maximum design shear stress greater than 6 pounds per square foot (287 Pascals) and less than or equal to 8 pounds per square foot (383 Pascals)

Construction Methods. The soil retention blanket mulch, shall be placed immediately after seeding operations have been completed or as approved by the Engineer, but in no case shall this period exceed 24 hours from the completion of the seeding operation. Prior to seeding and mulching, the area to be mulched shall be tracked, free of ruts, rocks or clods over 1 1/2 inches (40 millimeters) in maximum dimension and all sticks or other foreign materials which will prevent the close contact of the blanket with the soil. If as a result of rain, the prepared bed becomes crusted or eroded or if any eroded areas, ruts or depressions exist for any reason, the Contractor shall retrack and reseed the eroded areas.

Except for sprayed blanket mulch installation and anchorage of the soil retention blanket mulch shall be in accordance with notes and details in the Plans and the following DelDOT Standard Construction Details:

Standard No. E-9 for rolled blankets under Type 5
Standard No. E-25 for blankets under Types 6 and 7

Should the installation requirements of the manufacturer be more stringent than the above, the manufacturer's requirements shall govern.

Sprayed blanket mulches shall be applied as per the manufacturer's instructions and recommended rate.

No application shall be permitted if rain is anticipated within 24 hours as determined by the Engineer.

Method of Measurement:

The quantity of soil retention blanket mulch will be measured in square yards (meters) of each type soil retention blanket mulch installed and accepted. Measurements for calculating the number of square yards (meters) will be made along the surface of the area covered. Overlaps of materials of any kind will not be measured.

Basis of Payment:

The quantity of soil retention blanket mulch will be paid for at the contract unit price per square yard (meter) per each type. Price and payment will constitute full compensation for furnishing and placing all materials; for all methods of anchorage and securement; for repairing any loose or raised pins or pegs or any loose, torn, or undermined fabric; and for all labor, equipment, tools, and incidentals required to complete the work.

1/29/2013

737523 - PLANTING

The requirements of Section 737 shall be followed except as modified below:

Subsection 737.07 Peat Moss and Peat Humus.

Add the following:

(c) Composed leaf mulch free of wood, metallic substances, glass or other contaminates may be used in lieu of peat moss or peat humus.

Subsection 737.10 Stakes, Guys, and Related Materials.

Delete paragraphs (e),(f) and (h).

Subsection 737.16 Planting.

Delete paragraph (d).

Add the following:

Wire baskets shall be cut away and removed from the top half of the root ball.

Section 737.17 Plant Establishment.

Delete this subsection in its entirety and add the following:

The plant establishment period for all planting shall begin immediately after all planting and replacements (as specified under Section 737.16, Planting) are complete and acceptable to the Engineer. The plant establishment period will consist of one full growing season during which time the Contractor shall be responsible for all work necessary to keep the plants in a live and healthy condition. A growing season is defined as the period from May 1 through September 30. If the Contractor completes all planting (as specified under Planting) by May 1, the inspection will be held on or about October 1 of that year. In the event the Contractor does not complete all planting by May 1, the inspection will be held on or about October 1 of the following year. All replacement plant material determined to be necessary at the inspection must then be approved at the replacement plant source by October 15. At this time, the Engineer will direct the Contractor to replace those plants determined to be dead or unhealthy by December 1. The Contractor will notify the Engineer in writing that all replacement planting has been accomplished. The Engineer will conduct an inspection within 15 days after such notification to determine the acceptability of the replacements. If all replacements are determined satisfactory by the Engineer, the Contractor will be relieved of all further responsibility for care and replacement.

All planting areas shall be kept free of weeds and grass during the life of the Contract. The Contractor may utilize a pre- or post-emergent herbicide to control such grass and broadleaf weeds incidental to the cost of planting and be totally responsible for the proper use and placement of any such herbicide. As requested in writing by the Engineer, the Contractor shall be responsible to weed within all plant beds and within the saucer limits of individual plants, beginning 10 calendar days after the date of notification. The Contractor shall prune and apply insecticides or fungicides as required, repair or replace stakes and guy wires, tighten guy cable or wire and repair plant saucer washouts when and as specified by the Engineer.

Any plants that settle below or rise above the desired finished grades shall be reset at the proper grades. All replacements shall be plants of the same kind, size and quality as originally specified in the Contract and they shall be furnished, planted, mulched, guyed, watered, etc. as specified herein for new plant material.

If dead or unhealthy plants are discovered, they shall be removed within 10 calendar days and replaced with the next appropriate planting season.

The Contractor shall be responsible for all damage incurred to plant material, tree protection, wire or staking regardless of the cause.

The cost of the above described work shall be incidental to Section **737**, Planting.

The Contractor shall water all plants as required to sustain them in a healthy condition. The Contractor shall give 24 hours written notice to the Engineer prior to each watering.

Subsection 737.18 Method of Measurement.

Delete the paragraph in its entirety and insert the following:

The quantity of planting will not be measured.

Subsection 737.19 Basis of Payment.

Delete the first two paragraphs in their entirety and insert the following:

The quantity of planting will be paid for at the Contract lump sum. Price and payment will constitute full compensation for furnishing and placing all materials, including plants, soil mixes, and mulch; for protecting plants after digging and prior to planting; for staking, excavating plant pits, pruning, wrapping, and guying; for all watering until final acceptance, for the cultural care of the plants until the completion and acceptance of all landscape work; for disposing of excess and waste materials; for replacement planting; for cleanup; for repairs to plant material, tree protection, wire, or staking due to fire, theft, vehicular damage, or acts of vandalism; for repairs to damaged grassed, planted, or other landscaped area due to the Contractor's operations; for ensuring that topsoil meets the sieve analysis, acidity, and organic matter requirements; for applying sufficient materials to fertilizer that originally failed to meet the specified analysis; for using pre- or post-emergent herbicide to control grass and weeds; for the work outlined under Subsection 737.17; and for all labor, equipment, tools and incidentals required to complete the work.

The breakout sheet attached to the proposal shows all plant material proposed for this Contract. The Contractor shall fill in the per each unit price and the cost (unit price times the proposed quantity) for each species and size listed. The lump sum price bid for item 737523 - Planting shall be the sum of the total cost for all species and sizes listed. The completed typewritten breakout sheet shall be attached to the bid proposal. Failure to submit the breakout sheet with the Bid Proposal will result in the Bid Proposal being declared non-responsive and rejected.

The Department reserves the right to delete from the Contract the furnishing and installing of one or more of the species and/or sizes listed and the right to add or subtract from the quantity of each species and size listed. The lump sum to be paid will be adjusted in accordance with the Contractor's unit prices as required above. There will be no extra compensation to the Contractor if such additions and/or deletion are made.

Payment for the planting as described above may be processed if, in the opinion of the Engineer all work required, except that specified under Subsection 737.17 is satisfactorily completed. No partial payment will be made for any living plant until and unless planted in accordance with these specifications. No additional payment will be made for using plants larger than specified.

5/11/05

743550 – TUBULAR MARKER

Description:

This work consists of furnishing and installing tubular delineating markers on asphalt or concrete surfaces in accordance with the locations, notes and details on the plans and as directed by the Engineer. Tubular markers shall be used to prevent traffic access, channelize traffic and protect or identify a hazard.

Materials:

Delineator Post - All tubular posts shall be a minimum of 28" in height, a minimum of 3" wide, with wall thickness of at least 0.125" and meet the design requirements of the Delaware Manual on Uniform Traffic Control Devices DeMUTCD. Post shall be capable of sustaining a minimum of twenty four (24) direct wheel-over impacts at 60 MPH (100 KPH) without damage to the post or the reflective sheeting applied to the post. The material for the delineator posts shall be constructed of UV-stabilized thermoplastic polyurethane (TPU) which shall be resistant to impact, ultraviolet light, ozone, and hydrocarbons, and shall remain impact resistant from -30°F to 140°F (-34°C to +60°C). The color shall be solid throughout and stabilized to resist UV degradation. To delineate or identify hazards such as triangular islands, florescent orange devices with white sheeting shall be used. To supplement lane or painted edge lines, the color of the post, sheeting and base should match the line color.

Property	ASTM Test	Results
Specific Gravity (min.)	D 792	1.10
Hardness (min.)	D 2240	80 A
Tear Strength (min. PII)	D 624, Die C	600
Tensile Strength @ yield, (min. PSI)	D 412	4,000
Tensile Elongation @ break (min. %)	D 412	600
Cold Temp. Impact Test (-7ºF)	FL/DOT	Pass

Base – Tubular posts shall mount to a heavy duty base constructed of high-impact thermoplastic styrenic alloy with locking pins or other device to lock in the post. The base units may be inserted into the surface when the concrete is poured, with a PVC sleeve or adhered to the surface by use of a bituminous adhesive.

Locking Pins – Delineator post shall attach to the base with pins or similar device made of the same material as the base. The locking pins shall hold the post securely to the post while making replacement of post and easy operation.

Retroreflectorized Sheeting – The reflective sheeting shall be in accordance with ASTM D4956-01Type V and made of metalized micro-prismatic material. Two 3" minimum pieces of sheeting beginning 2" from the top of the post with 3" gap between each strip shall be installed on each post.

Adhesive – The only adhesive allowed will be a two part epoxy or a hotmelt thermoplastic.

Construction Methods:

Installation of delineators on or in asphalt or concrete surfaces shall be as specified by the manufacturer of the delineators. The method of installation must provide for easy replacement of any damaged delineators.

Prior to installation the surface shall be cleaned with a wire brush then wiped clean to remove any curing compound, laitance or loose debris. Ensure that no moisture is present prior to application. After mixing the epoxy or heating the thermo adhesive adequate pressure must be applied to base unit to assure bonding with the surface. Alternatively, the post may be installed using removable threaded base, recessed sleeves or anchors.

It is required that the Contractor will keep spare delineators at site for replacement of damaged delineators immediately. The Contractor shall be liable for the damage caused as a result of his failure to replace the damaged delineators immediately.

Method of Measurement:

Measurement of these items for payment will be on a per each basis, the quantity to be paid for will be the number of tubular delineators actually installed and accepted.

Basis of Payment:

Payment for tubular markers will be made at the contract unit price per each bid which price and payment thereof shall constitute full compensation for furnishing and erecting posts, inclusive of adhesive, base and reflective sheeting and for furnishing all materials, labor, tools, equipment, and incidentals necessary to complete this item. Removal of any temporary delineators will be part of this item.

The payment for replacement of each damaged delineator shall be made at the Contract unit bid price for tubular delineator after the number damaged is verified by the Engineer. No payment shall be made for delineators damaged by the Contractor vehicles during construction.

3/27/12

743551 - FURNISH AND MAINTAIN REMOTE COMMUNICATION PORTABLE CHANGEABLE MESSAGE SIGN

Description:

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

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

Remote Communication Equipment:

The PCMS shall be supplied with remote communication equipment meeting the following specifications:

Modem unit:

1. CP-WAN-B311-A CONNECTPORT WAN 3G W/EMBEDDED - VERIZON EVDO REV A MODULE & VPN

Antenna Equipment:

1. 85449 ANTENNA BASE
2. TRA806/17103 ANTENNA
3. 195 CABLE 2ft SMA-MALE TO N-MALE

Operation and Maintenance:

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

http://www.deldot.gov/information/pubs_forms/manuals/de_mutcd/pdf/Portable_Changeable_Message_Signs.pdf

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

http://www.deldot.gov/information/pubs_forms/manuals/de_mutcd/pdf/PCMS_Approval_Form.doc

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

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

Prior to acceptance for use, the Contractor shall successfully demonstrate remote communication capabilities between the PCMS and the DelDOT Transportation Management Center (TMC) to the satisfaction of the Engineer and a TMC representative.

Method of Mesaurement:

The item Furnish and Maintain Remote Communication Portable Changeable Message Sign will be measured per each-day.

Basis of Payment:

The payment for this item will be made at the Contract unit price per Each-Day bid for the Item 743551 - Furnish and Maintain Remote Communication Portable Changeable Message Sign, which price and payment shall constitute full compensation for furnishing the PCMS with remote communications equipment and trailer, placing, relocating, operating, programming, final removal when no longer required, and for all labor, tools, equipment, and necessary incidentals to complete the work.

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

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

3/10/10

744500 - CONDUIT JUNCTION WELL, TYPE 6, PRECAST POLYMER CONCRETE
744506 - CONDUIT JUNCTION WELL, TYPE 7, PRECAST POLYMER CONCRETE
744507 - CONDUIT JUNCTION WELL, TYPE 8, PRECAST POLYMER CONCRETE
744508 - CONDUIT JUNCTION WELL, TYPE 9, PRECAST POLYMER CONCRETE
744509 - CONDUIT JUNCTION WELL, TYPE 10, PRECAST POLYMER CONCRETE
744520 - CONDUIT JUNCTION WELL, TYPE 1, PRECAST CONCRETE
744523 - CONDUIT JUNCTION WELL, TYPE 4, PRECAST CONCRETE
744524 - CONDUIT JUNCTION WELL, TYPE 5, PRECAST CONCRETE
744530 - CONDUIT JUNCTION WELL, TYPE 11, PRECAST CONCRETE/POLYMER LID-FRAME
744531 - CONDUIT JUNCTION WELL, TYPE 14, PRECAST CONCRETE/POLYMER LID-FRAME
744532 - CONDUIT JUNCTION WELL, TYPE 15, PRECAST CONCRETE/POLYMER LID-FRAME

Description:

This work consists of supplying, constructing and installing conduit junction wells as shown on the applicable Plan Sheets or Standard Construction details

Materials:

Concrete shall conform to Section 812, Class B of the Standard Specifications.

Castings shall conform to Section 708.05 of the Standard Specifications.

Frames and lids shall be in accordance with Sections 708 and 744 of the Standard Specifications.

All required hardware and wire for Bonding and Grounding as shown on the Standard Construction or applicable Plan details.

Types 6, 7, 8 and 10 are precast polymer concrete stackable boxes with no base.

Precast polymer concrete is reinforced by heavy-weave fiberglass with a compressive strength of 9,000-15,000 psi, impact energy of 30-72 ft. lbs. and a tensile strength of 800-1,100 psi. Precast polymer concrete should be tested according to the requirements of ASTM Method D-543, Section 7, Procedure 1 for chemical resistance.

All precast polymer concrete covers shall be the heavy-duty type with a design load of 15,000 lbs. over a 10" square. The coefficient of friction should be greater than 0.5. The precast polymer concrete cover logo shall bear the inscription "DelDOT" (Types 6, 8, and 10) or "DelDOT TRAFFIC FIBER OPTICS" (Type 7).

Types 11, 14, and 15 are precast polymer frame and lids installed on a precast concrete base. Precast polymer concrete frame and lids shall be the heavy-duty nonconductive type with a design load of 15,000 lbs. over a 10" square. The coefficient of friction should be greater than 0.5. The precast polymer concrete lid logo shall bear the inscription "DelDOT ELECTRIC"(Types 11, 14, and 15)

Construction Methods:

The conduit junction well shall conform to the dimensions shown on the Standard Construction or applicable Plan Details, or on the manufacturer's specifications and shall be built so as to ensure that the cast iron frame and lid or polymer concrete box and cover are set level with the surrounding surface when constructed within pavement, sidewalks, pedestrian curb ramps, etc., and set above grade and graded to drain away from the junction well when constructed in unpaved areas. More than one conduit may extend into the well and shall conform to the dimensions shown on the applicable plan sheets or Standard Construction Details. A stone base shall be built for all types of junction wells. Grounding and bonding of the units shall be performed as shown on the plans or Standard Construction details.

Method of Measurement:

The quantity of junction wells shall be the actual number of conduit junction wells by type, that are supplied, constructed, complete in place, and accepted, including cast iron frames and lids with grounding lugs, precast polymer concrete frame and covers, or precast polymer concrete covers, stone base, bonding, grounding, and splicing if required. Frames and lids or precast polymer concrete covers must be installed prior to acceptance of this item.

Payment for all conduits extending into the junction well shall be included in the items for conduit installation.

The length of ALL conduits within a junction well shall conform to the Standard Construction or applicable Plan Details or as directed by Engineer. Payment for cutting existing conduit as directed by Engineer, where a junction well is replaced with a larger type of junction well is included in the bid price. The removal and replacement of cables within the conduits to be shortened shall be handled under other items of this contract.

Basis of Payment:

Payment for conduit junction wells as measured above shall be made at the Contract unit price per each junction well of the type indicated, completely installed and constructed, including excavation, backfilling, and stone base. Price and payment will constitute full compensation for all labor, equipment, tools, and incidentals required to complete the work.

2/29/12

744525 - REMOVAL OF EXISTING JUNCTION WELL

Description:

This work consists of removing a Type 1, Type 2, Type 3, Type 4, Type 5, Type 6, Type 7, Type 8, or Type 10 conduit junction well presently in place and returning it to the Department at the Dover Sign Shop.

Construction Methods:

The conduit junction well shall be removed in a manner as to not damage the junction well, frame and lid, or precast polymer concrete cover. The conduits that enter into the junction well shall be abandoned and capped off or connected together as directed by the Engineer. Removal of cables that enter into the well and any conduit used to tie into existing conduits, shall be paid under a separate item.

The areas left open after removal of the junction well shall be backfilled with Type C borrow or suitable fill material as directed by the Engineer. The fill shall be tamped in 6 inch (150 mm) lifts, graded, top soil placed (6 inch (150 mm) minimum) seeded and mulched.

Method of Measurement:

The quantity of junction wells to be measured under this item shall be the actual number of junction wells removed and returned to the Department at the Dover Sign Shop. Excavation around junction well to remove it and the backfilling of the area where junction well was removed are to be included in this price.

Backfill material will be paid for separately if required and as directed by the Engineer.

Any extra conduit used to reconnect the conduits that entered the well are to be paid for under another item of this contract.

Basis of Payment:

The number of junction wells removed, as determined above, shall be paid for at the Contract unit price bid per each. Price and payment will constitute full compensation for all labor, equipment, tools, and incidentals required to complete the work.

01/15/03

745520 - SUPPLY OF 4" SCHEDULE 40 HDPE CONDUIT
745521 - SUPPLY OF 4" SDR-13.5 HDPE CONDUIT
745522 - SUPPLY OF 3" SCHEDULE 80 PVC CONDUIT
745523 - SUPPLY OF 4" SCHEDULE 40 PVC CONDUIT
745524 - SUPPLY OF 4" SCHEDULE 80 PVC CONDUIT
745525 - SUPPLY OF 4" GALVANIZED STEEL CONDUIT
745526 - SUPPLY OF 3" GALVANIZED STEEL CONDUIT
745527 - SUPPLY OF 2 1/2" GALVANIZED STEEL CONDUIT
745528 - SUPPLY OF 2" GALVANIZED STEEL CONDUIT
745529 - SUPPLY OF 1 1/2" GALVANIZED STEEL CONDUIT
745530 - SUPPLY OF 1" GALVANIZED STEEL CONDUIT
745531 - SUPPLY OF 3/4" GALVANIZED STEEL CONDUIT
745532 - SUPPLY OF 3" SCHEDULE 40 PVC CONDUIT
745533 - SUPPLY OF 2 1/2" SCHEDULE 40 PVC CONDUIT
745534 - SUPPLY OF 2" SCHEDULE 40 PVC CONDUIT
745535 - SUPPLY OF 1 1/2" SCHEDULE 40 PVC CONDUIT
745536 - SUPPLY OF 3/4" ALUMINUM RIGID CONDUIT
745537 - SUPPLY OF 3/4" FLEXIBLE METALLIC-LIQUIDTIGHT CONDUIT
745538 - SUPPLY OF 1 1/2" FLEXIBLE METALLIC-LIQUIDTIGHT CONDUIT
745539 - SUPPLY OF 2" NONMETALLIC POLE RISER SHIELD
745540 - SUPPLY OF 3" NONMETALLIC POLE RISER SHIELD
745541 - SUPPLY OF 4" NONMETALLIC POLE RISER SHIELD
745579 - SUPPLY OF 2 ½" SCHEDULE 80 PVC CONDUIT
745580 - SUPPLY OF 1" FLEXIBLE METALLIC-LIQUID TIGHT CONDUIT
745581 - SUPPLY OF 2" SCHEDULE 80 PVC CONDUIT

Description:

This work consists of supplying a conduit or shield, of the type required and as specified in the contract documents or as directed by the Engineer.

Materials:

All conduits shall be UL listed and nonmetallic pole risers shall be Rural Utility Service (RUS) listed.

4" (100 mm) high density polyethylene (HDPE) schedule 40, or SDR-13.5 smooth wall conduit with permanently pre-lubricated lining, meeting ASTM D247, ASTM D3035 and NEMA TC7 specifications.

4" (100 mm) through 1-1/2" (38 mm) schedule 40 or 4" (100 mm) through 3" (75 mm) schedule 80 rigid polyvinyl chloride (PVC) conduit, meeting Commercial Standard CS-272-65 (PVC), ASTM D-1785 and U.C. Standard 651 specifications.

4" (100 mm) through 3/4" (19 mm) rigid galvanized steel conduit meeting National Electric Code 2002, Article 344.

3/4" (19 mm) aluminum rigid conduit meeting National Electric Code 2002, Article 344

3/4" (19 mm) and 1-1/2" (38 mm) liquidtight flexible metallic conduit meeting National Electric Code 2002, Article 350.

2" (50 mm), 3" (75 mm), and 4" (100 mm) nonmetallic pole riser shield with belled ends meeting NEMA TC-19 specifications.

In addition to any normal markings provided by the manufacturer, HDPE and PVC conduit shall have the following longitudinally printed on it in white letters: "DelDOT Traffic Fiber Optic Cable."

Method of Measurement:

The quantity of conduit or shield will be measured as the number of linear feet (meters) of conduit or shield supplied and accepted. The length of liquidtight flexible metallic conduit shall be measured including all fittings; no additional request for payment will be accepted based upon liquidtight fittings of 90-degrees,

45-degrees, straight, or swivel.

The length of any conduit that is reduced or divided (with a junction box or conduit body) shall be measured as part of the larger conduit. The nonmetallic pole riser shield length shall include any adapter required.

Basis of Payment:

The quantity of linear feet of conduit or shield will be paid for at the Contract unit price per linear foot (meter). Price and payment shall include full compensation for all materials and labor, and incidentals including fittings and bushings, necessary to complete the item.

1/9/13

745542 - INSTALLATION OF CONDUIT UNDER EXISTING PAVEMENT - DIRECTIONAL BORE
745543 - INSTALLATION OF CONDUIT UNDER EXISTING PAVEMENT - OPEN CUT
745544 - INSTALLATION OF CONDUIT IN UNPAVED TRENCH
745545 - INSTALLATION OF CONDUIT ON WOOD POLE
745546 - INSTALLATION OF CONDUIT ON STRUCTURE
745547 - INSTALLATION OF ADDITIONAL CONDUITS IN TRENCH OR OPEN CUT PAVEMENT
745548 - INSTALLATION OF ADDITIONAL CONDUITS IN DIRECTIONAL BORE

Description:

This work consists of installing trade sized rigid galvanized, PVC or HDPE conduit with all necessary fittings, under existing pavement either by directional bore or open cut, in unpaved trench, on wood pole, or on structure other than bridge or overpass. Installation of additional conduit in trench or open cut pavement or in a directional bore shall also be covered under this item.

The structure can be sign structure, tower, building or other type of structure. Installation of conduit on a bridge, highway and railroad overpass is not included in this payment item, and shall be covered under other items of these specifications.

The Contractor shall be responsible for correcting any existing conduit which is disturbed during installation.

Materials:

Weatherhead for galvanized or PVC conduit.
Insulated grounding bushing with knockouts.
Condulets for conduit sizes.
Anchors.
One hole conduit hangers: Steel City Series 6H or 6H-B, Grainger Industrial Supply Item # 6XCXX, Dale Electric Supply Co.- Conduit Hangers, Arlington Industries - Pipe Hangers Series 2000 or 2200, Raco/Hubbell Inc. - Conduit Hangers or Approved Equal.
End caps.
LONG sweep sections for conduit sizes.

Construction Methods:

The Department has the right to reject any installation method proposed for a given work site. PVC shall not be installed under existing pavement unless it is on a continuous roll or with the Engineer's written approval.

Conduit installed underground shall be installed in a straight line between terminal points. In straight runs, junction well spacing shall be no more than 900 feet (275 m) for fiber optic conduit or no more than 300 feet (90 m) for copper conduit, or as directed by the Engineer. If bends are required during installation, they must be sweeping bends. The Engineer will be consulted before any bends are installed to ensure that the proper arc is provided.

Conduit shall have a minimum cover as measured from the finished grade of 24 inches (600 mm) and a maximum cover of 48 inches (1.2 m).

The opening shall be filled half way with the cover material, and tamped down firmly before filling in the remainder of the opening. Additional lifts shall be used as required to install the warning tape at the specified depth. All cover material shall be free of rocks, debris, vegetation or other deleterious material that may damage the conduit. An underground utility warning tape shall be installed as specified in this section and the remainder of the fill shall be added, tamping down the top layer.

Conduit not terminated to a base or in a junction well shall be terminated 2 feet (600 mm) beyond the edge of the pavement unless otherwise directed by the Engineer, and properly capped. Tape is NOT an approved method. Conduit shall not extend more than 3 inches (75 mm) inside a junction well. See Standard Construction Details for typical methods of termination.

All underground conduits shall be marked in the ground with a warning tape. The marking tape shall be

buried directly above the conduit run that it identifies, at a depth of approximately 12 inches (300 mm) below final grade. The tape identifying ALL conduits shall be at least 6 inches (150 mm) wide, and have a minimum thickness of 3 mils and 500 percent elongation.

The color of the warning tape identifying fiber optic cable should be bright orange (preferably AULCC orange), and shall read "WARNING - OPTICAL CABLE" or other wording approved by the Engineer that conveys the same message. The color of the tape identifying all other cables shall be bright red, and shall read "WARNING—BURIED ELECTRIC BELOW" or other wording approved by the Engineer that conveys the same message.

Using conduit tools, rigid metallic conduit shall be cut, reamed, and threaded. The thread length shall be as necessary to ensure that the sections of conduits when screwed into a coupling and tightened correctly will butt together and the joint will be watertight.

A three-piece threaded union, as approved by the Engineer, shall be used to join two threaded lengths of conduit in the case where a standard coupling will not work. A threaded union shall not be used in a conduit run that is to be driven. **At no time is a threadless coupling or a split-bolt coupling to be used for direct buried conduit.**

All lengths of HDPE conduit shall be connected with irreversible fusion couplings. Mechanical and removable couplings will not be accepted.

All lengths of PVC conduit shall be connected by one conduit end fitting inside the flared end of the other conduit section. If this is not possible, then a coupling may be used. Regardless of how connection is made, all joints shall be sealed with the appropriate epoxy to ensure that the two conduit pieces bond to one another to form a solid waterproof link.

Using conduit tools, the conduit shall be cut and prepared. If approved by the Engineer, a coupler module may be used where conduit segments do not align properly to allow the flared end of one conduit segment to mate with the normal end of the other segment.

Sealed end caps (with knockouts if empty) shall be placed on the ends of all conduits by after compressed air has been used to clear all foreign matter.

If not already pre-installed by the manufacturer, a polyester or polypropylene pulling rope or tape (fish wire) with a minimum rated strength of 1250 pounds (5560 N) shall be installed in each conduit for future use. In instances where the Contractor installs the cable, the fish wire may be eliminated.

Installation Of Conduit Under Existing Pavement - Directional Bore:

Directional bore shall be used for installation of conduits under existing pavement with a conduit diameter not less than 1-1/2" (38 mm). The size of a bore shall not exceed the outside diameter of the conduit by more than 1 inch (25 mm). If it does, cement grout shall be pumped into the void.

Installation Of Conduit Under Existing Pavement - Open Cut:

Installation by cutting a slot in the existing pavement with masonry saw shall be used for conduits not less than 1-1/2" (38 mm) diameter. The Engineer must first approve all open cutting of roadways. The minimum size of open cut for a paved roadway shall be 18 inches (450 mm). The Contractor shall be responsible for the removal of all cut pavement and the replacement and correction of any damaged pavement once the conduit(s) are installed.

Installation Of Conduit In Unpaved Trench:

Trenching or other approved method shall be used for installation of conduit in unpaved trench or under new pavement. Backfill in conduit trenches shall be compacted thoroughly as it is being placed. At the discretion of the Engineer, sod, that must be removed for the placement of conduit, shall either be removed by the use of an approved sod cutter and then replaced or 6 inches (150 mm) of topsoil shall be placed and the surface seeded in accordance with Section 734001 - Seeding. In areas where new pavement is to be placed or in areas where total reconstruction is taking place, sodding or seeding may not be required by the Engineer.

Installation Of Conduit On Wood Pole:

Conduit installed on wood pole shall be installed in a straight vertical line. The conduit shall be attached to the wood pole with 2 hole straps spaced not more than 36 inches (1 m) apart with the top-most strap being 12 inches (300 mm) from the weatherhead and the lower-most being 12 inches (300 mm) from the condulet. A weatherhead matching the diameter of the conduit shall be installed on the upper end of the conduit. A condulet of the same size as the conduit being installed, but not smaller than 2 inches (50 mm) shall be placed 48 inches (1.2 m) above finished grade. Install two, 2 hole straps of the proper size, evenly spaced below the condulet. Nonmetallic pole risers (U-guard) shall be installed on wood poles to allow interduct to be connected directly to messenger cable. The underground conduit shall be as close to the base of the pole as possible. If the nonmetallic pole riser is not the same size as the conduit, an adapter shall be used at no additional cost to the Department. The nonmetallic pole riser shall be attached to the wood pole with 1/4" (6 mm) x 1-1/2" (38 mm) galvanized lag bolts with washers. Lag bolts will be used every 36 inches (1 m) on BOTH sides of the nonmetallic pole riser, and in the top most and bottom most set of slots.

Installation Of Conduit On Structure:

Conduit installed on structure shall consist of drilling anchors into concrete, brick, stone, steel or wood and mounting the conduit with the proper clamps or hangers. The conduit shall be attached to the structure by use of one-hole conduit hangers and approved anchors not more than 36 inches (1 m) apart. Any 90-degree turns in the conduit run shall be accomplished by placing the proper size and type sweeping bends for the application needed.

Installation Of Additional Conduit In Trench Or Open Cut Pavement:

In the case of slotted or trenched installations, the Contractor shall install additional conduits at the same time as the initial installation. The Engineer shall indicate the quantity of conduits to be installed during a build. Additional conduits may be stacked one on top of the other, side by side or in a matrix. The orientation shall be at the Contractor's discretion, but conduits shall not twist around one another or be allowed to deviate from straight line paths except in the case of bend installations. Conduits installed at the same time in the same trench or slot shall remain oriented the same in relation to one another throughout the conduit run.

Installation Of Additional Conduits In Directional Bore:

In the case of a directional bore that more than one conduit shall be installed, the Contractor shall, at the same time as the initial installation, install one (1) or more additional conduits. The Engineer shall indicate the quantity of conduits to be installed during a build. The additional conduits may be stacked one on top of the other, side by side or in a matrix. The orientation shall be at the Contractors discretion, but conduits shall not twist around one another or be allowed to deviate from straight line paths except in the case of a gentle bend. Conduits installed at the same time, in the same bore shall remain oriented in the same relation to one another throughout the conduit run.

Method of Measurement:

The quantity of conduit installed as specified, shall be measured as the number of linear feet (meters) of conduit installed as specified, complete in place, and accepted.

The length of conduit installed under existing pavement by a directional bore shall be measured along the path of the bore from the point that cannot be trenched to the point that trenching can resume. The length of conduit installed by cutting a slot in the existing pavement, in unpaved trench or under new pavement, on wood pole, or on structure shall be measured along the conduit.

Basis of Payment:

The quantity of conduit will be paid for at the Contract unit price per linear foot (meter). Price and payment shall include full compensation for all materials and labor, topsoil and seed if needed, and incidentals necessary to complete the item.

6/6/11

745551 - REMOVAL OF CONDUIT FROM WOOD POLE

Description:

This work consists of removing trade sized conduit with all necessary fittings from a wood pole.

Construction Methods:

The conduit may be rigid galvanized, aluminum, PVC or HDPE type, or nonmetallic pole riser in a wide range of sizes. The conduit and all straps, nails, and/or lag screws shall be removed in a manner so as not to damage or disturb the pole, or surrounding conduits. All materials shall be properly disposed of in a legal manner.

Method of Measurement:

The quantity of conduit removed will be measured as the number of linear feet (meters) of conduit completely removed in an acceptable manner.

Basis of Payment:

The quantity of conduit removed will be paid for at the contract unit price per linear foot (meter). Price and payment will constitute full compensation for all labor, equipment, tools, and incidentals required to complete the work.

01/15/03

746653 - ELECTRICAL TESTING

Description:

This work consists of furnishing all materials, equipment, tools, and labor necessary to perform electrical testing in accordance with these special provisions, notes and details on the plans, and as directed by the Engineer.

When this item is required to test a highway lighting system constructed as part of the Contract, the item shall also include a one year warranty of the highway lighting system. The highway lighting system is understood to include all items of work performed under this Contract to provide lighting of roadways, bikepaths, parking lots, signs, etc.

Construction Methods:

Ground Resistance Testing

The ground resistance shall be measured with a three-terminal, fall-of-potential, direct-reading, battery-powered earth tester with a 0.50 to 500 ohm scale or digital read-out. The 25 ohm reading shall be approximately at mid scale.

The test shall be performed according to the manufacturer's instructions and OSHA requirements. The test shall be performed when the soil is dry. The Contractor shall not add any chemical or salt solutions to any portion of the grounding system. All grounding rods and foundation grounds to be tested shall be installed a minimum of ten days prior to testing unless otherwise determined by the Engineer in the field.

Two auxiliary copper clad ground rods shall be driven into the ground at a minimum distance of 3 feet (one meter). The lateral spacing for each test rod shall be given in writing on the test report form and the spacing shall be approved by the Engineer.

Each ground rod or foundation ground shall be isolated with the bond wires disconnected when the test is being performed. The resistance to ground shall be 25 ohms or less.

Unless noted otherwise on the plans, there shall be two ground resistance tests performed under this item of work.

System Testing

Insulation from ground and roadway lighting circuits shall be tested as follows:

(1) Insulation from Ground. All underground circuits shall be tested for resistance to ground with a megger both before and after the conduit and wiring have been buried and all ground rods have been installed and connected. No circuit shall measure less than 10 megohms to ground. Circuits that fail will be inspected, repaired, and retested.

(2) Roadway Lighting Circuits. The Contractor shall connect field wiring to the load center terminals. The entire lighting system shall be energized for ten consecutive days for ten hours each day at the time directed by the Engineer prior to initial acceptance. Failures occurring during this test period shall be corrected. The Contractor shall repair or replace any equipment, components, or system that fails during this test. A retest shall be performed on the repaired portion at the Engineer's direction.

All tests shall be performed in the presence of the Engineer, and test results shall be written, dated, and given to the Engineer for approval.

Highway Lighting System Warranty:

The Contractor shall secure the manufacturer’s warranties and/or guarantees on electrical and/or mechanical equipment. These warranties and/or guarantees shall be submitted to the Department upon final acceptance of the completed highway lighting system. In addition to the manufacturer’s warranties and/or guarantees, the Contractor shall warrant to the Department the complete, installed highway lighting system to be free of defects, as hereafter defined, for one calendar year beginning at the initial acceptance of the highway lighting system by the Department. The initial acceptance of the highway lighting system will occur

upon the satisfactory correction of all deficiencies noted in the lighting system during the final inspection of the project.

The highway lighting system will be considered defective if any of the following conditions are discovered by visual inspection or by inspection with testing equipment within the warranty period:

1. Defective lamps or ballasts.
2. Failure to operate, in whole or in part.
3. Power wire grounding less than ten mega-ohms.
4. Shifts in pole/foundation alignment.
5. Short circuits or open circuits anywhere within the system.
6. Deterioration of finishes, plating, or paint not normal and customary in the environment in which the equipment is installed.
7. Settlement of trench backfill.
8. Defective fuses.
9. Defective or improperly installed splices.

These conditions listed shall not be considered all inclusive.

The highway lighting system is comprised of all Contract items for lighting, including but not limited to conduits, junction wells, cables, load centers, transformers, cabinet pads, pole bases, poles, high mast poles, light standards with and without davit arms, luminaires, sign lighting, service installations, and reworked/relocated existing lighting facilities.

There will be initial and periodic highway lighting system performance inspections after the Contractor has completed all the work. The initial inspection, to be conducted during the final construction inspection, will be to determine if the initial performance requirements are met. Periodic reviews will be conducted at monthly intervals through the warranty period to determine the sustained ability of the highway lighting system to meet the stated performance requirements.

The Department review team will be responsible for evaluating the highway lighting system within the project limits for both day and night acceptability considering all the possible defects listed above. If the highway lighting system is considered defective because of abnormal operation or deterioration (as listed above), the Department will require repair or replacement of the defective portion at its sole option.

All defective areas, which may include all highway lighting systems and components within the project limits, identified by the Department during initial or periodic inspections shall be repaired by the Contractor in accordance with this Section. All highway lighting system repair shall begin immediately following the notice to the Contractor of the lighting system defect unless weather limitations prevent the corrective work. The Department shall be given notification before the Contractor begins corrective work and shall be allowed full inspection of all operations and provided safe access to the areas being repaired.

If at any time during the warranty period, the highway lighting system or any portion thereof is rendered defective as a result of other than a manufacturing design or construction defect, the Department will repair, replace or revise said system at its sole option. The Contractor will not be held responsible for the cost to correct failures due to design defects in the highway lighting system.

Method of Measurement:

The quantity of electrical testing will not be measured.

Basis of Payment:

The quantity of testing will be paid for at the Contract lump sum price. Price and payment will constitute full compensation for furnishing all testing equipment, including ground rods; performing the tests; preparing the reports; and for all labor, equipment, tools, and incidentals required to complete the work. For highway lighting systems, price and payment will also constitute full compensation for providing the warranties.

5/24/02

746830 - REMOVAL OF CONCRETE POLE BASES AND CABINET FOUNDATIONS

Description:

This work consists of the removal of concrete pole bases and concrete cabinet foundations.

Materials:

Equipment as required to remove concrete pole bases and concrete cabinet foundations. Material as necessary to match the area surrounding the removed or graded masonry.

Construction Methods:

The masonry shall be removed to a depth of six inches below final grade or six inches below proposed pavement box in new pavement sections.

Backfill remaining hole with material that matches the surrounding area in accordance with the appropriate items.

Method of Measurement:

The quantity of concrete will be measured as the number of cubic yards (cubic meters) of concrete removed including anchor bolts, reinforcing bars, conduits and any other hardware within the concrete.

Concrete or other materials moved or removed which is not a part of the item being removed, shall not be measured for the purpose of payment under this item.

Basis of Payment:

The quantity of concrete will be paid for at the unit price per cubic yard (cubic meter). Price and payment will constitute full compensation for all labor, equipment, tools, and incidentals required to complete the work.

9/16/10

746843 - POLE BASE, TYPE 1
746844 - POLE BASE, TYPE 2
746845 - POLE BASE, TYPE 2A
746846 - POLE BASE, TYPE 2B
746847 - POLE BASE, TYPE 3
746848 - POLE BASE, TYPE 3A
746849 - POLE BASE, TYPE 3B
746850 - POLE BASE, TYPE 4
746851 - POLE BASE, TYPE 5
746852 - POLE BASE, TYPE 6

Description:

This work consists of constructing and furnishing round or square pole bases Types 1, 2, 2A, 2B, 3, 3A, 3B, 4, 5, and 6 for poles in accordance with the Standard Construction Details and at locations as directed by the Engineer.

Materials:

The concrete for pole bases shall conform to Section 812, Class B.

Bar reinforcement shall meet the requirements of Section 603 Grade 60.

Ground rods shall be copper clad, approved by the Underwriter's Laboratory and be supplied with approved clamps for connecting the grounding conductor to the rod.

Conduit for sweeps shall meet the requirements for galvanized rigid steel conduit in Section 745.

Anchor bolts will be supplied by the same entity that supplies the poles. This is the case for all poles base types, with the exception of Type 4. For Type 4, drop-ins are used for breakaway and the Contractor will supply the anchor bolts for Type 4. The anchor bolts and nuts for Types 5 and 6 shall not be hot-dipped galvanized and these anchor bolts and nuts shall meet the requirements of AASHTO M 314. Anchor bolts shall have a minimum yield strength of 55,000 psi (380,000 kPa).

Construction Methods:

The bases shall conform to the dimensions as indicated on the Standard Construction Details. A ground rod shall be installed as shown. A minimum of 8 feet (2.5 m) of the ground rod must be driven into undisturbed soil.

If a utility or a right-of-way conflict is found when a Type 2 or Type 3 base is specified in the Plans, an alternate base of equivalent strength may be used as directed by the Engineer. A Type 2 base has two equivalents, namely Types 2A and 2B. A Type 3 base has two equivalents, namely Types 3A and 3B.

Though the contract calls for the use of a round pole base, the Contractor may use a square base at its discretion.

The end of the conduit sweeps in the ground shall be extended outside the concrete and any forms or sheeting by 12 inches (300 mm) and capped or connected to the existing conduit. If the conduit is to be capped underground for future use, it must be sealed with a galvanized threaded conduit plug. Tape is NOT an approved conduit plug. The location of the conduits shall be marked on the base with arrows drawn in the wet concrete within 6 inches (150 mm) of the outer edge.

Excavation for the pole bases may not exceed the dimension of the foundation by more than 12 inches (300 mm) in any one direction. If a form is used in the excavation more than 18 inches (450 mm) below the ground surface, it is necessary that the area between the form and excavation be filled with Borrow Type C and tamped on all sides in continuous, horizontal layers not to exceed 68 inches (200150 mm) in depth, loose measurement.

Where a pole base is to be placed in existing concrete pavement such as a sidewalk, the concrete shall be saw cut in a square pattern or removed to the nearest joint. In other pavement material, a round hole may be

cut using an appropriate tool. Any damage to the existing pavement shall be repaired at the Contractor's expense and shall meet the approval of the Engineer. Any removal or replacement of any type of pavement under this item shall be an incidental cost to this item.

The bases shall be edged and have a broom finish.

Where water or highly unstable material is encountered during the excavation for the pole base, pole base sheeting may be required and the following steps shall apply:

1. The condition exists in the upper half of the excavation. Stop all work until the Bridge Design Section reviews the condition.

2. The condition exists below the upper half of the excavation:
   a. For a proposed Type 4 Base, increase the depth to 4 feet (1.2 m).
   b. For a proposed Type 5 Base, substitute a Type 1 Base.
   c. For a proposed Type 1, 2, or 3 Pole Base, substitute a Type 3A Pole Base for all but a Type 3B Pole Base. The depth of the base shall be as determined in (e) below, or 9 feet (2.7 m), whichever is greater.
   d. For a proposed Type 6 Pole Base, substitute a Type 2 Pole base and increase the depth in accordance with (e) below.
   e. Determine the depth of the base, which would be in the unsatisfactory area. Multiply that depth by 0.7 and add the result to the original required depth of the base to obtain the final depth of the base. The reinforcing bars shall be extended using the required pattern to match the final depth in accordance with the requirements of Section 603.07 of the Standard Specifications.

Method of Measurement:

The quantity of pole bases will be measured as the actual number of bases constructed, complete in place and accepted. Concrete, excavation and backfilling around the base, ground rods, and the two conduit sweeps in the base are included in this item.

Furnishing Borrow Type C backfill material will be measured and paid for separately by the cubic yard (cubic meter).

Payment for any additional sweeps shall be paid for separately under the appropriate conduit items. The Contractor's use of square base rather than a specified round base shall not result in any additional cost to the Department.

Basis of Payment:

Borrow Type C will be paid for under Section 210. No payment for Borrow Type C backfill material placed outside of the vertical plans located 18" (450 mm) outside of the neat line perimeter of the vertical face of the pole base foundation.

Any increase in the vertical dimension required herein shall be paid for separately under Item 746614, Pole Base Extension; another item of this contract.

The quantity of pole bases will be paid for at the Contract unit price for each pole base type. If an alternate pole base type is selected by the Engineer, payment will be the Contract unit price for the alternate selected. Price and payment will constitute full compensation for furnishing and placing all materials including concrete, ground rods, and a minimum of two conduit sweeps extending into the base; for excavating, backfilling and compacting around the base; for repairs to damaged existing pavement; for removal or replacement of pavement; and for all labor, equipment, tools, and incidentals required to complete the work.

3/1/12

746923 – FURNISH & INSTALL A 1" FLEXIBLE NON-METALLIC LIQUIDTIGHT CONDUIT DETECTOR SLEEVE WITH LOOP WIRE
746924 – FURNISH & INSTALL LOOP WIRE 1-CONDUCTOR #14 AWG ENCASED IN ¼" FLEXIBLE TUBING IN A LOOP SAWCUT

Description:

Sawcut and seal existing pavement, furnish and install loop detector wire, aluminum shielded "home-run" cable, and 1" Flexible Non-Metallic Liquidtight Detector sleeve as shown on the plans.

Materials:

1. **1" liquidtight flexible non-metallic conduit -** meets National Electric Code 2002, Article 350.

2. **1-conductor #14 AWG Cable in ¼" Flexible Tubing -** shall consist of cable preinstalled in a polyethylene (PE) plastic duct meeting IMSA 51-5. Cable shall be rated for 600 volts. The cable shall have a temperature tolerance range of at least - 65 to + 176 degrees Fahrenheit. The conductor is AWG #14 stranded copper. Outside diameter of the cable is 0.25 inches. Referred to as "loop wire"

3. **2-conductor #14 AWG Aluminum Shielded Cable –** see specifications for furnish and install cable. Referred to as "home-run cable".

4. **Flexible embedding sealer** - a cold poured, resilient type epoxy joint sealer, Bondo P 606 or Duracote D115 for concrete or asphalt pavement or E Poxy Industry 36 1 for concrete or E Poxy Industry11 1 for asphalt pavement, or approved equal. A sealer accelerant or retarder may be added per the manufacturers specifications.

5. **Backer Rod -** 5/8" closed cell foam

6. **Tape –** Vinyl electrical tape shall have a PVC base with rubber based pressure sensitive adhesive. The tape shall be a minimum 7 mils thick and be UL listed and marked per UL Standard 510 as flame retardant and cold resistant. It shall be compatible with synthetic cable insulations, jackets and splicing compounds and rated for wire and cable splices up to 600-volts.

7. For splices in Junction Well (see plan detail):

   a. Dual Wall Heat Shrink Tubing – Heat-shrink tubing shall be medium or heavy wall thickness, irradiated polyolefin tubing containing an adhesive mastic inner wall. Minimum wall thickness prior to contraction shall be 40 mils. When heated, the inner wall shall melt and fill all crevices and interstices of the object being covered while the outer wall shrinks to form a waterproof insulation. Each end of the heat-shrink tube or the open end of the end cap of heat-shrink tubing shall, after contraction, overlap the conductor insulation at least one and one-half inches. Heat-shrink tubing shall conform to the requirements in UL Standard 468D and ANSI C119.1, for extruded insulated tubing at 600 V.

   b. Soldering iron with Rosin Core solder

   c. Splicing Kit- In-line barrel type design, resin encapsulating compound kit with UL486 rating. Suitable for use in wet or direct buried locations. Resin encapsulating compounds shall be acceptable for use at 16 degrees C.

Construction Methods:

Loop Wire Installation:

The pavement saw cut shall be 5/8" wide and up to 4½" deep. It shall be "wet-cut" in the directions and sizes specified on the Plans, Standard Details or as directed by the Engineer. Contractor shall remove sharp edges in the saw cut and round the corners.

The saw cut shall be blown out with compressed air to remove all dust, water and particles of loose material prior to sealing.

The loop detector wire will then be installed using blunt tools so as to prevent damage to the polyethylene outer cover. One end of a loop detector wire shall be tagged to indicate start ("S"). A 5/8" backer rod will be placed into the bottom of the saw cut as needed to secure the wiring within the saw cut. All loop detector wires shall be laid in saw cuts in a clockwise rotation beginning with "S". The Engineer may require a High Voltage Ground Test with a 500 VDC megger after the loop detector installation is complete and prior to sealing saw cuts. If the resistance to ground is less than 100 megohms, this work will be rejected.

A sealer and sealer accelerant or retarder (if necessary) shall be applied in accordance with the manufacturer's directions and protected from traffic until it has set. A minimum of 1 inch of sealer shall be installed on top of the loop detector wire and finished flush with the pavement. Drilled holes in the pavement shall also be sealed.

Two loop detector wires shall be installed in a saw cut from the loop to the edge of the road. These two wires shall then extend from the end of the saw cut to a junction well (see Plan Details). Wires shall be parallel, twisted a minimum of 5 wraps per foot, and taped every 12" to 18" from the end of the saw cut to a junction well up to the splice. A 1" Liquidtight conduit shall be installed between the end of the saw cut and junction well as directed by the Engineer. The loop detector wire shall be installed in the conduit.

The loop detector wire shall be continuous and without splices from the junction well, through the saw cuts and conduit.

Home-run Wire Installation - refer to furnish and install cable specifications and conduit installation specifications. Refer to plans for details.

Splicing – splices between the loop detector wire and home-run cable shall be done in accordance with the plan details.

Conductors to be soldered shall be placed side by side with the exposed copper aligned. The copper shall then be twisted clockwise with pliers until a good mechanical connection is affected. The splice shall be coated with flux, heated with a soldering iron, and rosin core soldered in a manner that minimizes insulation damage. After each soldered connection is completed, it shall be properly insulated with heat shrink tubing.

After the electrical and mechanical connection is completed and before the splicing kit is applied, a test shall be made by the Contractor to ensure that all circuits are complete. An approved splice kit shall be installed as per manufacturer's instructions. A continuity test will be performed at the cabinet by the Department technician after the splicing kit is applied. The Department will be notified of the test results. If the continuity test fails the Contractor shall remake the splice and/or loop at his own expense.

If a splice is found to be faulty within 90 calendar days of installation, it shall be the Contractor's responsibility to remake the splice at his own expense.

Method of Measurement:

The quantity of loop detector wire to be measured under this item shall be the number of linear feet of sawcut in which loop detector wire is installed, sealed, tested, and accepted.
Sealer, sealer accelerant or retarder shall be incidental to this item.

1" flexible non-metallic liquidtight conduit shall be installed as shown on the plans or as directed in the field by the Engineer. Payment will be made for the actual number of linear feet installed. Loop detector wire inside the flexible conduit is considered incidental to the cost of the conduit.

Conduit and associated home-run cable between the junction well and cabinet will be measured and paid for under their respective items, separate from this specification.

Splicing of the loop detector wire to a home-run cable in a junction well shall be incidental to the cost of the loop wire.

Basis of Payment:

The quantity of loop detector wire supplied and installed will be paid for at the Contract unit price per linear foot, determined by measuring the footage of sawcut described above. Price and payment shall constitute full compensation for "wet"-sawcutting, furnishing and placing all materials including loop detector wire, backer rod, sealer, and for all labor, equipment, tools, splicing in the junction well, and incidentals necessary to complete this item.

The price bid per linear foot of 1" Flexible Non-Metallic Conduit Detector Sleeve with Loop Wire shall include furnishing and installing the Flexible Non-Metallic Conduit, drilling required for installation, concrete and pavement patching, sealing the conduit ends, internal bushings shown on the plans, and all incidentals necessary to complete the item.

2/29/12

747514 - CABINET BASE TYPE F
747515 - CABINET BASE TYPE M
747516 - CABINET BASE TYPE P
747517 - CABINET BASE TYPE R

Description:

This work consists of constructing cabinet base Type F, M, P and R in accordance with the Standard Construction Details or applicable Plan Details and at locations as directed by plans or the Engineer.

Materials:

Class B Concrete
3/4" x 10' sectional copperclad steel ground rods
5/8" Zinc plated or Stainless Steel Drop-in Anchors manufactured by Hilti Systems, Concrete Fastening Systems, or approved equal
5/8" x 1-1/2" galvanized hex bolts
3/4" acorn type ground clamps
PVC conduit sweeps

Construction Methods:

The base shall conform to the dimensions as indicated in the cabinet base detail on the Standard Construction Details or applicable Plan Sheets. A concrete collar is only required when installed in earth areas or as directed by the engineer. Conduits entering the base must enter only in the designated area. A minimum distance of 1 inch shall be maintained between conduits and a minimum distance of 2 inches between conduits and the ground rods.

A minimum of 8 foot of the ground rods must be driven into undisturbed soil through the 2 inch PVC sleeve. The PVC sleeve shall be driven into the ground so that the top of the sleeve will be flush with the concrete when the base is poured.

Method of Measurement:

The quantity of cabinet bases will be measured as the number of bases constructed in accordance with these specifications, complete in place, and accepted.

All conduit sweeps extending into the cabinet base as shown on the Plans or Standard Details as applicable shall be included in the price for each cabinet base..

Basis of Payment:

The quantity of cabinet bases will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for all concrete, ground rods, labor, equipment, tools, conduit sweeps, and incidentals required to complete the work as shown on the standard details or applicable plan sheets.

10/9/2012

748502 - RAISED/RECESSED PAVEMENT MARKER

Description:

This work consists of furnishing and installing raised/recessed pavement markers in accordance with the Plans and these specifications.

Materials:

The cast iron housing shall meet the requirements of ASTM A 536-84, Grade 72-45-84.

The reflectors shall meet the requirements of ASTM D 4383-03.
For installation on interstates, freeways, and principal arterials, the pavement marker shall have red reflectorized material on the back side (the side not facing the direction of traffic).

Epoxy shall meet the requirements of AASHTO M237, Type IV.

The followings models have been tested and approved by the Department and shall be used:

1. (Ennis Paint) Stimsonite - Avery Dennison Model 101LPCR Snow Plowable Marker.

2. Ray-O-Lite Model 300 Snow Plowable Marker with Model 2004 Reflector.

3. Or Approved Equal.

Construction Methods:

Pavement shall be saw cut to match the bottom contour of the marker housing using a saw and blade suitable for the pavement material being sawed. The depth of the cut slot must allow the housing to be set in epoxy, with leveling lugs resting on the pavement surface, so that the front edge of marker is at or below the surface of the pavement. Excessive saw cuts must be repaired to the satisfaction of the Engineer. When cutting is complete, the slot shall be cleaned as recommended by the manufacturer of the epoxy material. The epoxy and pavement marker will be installed in the prepared contour slot in the pavement per the manufacturer's recommendations.
Placement shall be in accordance with the DE MUTCD.

Method of Measurement:

The quantity of raised/recessed pavement markers will be measured as the actual number installed and accepted.

Basis of Payment:

The quantity of raised/recessed pavement markers will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for furnishing all materials, installation, saw-cutting, cleaning, disposal of discarded materials, for all labor, tools, equipment, all necessary incidentals associated with the item to complete the work.

07/26/2011

748506 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 4″
748507 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 6″
748508 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 8″
748509 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 12″
748510 - PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, EPOXY RESIN PAINT
748535 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 4″
748536 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 6″
748537 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 8″
748538 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 10″
748539 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 12″
748540 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 16″
748548 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"
748549 -PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 10"
748557 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 3"
748559 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 5"
748568 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 9"
748569 - PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 14"

Description:

This work consists of striping layout,furnishing and applying white or yellow, epoxy reflectorized pavement markings or black epoxy contrast pavement markings at the locations and in accordance with the patterns indicated on the Plans, or as directed by the Engineer, and in accordance with these specifications.

The white/yellow epoxy marking material shall be hot-applied by spray methods onto bituminous and/or Portland cement concrete pavement surfaces as required by the Plans. Following an application of double drop glass beads of two sizes and upon curing, the resultant epoxy marking shall be an adherent reflectorized stripe of the specified thickness and width that is capable of resisting deformation by traffic.
All marking materials shall be certified lead free and free of cadmium, mercury, hexvalent chromium, and other toxic heavy metals.

The black epoxy marking shall be a two-component, hot-spray applied epoxy resin pavement marking material to be used for pavement marking on Portland cement concrete pavement surfaces. Following an aggregate drop, and upon curing, it shall produce an adherent stripe of specified thickness and width capable of resisting wear from traffic. Black contrast pavement markings will be required on all Portland cement concrete pavements.

Materials Requirements:

A. White and Yellow Reflectorized Epoxy

1. Epoxy Composition Requirements:

The epoxy resin composition shall be specifically formulated for use as a pavement marking material and for hot-spray application at elevated temperatures. The type and amounts of epoxy resins and curing agents shall be at the option of the manufacturer, providing the other composition and physical requirements of this specification are met.

The epoxy marking material shall be a two-component (Part A and Part B), 100% solids type system formulated and designed to provide a simple volumetric mixing ratio (e.g. two volumes of Part A to one volume of Part B).

Component A of both white and yellow shall conform to the following requirements:

	% BY WEIGHT	
	WHITE:	**YELLOW:**
Pigments	Titanium Dioxide - 18% Min. (ASTM D476, Type II)	Organic Yellow - 6%-10%
Epoxy Resin	75% Min., 82% Max.	70% Min., 77% Max.

The entire pigment composition shall consist of either titanium dioxide and/or organic yellow pigment. No extender pigments are permitted. The white pigment upon analysis, shall contain a minimum of 16.5% TiO_2 (100% purity).

Epoxy Content-WPE (Component A) - The epoxy content of the epoxy resin will be tested in accordance with ASTM D1652 and calculated as the weight per epoxy equivalent (WPE) for both white and yellow. The epoxy content will be determined on a pigment free basis. The epoxy content (WPE) shall meet a target value provided by the manufacturer and approved by the Department's Material and Research Section (from now on will be addressed as Department). A ± 50 tolerance will be applied to the target value to establish the acceptance range.

Amine Value (Component B) - The amine value of the curing agent shall be tested in accordance with ASTM D2074-66 to determine its total amine value. The total amine value shall meet a target value provided by the manufacturer and approved by the Department. A ±50 tolerance will be applied to the target value to establish the acceptance range.

Toxicity - Upon heating to application temperature, the material shall not exude fumes which are toxic or injurious to persons or property.

Viscosity - Formulations of each component shall be such that the viscosity of both components shall coincide (within 10%) at a recommended spray application.

2. Physical Properties of Mixed Composition:

Unless otherwise noted, all samples are to be prepared and tested at an ambient temperature of 73 ± 5 F. (23 ± 3 C).

a. Color. The white epoxy composition when applied at a minimum wet film thickness of 20±1 mils (500 µm) as applicable and allowed to dry, shall plot within the boundaries described by the four corner points listed in Tables 1 and 2 of ASTM D 6628-01 when measured in accordance with the test methods prescribed in Section 7 of ASTM D 6628-01.

The yellow epoxy composition when applied at a minimum wet film thickness of 20±1 mils (500 µm) as applicable and allowed to dry, shall plot within the boundaries described by the four corner points listed in Tables 1 and 2 of ASTM D 6628-01 when measured in accordance with the test methods prescribed in Section 7 of ASTM D 6628-01.

b. Directional Reflectance. The white epoxy composition (without glass spheres) shall have a daylight directional reflectance of not less than 84% relative to a magnesium oxide standard when tested in accordance with Method 6121 of Federal Test Method Standard No. 141.
The yellow epoxy composition (without glass spheres) shall have a daylight directional reflectance of not less than 55% relative to a magnesium oxide standard when tested in accordance with Method 6121 of Federal Test Method Standard No. 141.

c. Drying Time (Laboratory). The epoxy composition, when mixed in the proper ratio and applied at a 20±1 mils (500 µm) minimum wet film thickness, and immediately dressed with large reflective glass spheres (Federal Spec. Type 4)at a rate of 12 lb/gal (1.4 kg/l) of epoxy pavement marking materials, immediately followed by a second drop of AASHTO M-247 Type 1 glass spheres applied at a rate of 12 lb/gal (1.4 kg/L) of epoxy pavement marking material, shall exhibit a no-track condition in 15 minutes or less (ASTM D711). A Bird Applicator or any other doctor blade shall be used to produce a uniform film thickness.

d. Drying Time (Field). When installed at a minimum wet film thickness of 20±1 mils (500 or 625 um) and reflectorized with glass spheres, the maximum drying times shall correspond to these temperatures:

80 F (27 C)	10 minutes
70 F (21 C)	10 minutes
60 F (16 C)	15 minutes
50 F (10 C)	25 minutes
40 F (4 C)	45 minutes
35 F (2 C)	60 minutes

The composition shall dry to no-tracking in approximately 10 minutes, and after thirty (30) minutes shall show no damaging effect from traffic. Dry to no-tracking shall be considered as the condition

where no visual deposition of the epoxy marking to the pavement surface is observed when viewed from a distance of 100 feet (30 meters), after a passenger car is passed over the line. Regardless of the temperature at the time of installation, the installation contractor shall be responsible for protection of the markings material until dry to a non-tracking state.

e. Abrasion Resistance. The wear index of the composition shall not exceed 82 when tested in accordance with ASTM C501 using a CS-17 wheel and under a load of 1000 grams for 1000 cycles.

f. Tensile Strength. The tensile strength of the epoxy composition shall not be less than 6000 psi (41 MPa) when tested in accordance with ASTM D638 using a Type IV specimen [0.125 ± 0.010 (3.18 ± 0.25 mm) thick]. Tests shall be conducted at an ambient temperature of 75 ± 5 F (24 ± 3 C). The testing machine shall operate at a speed of 0.20 (5.1 mm) per minute.

The total conditioning or drying period, from the time the epoxy composition is first mixed to the time of testing, shall not be less than 24 hours nor more than 96 hours.

Test specimens for tensile strength determination will be prepared as follows:

A 1/8 inch (3 mm) thick sheet of epoxy material is cast from a reservoir-type mold, fabricated from polyterrafluorethylene (PTFE), 1/8 deep x 10 x 10 (3 mm deep x 250 mm x 250 mm).

Prior to casting, the mold is sprayed with a suitable release agent. A sufficient amount of epoxy composition is mixed in the proper proportions (A:B) and poured level with the top of the mold. Care should be taken so as not to decrease or exceed the 1/8 (3 mm) thickness.

After a period of 1 to 4 hours, the material will have set into a semi-rigid sheet that is flexible enough to die-cut yet rigid enough to retain its shape. While the material is in this plastic state, five (5) specimens shall be die-cut and then placed on a flat, smooth, PTFE surface for the completion of the specified conditioning period.

g. Compressive Strength. The compressive strength of the epoxy composition shall not be less than 12,000 psi (83 MPa) when tested in accordance with ASTM D695 except that a compression tool shall not be necessary. The test specimen shall be a right cylinder [0.50 inch diameter by 1.0 inch length (12 mm diameter by 25 mm length)]. Tests shall be conducted at an ambient temperature of 75 ± 5 F (24 ± 3 C).

The total conditioning or drying period, from the time the epoxy composition is first mixed to the time of testing shall not be less than 24 hours nor more than 96 hours.

Test specimens for compressive strength determinations will be prepared as follows:

Five molds will be prepared from 1/2 (12 mm) I.D., 1/16 (1.5 mm) wall thickness acrylic tubing, cut in 1 1/2 (38 mm) lengths. After spraying the inside of the mold with a suitable release agent,[1] the cylindrical tubes are placed in a vertical position on a PTFE sheet base. A sufficient amount of epoxy composition is thoroughly mixed in the proper proportions (A:B) and poured into the mold to a depth of approximately 1 1/4 (32 mm). After a minimum of 72 hours curing, the specimens are removed from the molds and machined to a length of 1 ± 0.002 (25 mm ± 0.05 mm).

h. Hardness. The epoxy composition when tested in accordance with ASTM D2240 shall have a Shore D hardness of between 75 and 100. Samples shall be allowed to dry for not less than 24 hours nor more than 96 hours prior to testing.

B. Reflective Glass Spheres/Beads

Reflective glass spheres for drop-on application shall conform to the following requirements:

The glass spheres shall be colorless; clean; transparent; free from milkiness or excessive air bubbles; and essentially clean from-surface scarring or scratching. They shall be spherical in shape and at least 80% of the glass beads shall be true spheres when tested in accordance with ASTM D1155. At least 80% of the Type IV beads shall be true spheres as measured by the visual method.

The refractive index of the spheres shall be a minimum of 1.50 as determined by the liquid immersion method at 77 F (25 C).

The silica content of the glass spheres shall not be less than 60%.

The crushing resistance of the spheres shall be as follows: A 40 lb. (18 kg) dead weight, for 20 to 30 (850 µm to 600 µm) mesh spheres shall be the average resistance when tested in accordance with ASTM D1213.

The glass spheres shall have the following grading when tested in accordance with ASTM D1214.

M247 AASHTO Type 1 Glass Spheres

U.S. Standard Sieve	% Retained	% Passing
#20 (850µm)	0	100
#30 (600µm)	5-25	75-95
#50 (300µm)	40-65	15-35
#100 (150µm)	15-35	0-5
Pan	0-5	

Type 4 Large Spheres

U.S. Standard Sieve	% Retained	% Passing
#10 (2000 µm)	0	100
#12 (1680 µm)	0-5	95-100
#14 (1410 µm)	5-20	80-95
#16 (1190 µm)	40-80	10-40
#18 (1000 µm)	10-40	0-5
#20 (850 µm)	0-5	0-2
Pan	0-2	

The AASHTO M247 Type 1 glass spheres shall be treated with a moisture-proof coating. They shall show no tendency to absorb moisture in storage and shall remain free of clusters and hard lumps. They shall flow freely from dispensing equipment at any time when surface and atmosphere conditions are satisfactory for marking operations. The moisture-resistance of the glass spheres shall be determined in accordance with AASHTO M247 test method 4.4.1.

Type IV glass spheres shall be treated with an adhesion coating. They shall show no tendency to absorb moisture in storage and shall remain free of clusters and hard lumps. They shall flow freely from dispensing equipment at any time when surface and atmosphere conditions are satisfactory for marking operations. The adhesion coating property of the Type IV beads shall be tested in accordance with the dansyl-chloride test.

C. Black Epoxy Contrast Markings

Epoxy Resin Requirements: The two-component, 100% solids, paint shall be formulated and designed to provide a simple volumetric mixing ratio (e.g. 2 part component A to 1 part component B) specifically for service as a hot-spray applied binder for black aggregate in such a manner as to produce maximum adhesion. The material shall be composed of epoxy resins and pigments only.

The paint shall be well mixed in the manufacturing process and shall be free from defects and imperfections that may adversely affect the serviceability of the finished product. The paint shall not thicken, curdle, gel, settle excessively, or otherwise display any objectionable properties after storage. Individual components shall not require mixing prior to use when stored for a maximum of 6 months.

The overall paint composition shall be left to the discretion of the manufacturer, but shall meet the following requirements:

Composition:	Component	Percent By Weight
	Carbon Black (ASTM D476 Type III)	7±2 percent, by weight
	Talc	14±2 percent, by weight
	Epoxy Resin	79±4 percent, by weight

D. Black Aggregate

The moisture resistant aggregate shall meet the gradation requirements (AASHTO T27) as follows:

Sieve Size	Percent Retained
#30	18-28%
#40	60-80%
#50	2-14%

The moisture resistant aggregate shall have a ceramic coating. The aggregate shall be angular with no dry dispensement pigment allowed.

Hardness:	The black aggregate hardness shall be 6.5-7 on Moh's Mineral Scale.
Porosity:	The black aggregate porosity shall be less than two (2) percent.
Moisture Content:	The black aggregate moisture content shall be less than a half (.5) percent.

E. Packaging and Shipment

Epoxy pavement marking materials shall be shipped to the job site in strong substantial containers. Individual containers shall be plainly marked with the following information:

a. Name of Product
b. Lot Number
c. Batch Number
d. Test Number
e. Date of Manufacture
f. Date of expiration of acceptance (12 months from date of manufacture)
g. The statement (as appropriate)
   Part A - Contains Pigment & Epoxy Resin
   Part B - Contains Catalyst
h. Quantity
i. Mixing proportions, Application Temperature and Instructions
j. Safety Information
k. Manufacturer's Name and Address

Reflective glass spheres shall be shipped in moisture resistant bags. Each bag shall be marked with the name and address of the manufacturer and the name and net weight of the material.

F. The Department reserves the right to randomly take a one-quart sample of white, yellow and hardener, of the epoxy material or glass spheres without prior notice for testing to ensure the epoxy material meets specifications.

Epoxy Application Equipment:

Application equipment for the placement of epoxy reflectorized pavement markings shall be approved by the Department, prior to the start of work.

At any time throughout the duration of the project, the Contractor shall provide free access to his epoxy application equipment for inspection by the Engineer or his authorized representative.

In general, the application equipment shall be a mobile, truck mounted and self contained pavement marking machine, specifically designed to apply epoxy resin materials and reflective glass spheres in continuous and skip-line patterns. The application equipment shall be maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. In addition, the truck mounted unit shall be provided with accessories to allow for the marking of legends, symbols, crosswalks, and other special patterns.

The Engineer may approve the use of a portable applicator in lieu of truck mounted accessories, for use in applying special markings only, provided such equipment can demonstrate satisfactory application of reflectorized epoxy markings in accordance with these specifications.

The applicator shall be capable of installing up to 20,000 lineal feet (6,100 lineal meters) of epoxy reflectorized pavement markings in an 8-hour day and shall include the following features:

1. The applicator shall provide individual material reservoirs, or space, for the storage of Part A and Part B of the epoxy resin composition; for the storage of water; and for the storage of reflective glass spheres.

2. The applicator shall be equipped with heating equipment of sufficient capacity to maintain the individual epoxy resin components at the manufacturer's recommended temperature for spray application and for heating water to a temperature of approximately 140 F (60 C).

3. The glass spheres shall be gravity dropped upon 20 mils (500 um) of epoxy pavement markings to produce a wet-night-reflective pavement marking. The large spheres (Federal Spec. Type 4) shall be applied at a rate of 12 pounds per gallon (1.4 kg/L) of epoxy pavement marking material, immediately followed by a second drop of AASHTO M-247 Type 1 glass spheres applied rate of 12 pounds per gallon (1.4 kg/L) of epoxy pavement marking material. This application rate and the following gradation shall conform to FHWA's FP-96: Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (pages 757-761 Type 3 and Type 4 Beads).

4. The applicator shall be equipped with metering devices or pressure gauges, on the proportioning pumps. Metering devices or pressure gauges shall be visible to the Engineer.

5. The applicator shall be equipped with all the necessary spray equipment, mixers, compressors, and other appurtenances to allow for the placement of epoxy reflectorized pavement markings in a simultaneous sequence of operations as described below in Construction Details, D. Applications of Epoxy Reflectorized Pavement Markings of this Special Provisions.

Construction Details.

A. General: All pavement marking and patterns shall be placed as shown on the Plans or as directed by the Engineer.

Before any pavement markings work is begun, a schedule of operations shall be submitted for the approval of the Engineer. This schedule shall be submitted 2 weeks prior to the application of the striping.

At least five (5) days prior to starting striping the Contractor shall provide the Engineer with the epoxy manufacturer's written instructions for use. These instructions shall include but not be limited to: mixing ratios, application temperatures, and recommendations for use of water spray.

The application of pavement markings shall be done in the general direction of traffic. Striping against the direction of traffic flow shall not be allowed.

The Contractor shall be responsible for removing, to the satisfaction of the Engineer, tracking marks, spilled epoxy or epoxy markings applied in unauthorized areas.

The hot water spray shall not be used in conjunction with markings applications on any pavement surface, or on any existing durable type marking, unless specifically recommended by the manufacturer of the epoxy material.

B. Atmospheric Conditions: Epoxy pavement markings shall only be applied during conditions of dry weather and on substantially dry pavement surfaces. At the time of installation the pavement surface temperature shall be a minimum of 35 F (2 C) and the ambient temperature shall be a minimum of 35 F (2 C) and rising. The Engineer shall be the sole determiner as to when atmospheric conditions and pavement surface conditions are such to produce satisfactory results.

C. Surface Preparations: The Contractor shall clean the pavement or existing durable marking to the satisfaction of the Engineer.

Surface cleaning and preparation work shall be performed only in the area of the epoxy markings application.

At the time of application all pavement surfaces and existing durable markings shall be free of oil, dirt, dust, grease and similar foreign materials. The cost of cleaning these contaminants shall be included in the bid price of this item. Also, the item shall include the cost of removal of the curing component in the area of the epoxy markings application, if concrete curing compounds on new portland cement concrete surfaces have been used. Waterblasting will not be permitted for removal.

D. Application of White/Yellow Epoxy Reflectorized Pavement Markings: White/yellow epoxy reflectorized pavement markings shall be placed at the widths and patterns designated on the Contract Plans.

Markings operations shall not begin until applicable surface preparation work is completed, and approved by the Engineer.

White/yellow epoxy pavement markings shall be applied at a minimum uniform thickness of 20 mils (500 µm) on all Portland cement concrete and bituminous concrete pavement, including Stone Matrix Asphalt.

Large reflective glass spheres (Federal Spec. Type 4) shall be applied at the rate of 12 pounds per gallon (1.4 kg/L) of epoxy pavement marking material, immediately followed by a second drop of AASHTO M-247 Type 1 glass spheres applied at a rate of 12 pounds per gallon (1.4 kg/L) of epoxy pavement marking material. Glass spheres shall uniformly cover the length and width of the pavement marking.

E. Application of Black Epoxy Contrast Pavement Markings: Black epoxy contrast pavement markings shall be placed at the widths designated on the Contract Plans.

Markings operations shall not begin until applicable surface preparation work is completed, and approved by the Engineer.

Black epoxy contrast pavement markings shall be applied at a minimum uniform thickness of 20 mils (500 µm) on all Portland cement concrete surfaces followed by a single drop of graded black aggregate.

The width of black epoxy line shall be applied for the following situations:

Center Skip Line - On Portland cement concrete pavements a black contrast skip line shall be 10 feet (3 m) in length of the same width as the white epoxy reflectorized skip. It is to lead the white skip and stop at the beginning of the white skip. The black contrast skip is to have a single application of graded black aggregate.

Edge Lines - All edge lines on Portland cement concrete pavements shall have a base of black contrast markings which is 4 inches (100 mm) wider than the reflective white or yellow marking. The black contrast marking is to be applied first with a single drop of graded black aggregate. Once it has cured sufficiently so as not to track, the reflectorized white or yellow line is to be applied on top of it. The reflective line is to be centered along the black contrast line such that a minimum of 2 inches (50 mm) of black contrast marking is visible on either side of the reflective marking.

F. Defective Epoxy Pavement Markings: Epoxy reflectorized pavement markings, which after application and curing are determined by the Engineer to be defective and not in conformance with this specification, shall be repaired. Repair of defective markings shall be the responsibility of the Contractor and shall be performed to the satisfaction of the Engineer as follows:

1. Insufficient film thickness [(less than 20±1 mils (500 µm) as applicable] and line widths; insufficient glass bead coverage or inadequate glass bead retention.

   Repair Method: Prepare the surface of the defective epoxy marking by shot blasting, sand blasting, or water blasting. No other cleaning methods will be allowed. Surface preparation shall be performed to the extent that a substantial amount of the reflective glass spheres are removed and a roughened epoxy marking surface remains.

   Immediately after surface preparation remove loose particles and foreign debris by brooming or blasting with compressed air.

Repair shall be made by re-striping over the cleaned surface, in accordance with the requirements of this specification and at a full 20±1 mils (500 µm) minimum line thickness as applicable.

2. Uncured or discolored epoxy (brown patches); insufficient bond to pavement surface (or existing durable marking).

   Uncured epoxy shall be defined as applied material that fails to cure (dry) in accordance with the requirements of this specification under MATERIALS, A, 2d. DRYING TIME (FIELD); or applied material that fails to cure (dry) within a reasonable time period under actual field conditions, as defined by the Engineer.

   Discoloration (brown patches) shall be defined as localized areas or patches of brown or grayish colored epoxy marking material. These areas often occur in a cyclic pattern and also, often are not visible until several days or weeks after markings are applied.

   Repair Method: The defective epoxy marking shall be completely removed and cleaned to the underlying pavement surface to the satisfaction of the Engineer.

   The extent of removal shall be the defective area plus any adjacent epoxy pavement marking material extending one foot (300 mm) any direction.

   After surface preparation work is complete, repair shall be made by re-applying epoxy over the cleaned pavement surface in accordance with the requirements of this specification.

3. Reflectivity for epoxy resin paint.

   After satisfactory completion of all striping work and written notification from the Contractor, the Department shall test the striping to ensure it has the minimum reflectivity. The testing will be completed within 30 calendar days from notification. The Contractor may request that tests be conducted on completed phases or portions of the work. Approval of such a request will be at the discretion of the Engineer. Testing will be done using a LTL-X Retrometer (30 meter geometry). Five readings will be taken per line per mile (1.6 km). Projects less than 1 mile (1.6 km) in length will have a minimum of 5 readings per line. These readings will then be averaged for the overall project average.

   The required average minimum initial reflectivity reading in millicandellas shall be:

   White 450
   Yellow 325

   Any single reading shall not be less than 350 millicandellas for white and 250 millicandellas for yellow. Without exception, any pavement markings installed that does not meet the above average minimum initial reflectivity numbers shall be removed and replaced, at the installation contractor's expense.

   Other defects not noted above, but determined by the Engineer to need repair, shall be repaired or replaced as directed by and to the satisfaction of the Engineer.

   All work in conjunction with the repair or replacement of defective epoxy reflectorized pavement markings shall be performed by the Contractor at no additional cost to the State.

Method of Measurement:

The quantity of permanent pavement striping (white, yellow, or black epoxy resin paint) will be measured by the number of linear feet (meters) of pavement striping line and number of square feet (meter) of symbol installed on the pavement and accepted in accordance with the Plans.

Basis of Payment:

The quantity of permanent pavement striping (white, yellow, or black epoxy resin paint) payment will be paid for at the Contract unit price per linear foot (meter) for 3", 4 , 5", 6 , 8 , 9", 10 , 12 , 14", 16 (75 mm, 100 mm, 125 mm, 150 mm, 200 mm, 225 mm, 250 mm, 300 mm, 350 mm, or 400 mm) line and the Contract unit price per square foot (meter) of symbol. The quantity of permanent pavement marking (white, yellow, or black epoxy resin paint) will be paid for at the Contract unit price per linear foot (meter) of line and the Contract unit price per square foot (meter) of symbol. Price and payment shall include striping layout,

cleaning and preparing the pavement surface, and placing all materials, for all labor, tools, equipment and incidentals necessary to complete the work.

NOTE:

For information only:

The following manufacturers are known to us which manufacturer Epoxy Resin Paint for Pavement Striping. The Department does not endorse or require the use of any of the manufacturers listed below. However, a bidder wishes to use another manufacturer's product, it shall be submitted for review and approval prior to submitting a bid proposal. Should the product be deemed unacceptable by the Department, the successful bidder will be required to use only an approved product.

1. POLY CARB, Inc.
   33095 Bainbridge Road
   Solon, Ohio 44139
   Tel. 1-800-CALLMIX

2. IPS - Ennis Paint
   P.O. Box 13582
   Research Triangle Park, North Carolina 27709
   Tel. 1-877-477-7623

3. Epoplex
   One Park Avenue
   Maple Shade, NJ 08052
   Tel. 1-800-822-6920

4. Or an approved equal.

2/14/12

748525 - TEMPORARY MARKINGS, TAPE, 4"
748526 - TEMPORARY MARKINGS, TAPE, 6"
748527 - TEMPORARY MARKINGS, TAPE, WORDS/SYMBOLS
748570 - TEMPORARY MARKINGS, TAPE, 5"

Description:

This work shall consist of furnishing, installing, removing or obliterating pavement markings in work zones in accordance with this provision and in reasonably close conformity with the dimensions and lines shown on the plans or established by the Engineer.

Materials:

The markings shall consist of white or yellow retro reflective pavement marking on a conformable backing.

The quality of the pavement marking shall be such that the performance requirements for the marking shall be met.

The markings shall be precoated with a pressure sensitive adhesive and shall be capable of being adhered to Asphalt concrete or Portland cement concrete at temperatures as low as 50 F (10 C) in accordance with the manufacturer's recommendations. A surface preparation adhesive recommended by the manufacturer shall be used for all applications to improve initial and long term adhesion.

When stored in a cool dry area indoors, the materials shall be suitable for use for one year after the date of purchase.

Classification:

The removable retro reflective pavement marking tape must be designed and constructed in such a manner that it can be readily removed when the markings are no longer applicable. The tape shall be capable of performing for the duration of a normal construction season and shall then be capable of being removed intact or in large pieces. The tape shall be wet and dry reflective throughout its useful life. (A normal construction season is defined as the time after the last snowplowing in the spring and before the first snowplowing in the fall/winter. In non-snow removal locations, a normal construction season is limited to the calendar year at the time of installation.)

Requirements:

Composition

The removable, retro reflective pavement markings shall consist of a highly reflective white or yellow enclosed lens pavement marking with a thin, flexible, conformable backing which is precoated with a pressure sensitive adhesive.

Retro reflectance

The enclosed lens white and yellow pavement markings shall have the initial minimum retroreflectance values as shown in Table 1 under dry, wet, and rainy conditions at 1.05 observation angle and 88.76 entrance angle. These angles represent a simulated driver viewing geometry at 30 meters distance. The photometric quantity to be measured shall be the coefficient of retroreflected luminance (R_L), and shall be expressed as millicandelas per square meter per lux [(mcd m^{-2}) lx^{-1}]. The English equivalent shall be expressed as millicandelas per square foot per foot candle [(mcd ft^{-2}) fc^{-1}]

Retroreflectance values shall be measured under dry conditions in accordance with ASTM D 4061. The angular aperture of both the photoreceptor and light projector shall be 6 minutes of arc. The reference center shall be the geometric center of the sample, and the reference axis shall be taken perpendicular to the test sample.

Values measured under wet conditions shall be measured in accordance with ASTM E 2176 or ASTM E 2177 using a portable retroreflectometer. Wet retroreflectance values measured under a "condition of continuous wetting" (simulated rain) shall be in accordance with ASTM E 2176. Wet retroreflectance values measured under a "condition of wetness" shall be in accordance with ASTM E 2177.

Visually, the reflective performance shall be similar whether the material is dry or wet.

Table 1: Minimum initial R_L under dry, wet and rainy conditions		
	White	Yellow
Entrance Angle	88.76	88.76
Observation Angle	1.05	1.05
Retroreflected Luminance	750	450
R_L [(mcd m^{-2}) lx^{-1}]		

Removability

The marking film shall be removable from Asphalt concrete and Portland cement concrete intact or in large pieces, at temperatures above freezing without the use of heat, solvents, grinding or blasting without permanently scarring the roadway surface.

Skid Resistance

The surface of the markings when new provides an average skid resistance value of 50 BPN when tested according to ASTM E 303.

Color

The x,y chromaticity co-ordinates for dry markings shall lie within the regions defined by the following corner points:

	1		2		3		4	
	x	y	x	y	x	y	x	y
White	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375
Yellow	0.560	0.440	0.460	0.400	0.420	0.440	0.490	0.510

Daytime appearance[1]
The appearance of the marking in daylight or under road lighting conditions can be determined by measuring the reflection in diffuse conditions. The luminance coefficient in diffuse illumination (Qd) is measured using a portable Qd reflectometer incorporating "30 meter" geometry. The Qd shall be greater than 130 [(mcd ft^{-2}) fc^{-1}] when newly applied.

Note: The luminance coefficient (Qd) under diffuse illumination represents the brightness of a road marking as seen by drivers of motorized vehicles in typical or average daylight or under road lighting conditions.

[1]Reference CEN Standard EN 1436.

Construction Methods:

Pavement markings in work zones shall be placed in accordance with the following provisions:

At the end of each day's work, pavement markings shall be in place on each paving lift that is open to normal traffic flow. Materials requiring removal shall be specified above, and marking configurations shall be in accordance with the Manual on Uniform Traffic Control Devices.

The pavement markings shall be maintained and replaced by the Contractor without additional compensation until they have served their purpose, at which time the contractor will be required to remove them.

Pavement markings shall be applied to clean dry surfaces in accordance with the manufacturer's installation instructions or a method approved by the Engineer.

Method of Measurement:

Linear pavement markings will be measured in linear feet complete-in-place for the width specified.

Removal or obliteration of pavement markings in construction work zones will not be measured for payment, but shall be considered incidental to the work.

Basis of Payment:

Retro reflective pavement markings will be paid for at the contract unit price, which price shall be full compensation for cleaning and preparing the pavement surface, for furnishing and placing all materials, and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Temporary Marking, Tape, linear	Linear Foot
Temporary Marking, Tape, words/symbol	Square foot

7/15/11

748530 - REMOVAL OF PAVEMENT STRIPING

Description:

This work consists of removing pavement markings of all kinds including paint, tape, etc., in accordance with this special provision, notes on Plans and/or as directed by the Engineer. The Contractor shall coordinate with the Engineer for maintaining traffic during the operation, prior to starting the work.

Materials and Construction Methods:

Paint and Epoxy Resins:
Shot/abrasive grit blasting or water blasting equipment shall be used for removal of markings from pavement surfaces.

Alkyd Thermoplastic:
In addition to the removal techniques discussed for paint and epoxy, burning or grinding (erasing machines) equipment may also be used for removal of markings from pavement surfaces.

The removal operation shall be performed in a manner that will not damage the pavement surface.

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

After removal of striping on bituminous concrete, approved flat black paint or asphalt sealer shall be used to cover any exposed aggregate or embedded paint at no additional cost.

Method of Measurement:

The quantity of pavement striping removal will be measured as the number of square feet (meters) of pavement striping removed and accepted. The area of lines will be calculated by multiplying the nominal width of line times the length and the area of symbols will be as specified in Subsection 748.10 of the Standard Specifications.

Basis of Payment:

The quantity of pavement striping removal will be paid for at the Contract unit price per square foot (meter) for "Removal of Pavement Striping". Price and payment shall be full compensation for furnishing all materials, removing the pavement markings, disposing of the removed marking material, covering up the exposed aggregate, and for all labor, equipment, tools and incidentals necessary to complete the work.

Note:

There will be no measurement and payment for removal of pavement markings placed incorrectly by the Contractor.

01/09/06

748541 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, 4”
748542 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, 6"
748543 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, 8"
748544 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, 12”
748545 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, 16"
748546 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, SYMBOL/LEGEND
748553 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, BIKE SYMBOL
748554 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, PEDESTRIAN SYMBOL
748555 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, HANDICAP SYMBOL

Description:

This work consists of furnishing and installing preformed retroreflective thermoplastic pavement marking with a preapplied Federal Specification Type IV glass bead coating throughout its entire cross section on bituminous asphalt pavement at the locations and in accordance with the patterns on the Plans, or as directed by the Engineer.

The preformed retroreflective markings shall conform to the size and dimensions as shown in the Federal “Standard Highway Signs” book found at: http://mutcd.fhwa.dot.gov/SHSe/pavement.pdf as referred to in the Delaware Manual on Uniform Traffic Control Devices, Part 3, Markings.

Materials:

General: Only materials listed on the Department’s Approved Pavement Markings Material List will be used for this item. The preformed retroreflective markings shall be fusible to bituminous asphalt pavement by means of the normal heat of a propane type of torch. Adhesives, primers or sealers are not necessary prior to the preformed retroreflective markings application on bituminous asphalt pavement.

The preformed retroreflective markings shall conform to pavement contours, breaks and faults through the action of traffic at normal pavement temperatures. The markings shall have resealing characteristics and be capable of fusing to itself and previously applied worn hydrocarbon and/or alkyd thermoplastic pavement markings.

The preformed retroreflective markings shall be capable of application on bituminous asphalt pavement wearing courses during the paving operation in accordance with the manufacturer's instructions. After application the markings shall be immediately ready for traffic. The preformed retroreflective markings shall be suitable for use for one year after the date of receipt when stored in accordance with the manufacturer's recommendations.

The preformed retroreflective thermoplastic markings shall not be brittle and must be sufficiently cohesive and flexible at temperatures exceeding 50°F (10°C) for one person to carry without the danger of fracturing the material prior to application.

Composition: The retroreflective pliant rosin ester thermoplastic pavement markings shall consist of a homogeneous mixture of high quality polymeric thermoplastic binders, pigments, fillers and glass beads. The thermoplastic material must conform to AASHTO M249-79(86) with the exception of the relevant differences due to the material being preformed, and identified herein.

Intermix Glass Beads: The preformed retroreflective material shall contain a minimum of 30% glass spheres which shall conform to AASHTO M247-81 Type 1. Glass spheres shall have a minimum of 80% true spheres overall.

Top Beads: To provide the required retroreflectivity, the preapplied factory top coating of glass beads shall be a combination of both Federal Spec. Type IV and AASHTO M247-81 Type I beads. Federal Spec. Type IV beads shall be evenly disbursed across the entire surface of the product at a minimum rate of 4 lb. (1.8 kg) per 100 ft^2 (9.3 m^2) and the AASHTO at 3 lb.(1.4 kg) per 100 ft^2 (9.3 m^2). In combination, the total glass bead coverage shall be 7-8 lb. (3.2-3.6 kg) per 100 ft^2 (9.3 m^2). The AASHTO M247-81 Type I beads shall have a minimum of 80% true spheres overall and the Federal Spec. Type IV beads shall be 80% true spheres on the 12 and 14 sieves and shall be no less than 75% true spheres on the remaining sieves.

Retroreflectivity: After satisfactory completion of all striping work and written notification from the contractor, the Department shall test the striping to ensure it has the minimum reflectivity. The testing will be completed within 30 calendar days from notification. Testing will be done using a Delta LTL 2000 Retrometer (30 meter geometry). The required minimum initial reflectivity reading in millicandellas shall be:

White 300
Yellow 200
Blue 200

Skid Resistance: The surface of the preformed retroreflective thermoplastic markings shall provide a pre-appled minimum skid resistance value of 45-51 BPN and a post-applied minimum skid resistance value of 45-55 BPN when tested according to ASTM E303-74.

Thickness: The thickness of the supplied material shall have a minimum average thickness of .090" (90 mils) for all Longitudinal lines and a thickness of .125" (125 mils) for all transverse lines and symbols/legends.

Tensile Strength and Elongation: The preformed retroreflective thermoplastic material shall have a minimum tensile strength of 150 lb. per square inch (1054 kg per square mm) of cross section, at .002" (2.28 mil) thickness, when tested according to ASTM D638-76 except that a sample 6" by 1" (150 mm by 25 mm) shall be tested at a temperature between 70°F and 80°F (21°C and 27°C) using a jaw speed of 10" to 12" (250 mm to 300 mm) per minute. The sample shall have a maximum elongation of 20% at break when tested by this method.

Flexibility: The preformed retroreflective thermoplastic marking material shall have flexibility at 50°F such that when a 1" by 6" (25 mm by 150 mm) sample is bent through an arc of 90 degrees at a uniform rate in 10 seconds (9 degrees per second) over a 1" (25 mm) mandrel, no cracking occurs in the test sample. The sample must be conditioned prior to testing at 50°F±2 degrees (10°C) for a minimum of four hours. At least two specimens tested must meet the flexibility requirements at 50°F (10°C) for a passing result.

Environmental Resistance: The applied markings shall be resistance to deterioration due to exposure to sunlight, water, oil, diesel fuels, gasoline, pavement oil content, salt and adverse weather conditions.

Effective Performance Life: When properly applied, in accordance with manufacturer's instructions, the preformed retroreflective pavement markings shall be neat and durable. The markings shall remain skid resistant and show no lifting, shrinkage, tearing, roll back or other signs of poor adhesion for a period of one winter season.

Oil/grease Resistant Test: The preformed retroreflective thermoplastic material shall not dissolve or smear after rubbing a small amount of motor oil on a small piece of the thermoplastic material for two minutes.

Bond Strength: The material shall exhibit a bond strength to Portland Cement Concrete (PCC) equal or exceed 180 psi when tested at room temperature (73.4±3°F) (23°C) in accordance to ASTM Standard Test Method for Bond Strength of thermoplastic marking Material D4796-88. Place a coarse brick in a 400°F (204°C) oven for 5 minutes. Prepare a 4 square inch test specimen. Place the test specimen on the brick and further heat in the 400°F (204°C) oven for 15 minutes. The test specimen is then allowed to cool to room temperature and prepared for testing.

Low Temperature Cracking (Stress) Resistance for Extended Period: The material shall be tested according to AASHTO T250 Section 7 with Section 7.2.3 modified for and extended cold temperature 15 degrees ±3°F (-9.4±2°C) exposure period 72 hours. Any cracking shall constitute failure of the material for PCC road surfaces.

Impact Resistance (Gardner Falling Weight): A 2" by 7.5" (50 by 190 mm) specimen shall be applied on a course concrete brick. Using a Gardner Impact Tester, a 2 lb (.91 kg) weight is dropped from a height of 80" (2032 mm). The specimen when tested at room temperature 73.4±3°F (23°C) should show no sign of cracking. (Test procedure is in accordance with ASTM D5420-93).

Packaging: The flexible preformed retroreflective thermoplastic marking materials, for use as transverse or longitudinal markings as well as legends, arrows and symbols shall be available in flat form material or in rolls. Flat material shall be supplied in maximum of 4' (1.2 m) lengths up to 2' (.6 m) in width. The material shall be packed in suitable cartons clearly labeled for ease of identifying the contents.

Construction Methods:

The markings shall be applied in strict accordance with the manufacturer's recommendations on clean and dry surfaces. Marking configurations shall be in accordance with the "Delaware Manual on Uniform Traffic Control Devices, Part 3, Markings."

The preformed retroreflective thermoplastic material shall be fusible to the pavement by means of a propane torch recommended by the manufacturer. Preheating the surface to remove any latent moisture will be done just prior to the placement and installation of the Symbol/ Legend.

No markings shall be placed when the ambient temperature is below 40°F (4°C). The material shall be kept in a location above 55°F (13°C) until just before application.

The supplier shall provide technical services as may be required.

Method of Measurement:

The quantity of pavement striping (748541-748545) will be measured by the number of linear feet (linear meters) of 4”, 6”, 8”, 12”, or 16” pavement striping line placed and accepted. The quantity of symbol/ legend (748546) will be measured by the number of square feet (meters) of symbol/legend placed and accepted. The quantity of bike symbol, pedestrian symbol, and handicap symbol (748551-748553) will be measured as each placed and accepted. The dimensions for the symbol/legends are as follows:

Bike Rider with Helmet shall be 3’ X 5’.
Pedestrian shall be 4’ X 8’.
Handicap Symbol shall be 40” X 40”.

Basis of Payment:

The quantity of pavement striping payment will be paid for at the Contract unit price per linear foot (linear meter) for 4”, 6”, 8”, 12” and 16” (100 mm, 150 mm, 200 mm, 300 mm, and 400 mm) line. The quantity of symbol/legend will be paid for at the Contract unit price per square foot (meter). The quantity of bike symbol, pedestrian symbol, and handicap symbol will be paid for at the Contract unit price per each. Price and payment shall include cleaning and preparing the pavement surface, and placing all materials, for all labor, tools, equipment and incidentals necessary to complete the work.

Warranty:

The Contractor shall warrant to the Department that the installed retroreflective preformed thermoplastic pavement markings are free of defects, as hereafter defined, for a period of one winter season beginning at the initial acceptance of the marking installation by the Department. The initial acceptance of the marking installation will occur upon the satisfactory correction of all deficiencies noted in the marking installation during the Final Inspection of the project. The markings shall be warranted against failure due to blistering, excessive cracking, bleeding, staining, discoloration, oil content of the pavement materials, smearing and spreading under heat, deterioration due to contact with grease deposits, oil, diesel fuel, or gasoline drippings, chipping, spalling, poor adhesion to the pavement materials, vehicular damage, and wear from normal maintenance activities including snow plowing.

The Contractor shall repair all defective areas identified by the Department after initial installation or during the Warranty Period. All repairs shall begin immediately following the notice to the Contractor by the Department unless weather limitations prevent the corrective work. Should the contractor not commence work within the period stated in the notice, weather permitting, and pending severity, the Department reserves

the right to remedy the condition and charge the contractor for the work. Any corrective work shall be as recommended by the manufacturer of the marking material and approved by the Department. The Department shall be given notification before the Contractor begins corrective work to allow for inspection of the operation. All costs associated with the repair work shall be the responsibility of the contractor. These costs shall include, but are not limited to, removal, material, maintenance of traffic, etc.

2/28/09

749687 – INSTALLATION OR REMOVAL OF TRAFFIC SIGN ON SINGLE SIGN POST

Description:

This work consists of installing or removing traffic sign(s) on a single post at the locations indicated on the Plans or as directed by the Engineer. This specification also includes installation of posts in boring holes constructed under other items.

A single sign totaling more than 9 square feet, or with any dimension, length or width, greater than or equal to 48 inches shall be installed on multiple sign posts under Item 749690 – Installation or Removal of Traffic Sign on Multiple Sign Posts.

Materials:

The Department will provide all sign materials to be used on this project. The Contractor shall contact the DelDOT Sign Shop Supervisor with project plans and quantity sheets at 302-760-2581. Sign fabrication orders require a minimum of four (4) weeks for completion. Orders placed with less than 4 weeks lead-time will result in a delay. Any delay caused by inadequate lead-time due to a late order will be the sole responsibility of the Contractor. The Contractor shall pick-up the sign materials from the DelDOT Sign Shop and deliver them to the job site without any damage to the sign materials.

Construction Methods:

The Contractor shall pick-up necessary signs, sign posts, hardware, and extensions from the Department and install the signs in the locations indicated on the Plans in accordance with the DelDOT MUTCD or as directed by the Engineer. The Contractor shall be responsible for obtaining all necessary utility clearances before the signs may be installed. For sign removals, the sign posts shall have all nuts, bolts, and other connectors removed. The disturbed ground shall be graded and backfilled accordingly. All signing materials removed from the project shall be returned to the DelDOT Sign Shop without any damage to the sign materials.

Method of Measurement:

The number of single sign installations or removals will be measured as the actual number of sign posts installed or removed and accepted.

Basis of Payment:

The quantity of single sign post installations or removals will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for installing or removing signs and sign materials, pick-up and delivery of sign materials, grading disturbed areas, and for all labor, equipment, tools, and incidentals required to complete the work. Signs that are not installed in accordance with the DelDOT MUTCD or signs installed in the incorrect location shall be moved at no additional cost to the Department.

2/2/11

749688 - INSTALLATION OF 4" DIAMETER HOLE, LESS THAN OR EQUAL TO 6" IN DEPTH
749689 - INSTALLATION OF 4" DIAMETER HOLE, GREATER THAN 6" IN DEPTH

Description:

This work consists of boring a hole 4" in diameter averaging 6" in depth into existing P.C.C. surfaces for installing single or multiple sign posts at the locations indicated on the Plans or as directed by an Engineer.

Materials:

The Contractor shall provide the equipment necessary to bore a 4" hole into concrete surfaces, while maintaining the stability of the surrounding P.C.C. The depth of the bored hole shall be to the top of the subbase material.

Construction Methods:

The holes shall be bored into P.C.C. islands, medians, or sidewalk using a mechanical hole borer for such work or other methods approved by the Engineer. The hole shall be 4" in diameter. Holes bigger or smaller than 4" shall be corrected at the Contractor's expense.

Method of Measurement:

The number of 4" holes in diameter bored will be measured as the actual number of holes bored and accepted.

Basis of Payment:

The quantity of holes bored as required above will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for boring holes at the required depth, and for all labor, equipment, tools, and incidentals required to complete the work.

Note:

The cost for installing holes and PVC sleeves for sign posts in newly constructed P.C.C. islands, medians, or sidewalks shall be incidental to the P.C.C. item. Holes in bituminous surfaces are considered incidental to the sign installation

7/19/13

749690 - INSTALLATION OR REMOVAL OF TRAFFIC SIGN ON MULTIPLE SIGN POSTS

Description:

This work consists of installing or removing traffic sign(s) on multiple sign posts at the locations indicated on the Plans or as directed by the Engineer. This specification also includes installation of posts in holes installed under other items.

A single sign totaling more than 9 square feet, or with any dimension, length or width, greater than 48 inches shall be mounted on two (2) posts. Signs with a length greater than or equal to 78 inches shall be mounted on three (3) sign posts.

Materials:

The Department will provide all sign materials to be used on this project. The Contractor shall contact the DelDOT Sign Shop Supervisor with project plans and quantity sheets at 302-760-2581. Sign fabrication orders require a minimum of four (4) weeks for completion. Orders placed with less than 4 weeks lead-time will result in a delay. Any delay caused by inadequate lead-time due to a late order will be the sole responsibility of the Contractor. The Contractor shall pick-up the sign materials from the DelDOT Sign Shop and deliver them to the job site without any damage to the sign materials.

Construction Methods:

The Contractor shall pick-up necessary signs, sign posts, hardware, and extensions from the Department and install the signs in the locations indicated on the Plans in accordance with the DelDOT MUTCD or as directed by the Engineer. The Contractor shall be responsible for obtaining all necessary utility clearances before the signs may be installed. For sign removals, the sign posts shall have all nuts, bolts, and other connectors removed. The disturbed ground shall be graded and backfilled accordingly. All signing materials removed from the project shall be returned to the DelDOT Sign Shop without any damage to the sign materials.

Method of Measurement:

The number of sign installations or removals will be measured as the total square foot of the sign(s) installed or removed and accepted.

Basis of Payment:

The quantity of sign installations or removals will be paid for at the Contract unit price per square foot. Price and Payment will constitute full compensation for installing or removing signs and sign materials, pick-up and delivery of sign materials, grading disturbed areas, and for all labor, equipment, tools, and incidentals required to complete the work. Signs that are not installed accordance with the DelDOT MUTCD or signs installed in the incorrect location shall be moved at no additional cost to the Department.

2/2/11

753516 - SANITARY SEWER SYSTEM

Description:

This work consists of furnishing and installing all materials to construct an expansion of the Sussex County sewer system as shown on the plans and meeting the requirements of the applicable DelDOT Standard Specifications, these Special Provisions, and the Technical Specifications. Work includes, but is not limited to, various sizes of gravity and force main sewer lines, manholes, laterals and cleanouts, jack and bored casing pipe, pump station wetwell, and various fittings, bends, wyes, tees, valves, etc. The sewer expansions are located between sta 7+93 +/- and sta 75+50 +/-.

Any requirements included in the Technical Specifications that are not addressed on the plans or by these Special Provisions, shall be performed in accordance with the applicable sections of the Appendix A Technical Specifications. The Contractor is advised to obtain and be fully acquainted with the specifications of the Owner. Costs to comply are considered incidental to Item 753516.

The Owner of the sewer line on this project is the Sussex County Engineering Department, Georgetown, Delaware, and their Technical Specifications are included in this contract as Appendix A to the Special Provisions. When referenced in these Special Provisions, or the Technical Specifications, the Owner is intended to be represented by a Sussex County employee or their Consultant; [Whitman, Requardt and Associates (WRA)].

All work on this item shall be performed by a contractor prequalified by and acceptable to Sussex County. A list of pre-approved contractors is included elsewhere in the Special Provisions.

A "Breakout Sheet" is included in the contract to establish unit prices for the items listed below. The total of these unit prices multiplied by the estimated quantities will establish the total Lump Sum price to be submitted with the bid. Each listed item will be measured as a unit price item in the field. The final Lump Sum payment for Item 753516 will be adjusted by change order, either plus or minus, to match the final totals of all unit price items established in the Breakout Sheet. Failure to complete and submit the Breakout Sheet with the bid will cause the bid to be considered unresponsive.

Breakout Item	Description
A-1	Furnish and Install 48" Precast Manhole (Vertical Foot)
A-2	Furnish and Install 60" Precast Manhole (Vertical Foot)
A-3	Furnish and Install 8" Terminal Cleanouts (EA)
A-4	Furnish and Install Manhole Frames and Covers (EA)
A-5	Furnish and Install 6" PVC House Lateral (LF)
A-6	Furnish and Install 8" PVC House Lateral (LF)
A-7	Furnish and Install 6" House Lateral Cleanouts (EA)
A-8	Furnish and Install 8" House Lateral Cleanouts (EA)
A-9	Furnish and Install 8" PVC Gravity Sewer (LF)
A-10	Furnish and Install 10" PVC Gravity Sewer (LF)
A-11	Furnish and Install 12" PVC Gravity Sewer (LF)
A-12	Furnish and Install 15" PVC Gravity Sewer (LF)
A-13	Furnish and Install 18" PVC Gravity Sewer (LF)
A-14	Furnish and Install 8" PVC Force Main (LF)
A-15	Furnish and Install 14" PVC Force Main (LF)
A-16	Furnish and Install 8" Isolation Gate Valve (EA)
A-17	Furnish and Install 14" Isolation Gate Valve (EA)
A-18	Furnish and Install 48" Combination Air Release / Vacuum valves and manholes (EA)
A-19	Jack and Bore 20" Casing Pipe (LS)
A-20	Furnish and Install 8"x6" PVC Wye Branch (EA)
A-21	Furnish and Install 10"x6" PVC Wye Branch (EA)
A-22	Furnish and Install 10"x8" PVC Wye Branch (EA)
A-23	Furnish and Install 12"x6" PVC Wye Branch (EA)
A-24	Furnish and Install 12"x8" PVC Wye Branch (EA)
A-25	Furnish and Install 15"x6" PVC Wye Branch (EA)
A-26	Furnish and Install 10 ft. Diameter Pump Station Wetwell (LS)
A-27	Furnish and Install Concrete Encasement (CY)
A-28	Furnish and Install 15"x8" PVC Wye Branch (EA)

General Requirements:

As listed in Technical Specifications 00810, 01050, 01106, and 01400.

Any and all emergency repairs required during the period of this Contract shall be the responsibility of the Contractor. In the event the Owner or Engineer is unable to contact the Contractor for the immediate emergency repair items of work, or in the event the Contractor does not take action when contacted within a reasonable length of time, the Owner of the utility reserves the right to attend to any and all emergency repair work items and to resubmit the costs directly to the Contractor for complete payment.

Specifications:

DelDOT Standard Specification Sections 208.04, 209.04, 708.08, 708.14, 812.02, 812.03 (Class B), and 813

Technical Specification Sections 00810, 01050, 01106, 01380, 01400, 02200, 02300, 02730, 02731, 02733, and 03410

Contract Plans and Details

These Special Provisions

Submittals:

In addition to the shop drawings outlined in Article 1.02 of Technical Specification Sections 02730, 02731, 02733, Article 1.10 of Technical Specification 02200, Article 1.03 of Technical Specification Section 2300, and Article 1.04 of Technical Specification 03410, the Contractor shall submit for review by the Engineer a detailed plan for dewatering the work zone prior to beginning any sanitary sewer work. The plan must be signed and sealed by a licensed Delaware Well Driller. It is intended to place all pipe and manholes in a "dry trench", bedded on Delaware #57 stone or material meeting Borrow, Type B. Refer to Technical Specification Section 02200, Articles 1.06 and 1.10 for additional details.

Excavation support systems shall be submitted and signed by a Professional Engineer licensed in the State of Delaware.

Construction photographs are required to be submitted each month. Refer to Technical Specification Section 01380.

The Contractor is responsible for providing Design Calculations for the Precast Concrete Wetwell. See Articles 1.03 and 1.04 of Technical Specification Section 03410 for additional details.

Materials:

Material requirements for pipe, bends, valves, fittings, joint restraints, wye branches, tees, and materials related to the sewer pipe installation, are as listed in the plan details and Part 2 of Technical Specification Sections 02730 and 02731.

Cast-in-place Concrete shall meet the requirements of Section 812, Class B of the Delaware Standard Specifications.

Borrow, Type C, or existing material meeting Borrow, Type C requirements for backfilling shall conform to the requirements of Section 209.04 of the DelDOT Standard Specifications.

Pipe bedding shall meet the requirements of #57 Stone in accordance with Section 813 or Borrow, Type B, or existing material meeting Borrow, Type B requirements in accordance with Section 209.04 of the DelDOT Standard Specifications.

Precast Manholes, Frames and Covers, Steps, and related appurtenances shall meet the requirements of Technical Specification Section 02733, Part 2 and the plan details. Shop drawings, including proposed mix design, pipe openings, and reinforcing details, shall be submitted to the Engineer and Owner for review and approval prior to fabricating the manholes.

Precast Air Release Manhole materials, including castings and covers, shall conform to the plan notes, sanitary sewer detail plans, and article 2.05 of Technical Specification 02731. Shop drawings, including proposed mix design, pipe openings, and reinforcing details, shall be submitted to the Engineer for review and approval prior to fabricating the manholes.

PVC Cleanouts and laterals shall conform to Articles 2.02 and 2.03 of Technical Specification Section 02730.

Casing pipe for Jack and Bore operations shall conform to Article 2.01 of Technical Specification Section 02300. Associated materials for the jack and bore work are listed in Article 2.02 of Technical Specification Section 02300.

Precast Concrete Wetwell shall conform to Articles 1.04, 1.06, 1.07, 2.01, and 2.02 of Technical Specification Section 03410.

Construction Methods:

Furnish and Install 48" and 60" Diameter Precast Manholes (Breakout Items A-1 & A-2) -

Precast Concrete Manholes shall conform to the notes, sanitary sewer detail plans, and Technical Specification Section 02733. Shop drawings, including proposed mix design, pipe openings, and reinforcing details, shall be submitted to the Engineer for review and approval prior to fabricating the manholes. The Contractor is responsible for assuring that the manhole will fit the field conditions encountered. No additional compensation will be considered to correct openings in the manhole that were not properly cast in the shop.

Borrow Type C or existing material meeting Borrow Type C requirements, for backfilling shall conform to the requirements of Section 209.04 of the DelDOT Standard Specifications.

Excavation and Backfilling for manhole installation shall conform to Sections 708.08 and 708.14 of the DelDOT Standard Specifications.

Sheeting, shoring, or an approved steel trench box shall be installed, if needed, to meet all applicable OSHA requirements. Also refer to Technical Specification Section 02200, Articles 1.07, 1.08, and 1.10 for additional details.

Manhole bedding shall be #57 stone per DelDOT Standard Specification 813.

Furnish and Install 8" Terminal Cleanouts (Breakout Item A-3) –

Terminal Cleanouts shall be furnished and installed at the locations indicated on the plans and in accordance with the plan notes, details, and Article 2.03 of Technical Specification Section 02730.

Furnish and Install Manhole Frames and Covers (Breakout Item A-4) -

Manhole Frames and Covers shall be furnished and installed under this item on all 48" and 60" Precast Concrete Manholes in accordance with the plan notes, details, and Article 2.03 of Technical Specification Section 02733.

Rim and invert elevations of each manhole shall be recorded by the Contractor on the as-built record plans with costs incidental to Item 763501, Construction Engineering.

Furnish and Install 6" and 8" PVC House Laterals (Breakout items A-5 and A-6) -

House laterals shall be furnished and installed at the locations and of the size shown on the plans, plan details, and in accordance with Article 3.02 of Technical Specification Section 02730.

Furnish and Install 6" and 8" PVC House Lateral Cleanouts (Breakout Items A-7 and A-8)
House Lateral Cleanouts shall be furnished and installed at the locations indicated on the plans and in accordance with the plan notes, details, and Article 2.03 of Technical Specification Section 02730. This item will be used to pay for both standard house lateral cleanouts and deep lateral cleanouts as shown on the details. Unless noted otherwise, a cleanout shall be installed on each 6" and 8" lateral house connection.

Furnish and Install 8", 10", 12", 15", and 18" PVC Gravity Sewer (Breakout Items A-9, A-10, A-11, A-12, and A-13) –

All pipes shall be thoroughly cleaned before they are laid and shall be kept clean until the completed work is accepted. The Contractor shall place the pipe and related materials in accordance with Part 1 and Article 3.01 of Technical Specification Section 02730.

Sheeting, shoring, or an approved steel trench box shall be installed if necessary to meet all applicable OSHA requirements. Also refer to Technical Specification Section 02200, Articles 1.07, 1.08, and 1.10 for additional details.

Following dewatering, the excavation and backfill for the pipe shall be performed in accordance with the applicable requirements of DelDOT Standard Specification Section 208 including backfill requirements of Section 208.04. The trench width shall be as shown on the plan details. Type C borrow, or existing material meeting Type C borrow, shall be placed for the entire depth of trench from top of bedding to the bottom of roadway patching materials under existing and proposed roadways and shoulders. In areas outside of the roadway or proposed roadway including shoulders, Type C material shall be placed at least one foot above the top of the sewer line. Excavated material may be used for backfill above the Type C borrow in areas outside of roadway and shoulders provided it is dry and free of organic material.

Should the designed bottom of pipe bedding or structure bedding elevation prove to be unstable, any additional excavation required to achieve a stable bottom shall be measured and paid for separately in accordance with Table 207-A of the DelDOT Standard Specifications. Item 208000 will be used for payment of this excavation, but only for the amount below the designed pipe bedding bottom. Backfill materials (#57 stone or Borrow, Type B) shall also be paid at their respective bid prices, but only for the amount required to backfill the area to the originally designed bottom of pipe bedding.

The pipe shall be installed at the locations and to the lines, grades, and dimensions shown on the Plans or as directed by the Engineer. Final tie-ins to any existing gravity lines and/or manholes are to be made with costs included in the linear foot price for the pipe.

During backfill of the gravity sewer, the Contractor shall install the specified detectable warning tape at a depth of 12" to18" below finished grade or as directed and approved by the Engineer/Owner. See Article 2.04 of Technical Specification Section 02730 for additional information.

No pipe shall be laid upon a foundation into which frost has penetrated or at any time when the Engineer or Owner shall deem that there is danger of the formation of ice or the penetration of frost at the bottom of the excavation.

Acceptance Testing of Gravity Pipe –
Prior to the request for inspection by the Engineer, it shall be the Contractor's responsibility to examine all completed pipe lines to insure that they are laid to the proper alignment and grade and free from foreign material. After this has been done to the satisfaction of the Engineer, he/she will order tests to be made on all portions of the sewers built under the Contract.

The Contractor shall cooperate and furnish all assistance necessary to perform the tests as specified herein and as further required and directed by the Engineer and the representative of the Owner.

Testing of Gravity Sewers shall be in accordance with Articles 3.03 and 3.04 of Technical Specification Section 02730.

The Contractor shall furnish all equipment and personnel to conduct the tests specified and/or any proposed by the Owner of the utility.

All material and labor required for tests, including caps and plugs shall be furnished by the Contractor and the cost thereof included in the prices bid for Item 753516.

Furnish and Install 8" and 14" PVC Force Main Pipes (Breakout Items A-14 and A-15) –

All pipes shall be thoroughly cleaned before they are laid and shall be kept clean until the completed work is accepted. The Contractor shall place the pipe and related materials in accordance with Part 3 of Technical Specification Section 02731.

Sheeting, shoring, or an approved steel trench box shall be installed if necessary to meet all applicable OSHA requirements. Also refer to Technical Specification Section 02200, Articles 1.07, 1.08, and 1.10 for additional details.

Following dewatering, the excavation and backfill for the pipe shall be performed in accordance with the applicable requirements of DelDOT Standard Specification Section 208 including backfill requirements of Section 208.04. The trench width shall be as shown on the plan details. Type C borrow, or existing material

meeting Type C borrow, shall be placed for the entire depth of trench from top of bedding to the bottom of permanent roadway patching materials under existing and proposed roadways and shoulders. In areas outside of the roadway or proposed roadway including shoulders, Type C material shall be placed at least one foot above the top of the sewer line. Excavated material may be used for backfill above the Type C borrow in areas outside of roadway and shoulders provided it is dry and free of organic material.

Should the designed bottom of pipe bedding or structure bedding elevation prove to be unstable, any additional excavation required to achieve a stable bottom shall be measured and paid for separately in accordance with Table 207-A of the DelDOT Standard Specifications. Item 208000 will be used for payment of this excavation, but only for the amount below the designed pipe bedding bottom. Backfill materials (#57 stone or Borrow, Type B) shall also be paid at their respective bid prices, but only for the amount required to backfill the area to the originally designed bottom of pipe bedding.

The pipe shall be installed at the locations and to the lines, grades, and dimensions shown on the Plans or as directed by the Engineer.

During backfill of the force main the Contractor shall install the specified detectable warning tape at a depth of 18" below finished grade or as directed and approved by the Engineer/Owner. Detectable wire shall also be installed as detailed in the Technical Specifications. See Article 2.06 of Technical Specification Section 02731 for additional information.

No pipe shall be laid upon a foundation into which frost has penetrated or at any time when the Engineer or Owner shall deem that there is danger of the formation of ice or the penetration of frost at the bottom of the excavation.

Acceptance Testing of Force Main Pipe –

Prior to the request for inspection by the Engineer, it shall be the Contractor's responsibility to examine all completed pipe lines to insure that they are laid to the proper alignment and grade and free from foreign material. After this has been done to the satisfaction of the Engineer, he/she will order tests to be made on all portions of the sewers built under the Contract.

The Contractor shall cooperate and furnish all assistance necessary to perform the tests as specified herein and as further required and directed by the Engineer and the representative of the Owner.

Testing of Force Mains shall be in accordance with Articles 3.04, 3.05, and 3.06 of Technical Specification Section 02731.

The Contractor shall furnish all equipment and personnel to conduct the tests specified and/or any proposed by the Owner of the utility.

All material and labor required for tests, including caps and plugs shall be furnished by the Contractor and the cost thereof included in the prices bid for Item 753516.

Furnish and Install 8" and 14" Isolation Gate Valves (Breakout Items A-16 and A-17) –

Gate valves shall be furnished and installed on force main pipes at the locations indicated on the plans and in accordance with the plan notes, details, and Article 2.08 of Technical Specification Section 02731. Included in these items are valve boxes and extension stems to match finished grade.

Furnish and Install Combination 48" Air Release / Vacuum Valves and Manholes (Breakout Item A-18) -

Precast Air Release Manhole materials shall conform to the notes, sanitary sewer detail plans, and Article 2.05 of Technical Specification Section 02731. Shop drawings, including proposed mix design, pipe openings, and reinforcing details, shall be submitted to the Engineer for review and approval prior to fabricating the manholes. The Contractor is responsible for assuring that the manhole will fit the field conditions encountered. No additional compensation will be considered to correct openings in the manhole that were not properly cast in the shop.

Castings and Manhole Covers shall conform to the plan notes, sanitary sewer detail sheets, and Article 2.05 of Technical Specification Section 02731.

Borrow Type C, or existing material meeting Borrow Type C requirements, for backfilling shall conform to the requirements of Section 209.04 of the DelDOT Standard Specifications.

Excavation and Backfilling for manhole installation shall conform to Sections 708.08 and 708.14 of the DelDOT Standard Specifications.

Sheeting, shoring, or an approved steel trench box shall be installed, if needed, to meet all applicable OSHA requirements. Also refer to Technical Specification Section 02200, Articles 1.07, 1.08, and 1.10 for additional details.

Manhole bedding shall be #57 stone per DelDOT Standard Specification 813.

Jack and Bore 20" Casing Pipe (Breakout Item A-19) –

This item includes furnishing and installing a 20 inch casing pipe by jack and bore methods at the location and elevations shown on the plans in accordance with Technical Specification Section 02300.

Furnish and Install PVC Wye Branches of Various sizes (Breakout Items A-20 through and including A-25, and A-28) –

These items include furnishing and installing Wye Branches of the size indicated on the plans and are intended to connect the main gravity system pipe to 8" and/or 6" laterals. Installation shall be in accordance with Article 3.01 of Technical Specification 02730 for PVC gravity pipe.

Note that Wye Branches required between the lateral and cleanout will not be paid separately, but are to be included in the price bid per each cleanout.

Furnish and Install Pump Station Wetwell (Breakout Item A-26) –

This item consists of Designing, Fabricating, Furnishing and Installing a Precast Concrete Wetwell meeting the requirements of the plans, notes, details, and Technical Specification Section 03410. The Contractor is responsible for assuring that the wetwell will fit the field conditions encountered. No additional compensation will be considered to correct openings in the unit that were not properly cast in the shop.

Borrow Type C or existing material meeting Borrow Type C requirements, for backfilling shall conform to the requirements of Section 209.04 of the DelDOT Standard Specifications.

Excavation and Backfilling for manhole installation shall conform to Sections 708.08 and 708.14 of the DelDOT Standard Specifications.

Sheeting, shoring, or an approved steel trench box shall be installed, if needed, to meet all applicable OSHA requirements. Also refer to Technical Specification Section 02200, Articles 1.07, 1.08, and 1.10 for additional details.

Wetwell bedding shall be #57 stone per DelDOT Standard Specification 813.

Furnish and Install Concrete Encasement (Breakout Item A-27) -

This item consists of constructing concrete encasement around Sewer, Utility or storm sewer pipe in accordance with the plan details. The item will be used in the event sufficient clearance between adjoining pipes or if sufficient cover cannot be maintained. A representative of the Owner and Engineer must approve the use of an encasement prior to beginning any installation. Concrete shall meet the requirements of DelDOT Standard Specification 812.03 (Class B).

<u>Measurement and Payment:</u>

Furnish and Install 48" and 60" Diameter Precast Manholes (Breakout Items A-1 & A-2) -

Payment for constructing the various types of manholes will be made at the unit price bid per vertical foot of each type of manhole as measured from the bottom of the manhole frame to the invert of the flow channel at the bottom center of the manhole.

The unit price bid per vertical foot of manhole shall include the cost of excavation, sheeting, shoring, or trench box, furnishing Type C Borrow backfill (or excavated material meeting Type C requirements), backfilling, bedding, preparation of subgrade, furnishing, fabricating, and placing the manhole, dewatering, attaching the pipes, manhole steps, plugs, concrete, brick, stub connections, waterproofing, construction of flow channels, testing, installation of all clamps, brackets, and all labor, material, equipment, testing, tools and incidentals to complete this work as indicated on the drawings and as specified, shown or directed.

Manholes which are part of other bid items as described herein or as shown on the drawings shall not be paid for under this item.

Existing Concrete removal required for manhole installation will be measured and paid for under item 758000.

Final payment for vertical footage will not be made until surveys of rim elevations and sewer pipe invert elevations at manholes are made for final Record Drawings. A total of one (1) vertical foot per manhole will be withheld until the survey listing is confirmed by the Engineer.

Furnish and Install 8" Terminal Cleanouts (Breakout Item A-3) –

The price bid shall include the furnishing and placement of terminal cleanouts and associated fittings, including wye branches, plugs, frames and covers, concrete rings, re-excavation and furnishing Type C backfill (or excavated material meeting Type C requirements), backfilling, dewatering, and all associated work for connection to the sewer, as depicted on the plans and specified herein.

Existing Concrete removal required for Terminal Cleanout installation will be measured and paid for under item 758000.

Payment for the furnishing and placement of the cleanouts shall be made at the unit price bid per each cleanout actually furnished and acceptably installed.

Furnish and Install Manhole Frames and Covers (Breakout Item A-4) -

The price bid shall include the furnishing and placement of all materials required to provide a complete manhole frame and cover, including watertight inserts, brick, mortar, and concrete collar in accordance with the plan details.

Payment for providing complete manhole frames and covers with watertight inserts shall be made at the appropriate unit price bid for the number acceptably installed.

Note that frames and covers on Combination Air Release / Vacuum Valve Manholes are not paid separately, but are included in the price bid per each unit under Breakout Item A-18.

Furnish and Install 6" and 8" PVC House Laterals (Breakout items A-5 and A-6) –

Payment for constructing lateral house connections will be made per linear foot for the lengths of the various sizes and kinds actually constructed. Payment will begin at the Wye Branch (or other fitting) sewer main connection point and extend to the connection point of the wye branch (or other fitting) at the cleanout. Measurements for house lateral connections will be made along the centerline of pipe as laid, both horizontally and vertically, from the centerline of the sewer main to the cleanout. No deduction will be made for the lengths of fittings and pipe within the inside measurements of manholes.

Payment for House Laterals will constitute full compensation for furnishing and installing lateral sewer pipes, bends, fittings, adapters, couplings, plugs, stoppers, caps, sleeves, spools, concrete, pipe bedding, testing, etc. as detailed on the plans and in Technical Specification Section 02730.

Included in the price per linear foot of lateral is the excavation of all materials encountered in the trenches, (except those paid for under items covering excavation below subgrade and removal of existing concrete under Item 758000), excavation for appurtenances that may be shown or required, any excavation that may be necessary in sheeting or bracing the trench; the placing and removal or cutting off of sheeting or bracing; pumping or other disposal of water; furnishing and placing pipe bedding material; the backfill (including Borrow, Type C or excavated material meeting Type C requirements), backfilling and compaction of excavations and removal of surplus material; temporary support of existing Utilities if needed and for all labor, tools, equipment, and incidentals to complete the work and make the sewer system functional.

Sawcutting, pavement patching and restoration, maintenance of traffic, and final topsoil and seeding will be paid for under their respective bid items.

A total of five (5) percent of the unit price bid item will be withheld per linear foot until all final testing of the sewer laterals is complete.

Furnish and Install 6" and 8" PVC House Lateral Cleanouts (Breakout Items A-7 and A-8) –

The price bid per each shall include the furnishing and placement of cleanouts, deep cleanouts, and associated fittings, including wye branches between the lateral and cleanout, plugs, pipe stubs for future house or business connections, bends, frames and covers, concrete rings, re-excavation and Type C backfill (or excavated material meeting Type C requirements), backfilling, dewatering, and all associated work for connection to the sewer, as depicted on the plans, plan details, and specified herein.

Existing Concrete removal required for Terminal Cleanout installation will be measured and paid for under item 758000.

Sawcutting, pavement patching and restoration, maintenance of traffic, and final topsoil and seeding will be paid for under their respective bid items.

Payment for the furnishing and placement of the cleanouts and/or deep cleanouts shall be made at the appropriate unit price bid per each cleanout actually furnished and acceptably installed.

Furnish and Install 8", 10", 12", 15", and 18" PVC Gravity Sewer (Breakout Items A-9, A-10, A-11, A-12, and A-13) –

Payment for constructing PVC gravity sewer lines will be made per linear foot for the lengths of the various sizes and kinds actually constructed. Measurements of lengths for gravity sewers will be made horizontally along the centerline. No deduction will be made for the lengths of fittings, and no deduction for pipe within the inside measurements of manholes and/or casing pipes.

The prices bid per linear foot for construction of gravity sewer mains shall include and cover; the excavation of all materials encountered in the trenches, (except for concrete items paid for under Item 758000 or excavation made below the designed pipe bedding elevation; excavation of hotmix pavement and base course, if required, shall be included in the linear foot price of the force main being installed) excavation for appurtenances that may be shown or required, any excavation that may be necessary in sheeting or bracing the trench; the placing and removal or cutting off of sheeting or bracing; pumping, dewatering, or other disposal of water; furnishing and placing pipe bedding material; furnishing the backfill, (including Type C borrow or excavated material meeting Type C requirements) backfilling, and removal of surplus material, furnishing and placing detectable warning tape; the support and protection of all structures and their restoration in case of injury; the protection of existing utilities, bracing of existing utility poles, foundations and other underground conditions or facilities; the furnishing and delivering of all materials, tools, and equipment necessary; the handling of all materials to and into the trench; and the laying of all pipe and fittings and the testing of the gravity sewer; and related work as specified, shown or directed.

The prices per linear foot for constructing gravity sewer main shall also include all connections of new systems to existing sewers or manhole structures.

Sawcutting, pavement patching and restoration, maintenance of traffic, and final topsoil and seeding will be paid for under their respective bid items.

Payment for constructing the sewer main will be made per linear foot actually constructed, including all required testing. A total of five (5) percent of the unit price bid item will be withheld per linear foot until all final testing of the sewer main is complete.

Furnish and Install 8" and 14" PVC Force Main Pipes (Breakout Items A-14 and A-15) –

Payment for installing sanitary sewer force mains as required by the Contract, measured horizontally along the centerline from end-to-end, shall be paid for at the Unit Breakout price per linear foot for "Furnish and Install Force Main", of the size(s) and type(s) required by the Contract, which price and payment will constitute full compensation for furnishing and installing sanitary sewer pipes, detectable warning tape and wire, bends, fittings, couplings, saddles, plugs, stoppers, caps, sleeves, spools, concrete thrust blocks, buttresses, joint

restraints, pipe bedding, etc. as detailed on the plans and in the Technical Specifications.

Measurement will be made through the final installed lengths of pipes, bends, wyes, valves, air release valves, etc. along all runs.

Included in the price per linear foot of the various force main pipe sizes is the furnishing, installation, and removal of sheeting and/or shoring, temporary support of existing Utilities if needed, pipe trench excavation (except for concrete items paid for under Item 758000 or excavation made below the designed pipe bedding elevation; excavation of hotmix pavement and base course, if required, shall be included in the linear foot price of the force main being installed), furnishing Type C backfill or existing excavation meeting Type C requirements, backfilling, pumping, dewatering or other disposal of water, disposal of excess soil, removal and disposal of excess sewer line materials and/or pipe, pipe testing and all related costs, final tie-ins to existing force main pipes; and for all labor, tools, equipment, and incidentals to complete the work and make the sewer system functional.

Sawcutting, pavement patching and restoration, maintenance of traffic, and final topsoil and seeding will be paid for under their respective bid items.

A total of five (5) percent of the unit price bid item will be withheld per linear foot until all final testing of the sewer main is complete.

Furnish and Install 8" and 14" Isolation Gate Valves (Breakout Items A-16 and A-17) –

Measurement for furnishing and installing force main isolation valves will be made for each valve of the size and location depicted on the plans, plan details, and specified herein, satisfactorily installed complete and operational.

Payment for furnishing and installing force main isolation valves complete and operational will be made at the unit price bid for each isolation valve installed in accordance with the drawings and specifications. The price(s) bid shall include excavation, valves, valve boxes, cast iron frame and covers, concrete with wire reinforcement if required, bedding, operating nut extension, and all other incidental materials and work necessary to satisfactorily complete the installation and make the isolation valves operational.

Furnish and Install Combination 48" Air Release / Vacuum Valves and Manholes (Breakout Item A-18) -

The quantity of 48 inch Force Main Combination Air Release / Vacuum Relief Manholes (Sanitary Manholes, Special II) will be paid for at the Unit Breakout price per each. Price and payment will constitute full compensation for furnishing and placing materials, including precast concrete sections, joint material, bar reinforcement, frame and cover, bedding, concrete block supports, mortar, grout, Tapping Tee, air release valve/vacuum relief valve assembly, all related hardware, steps, and for all labor, equipment, tools, and incidentals necessary to complete this item. Also included in the price per each manhole is the excavation (except for concrete paid under Item 758000 or excavation required below the designed bottom of bedding elevation), sheeting or shoring if required to meet OSHA requirements, backfilling, Type C Backfill or excavation meeting Type C requirements, work to tie-in any existing or installed pipes, and disposal of any excess excavation. Force main pipe running through the manhole will be measured and paid for separately under its respective item.

Jack and Bore 20" Casing Pipe (Breakout Item A-19) –

Payment for the jack and bore casing installation at the location and elevations shown on the plans shall be made at the lump sum price bid.

The price bid shall include excavation, Type C Borrow backfill (or excavated material meeting Type C requirements), and backfilling of jacking and receiving pits, dewatering, furnishing, installing and removing sheeting, shoring, or trench box, furnishing and installing the casing pipe and installation equipment, end caps, stainless steel spacers, seals and incidentals necessary to complete the casing installation.

Carrier pipe inside the casing will be measured and paid for under its respective item.

Furnish and Install PVC Wye Branches of Various sizes (Breakout Items A-20 through and including A-25, and A-28) –

The prices bid per each wye connection of the size and location shown on the plans and details shall include the furnishing and placement of all wye branches connecting the gravity sewer mains with house lateral pipes and associated fittings incidental to this work.

Payment for the furnishing and placement of wye branches shall include excavation, dewatering, sheeting, shoring, or trench box installation and removal, furnishing Borrow, Type C backfill (or excavated material meeting Type C requirements), backfilling, bedding, furnishing and placing the wye connections, and incidentals necessary to complete the installations.

Note that Wye Branches required between the laterals and cleanouts will not be paid separately, but are to be included in the price bid per each cleanout.

Furnish and Install Pump Station Wetwell (Breakout Item A-26) –

Payment for constructing the pumping station within the limits shown on the plans and plan details shall be made at the lump sum price bid.

The lump sum price bid for furnishing and installing the pumping station wetwell shall include all work related to construction of the station complete with design, precast concrete wet well, excavation, sheeting, shoring, or trench box, furnishing Type C borrow backfill (or excavation meeting Type C requirements), backfilling, dewatering, bedding, bypass connection piping, outside piping, testing of system, cast-in-place concrete, gasket seals, wall sleeves, caps, plugs, and installing all other appurtenances on the site specified or detailed in the plans and plan details.

Also included in the price is furnishing and installing the wetwell hatch, 2 ea 14" NRS Gate Valves with necessary extensions and caps, 8" PVC Duct Termination, and 8" PVC Duct Exhaust.

The 18" PVC influent pipe and 14" Force Main pipe exiting the gate valves will be paid for under their respective unit price items. The dual 14" Force Main pipes between the wetwell and gate valves are to be included in the Lump Sum price bid for the wetwell.

Furnish and Install Concrete Encasement (Breakout Item A-27) -

The price per cubic yard of concrete encasement shall include excavation, backfill, backfilling, furnishing, and placing the concrete in accordance with the plan detail. Measurement will be made by computing the volume by template. The width and depth of the cross section will be 6 inches outside the pipe as shown on the detail sheet. The length will be the actual length of pipe encased. No deductions will be made for bends, fittings, etc. Payment will be limited to the cubic yards computed, minus the volume of the pipe encased. The Contractor may elect to utilize additional concrete with the understanding that no additional payment will be made for material outside of the templated volume.

Payment Clarification –

A percentage of the total Lump Sum will be paid based on the work performed in each pay period. The percentage will be calculated by multiplying the total units of each completed Breakout Item times the appropriate unit price; then adding the total dollars of completed work, divided by the total Lump Sum bid price for item 753516, Sanitary Sewer System. Final payment may result in less than 100% of the total Lump Sum based on actual work performed. Should the Lump Sum total be exceeded, additional funds will be added by Change Order based on the best available estimate at the time. Failure to fully complete the Breakout Sheet for this Item will result in the bid being declared non-responsive.

In addition to the One-year Warranty outlined in Article 6.19 of Technical Specification Section 00810, a Maintenance Bond representing 15% of the total price bid for Item 753516 shall be furnished to the Owner upon successful completion of the item and shall be in effect for three (3) Calendar Years. Costs to provide the warranty and furnish the Bond to be included in the Lump Sum price bid for item 753516.

Field Office Signage -

A 4 foot by 8 foot sign (language attached) is required to be fabricated, furnished, installed at the Field Office location and prominently displayed. Details are on the following page. Costs are incidental to item 753516.

TEMPORARY CONSTRUCTION SIGN FOR RURAL DEVELOPMENT PROJECTS

WHITE BACKGROUND

Millville Sanitary Sewer District:
Contract T200411210

Sussex County Council

#2 The Circle Georgetown, DE 19947

Whitman, Requardt & Associates, LLP

(second line)

Contractor

(second line)

BLACK LETTERING

USDA Rural Development

Committed to the future of rural communities.

TOWNSCAPE AND LETTER FORMS (BLUE, PMS 288)

ROLLING FIELDS (GREEN, PMS 343)

Financed by United States Department of Agriculture (USDA) Rural Development

LETTERING (GREEN, PMS 343)

This institution is an equal opportunity provider.

Barack Obama, President of the United States
Tom Vilsack, Secretary of Agriculture

BLACK LETTERING

SIGN DIMENSIONS: 1200 mm x 2400 mm x 19 mm (approx. 4' x 8' x ¾")
PLYWOOD PANEL (APA RATED A-B GRADE–EXTERIOR)

753558 - RELOCATE FORCE MAIN

Description:

This work consists of furnishing and installing all materials to relocate 24 inch Ductile Iron and 10 inch PVC sanitary force mains at multiple locations as shown on the plans and meeting the requirements of the applicable DelDOT Standard Specifications, these Special Provisions, and the Technical Specifications. Also included is the furnishing and installation of Line Stops and Bypass Piping at each relocation area. Air release valves with precast manholes shall be furnished and installed as shown on the plans. The relocations are located between sta 184+00 +/- (Central Avenue) and sta 210+00 +/-.

Any requirements included in the Technical Specifications that are not addressed on the plans or by these Special Provisions, shall be performed in accordance with the applicable sections of the Technical Specifications. The Contractor is advised to obtain and be fully acquainted with the applicable specifications of the Owner. Costs to comply are considered incidental to Item 753558.

The Owner of the sewer line on this project is the Sussex County Engineering Department, Georgetown, Delaware, and their Technical Specifications are included in this contract as Appendix A to the Special Provisions. When referenced in these Special Provisions, or the Technical Specifications, the Owner is intended to be represented by a Sussex County employee or their Consultant; [Whitman, Requardt and Associates (WRA)].

All work on this item shall be performed by a contractor prequalified by and acceptable to Sussex County. Note that, in addition to the general sewer work, a specialized contractor will be required to perform the live taps and bypass work. A listing of pre-approved Contractors is included elsewhere in the Special Provisions.

A "Breakout Sheet" is included in the contract to establish unit prices for the items listed below. The total of these unit prices multiplied by the estimated quantities will establish the total Lump Sum price to be submitted with the bid. Each listed item will be measured as a unit price item in the field. The final Lump Sum payment for Item 753558 will be adjusted by change order, either plus or minus, to match the final totals of all unit price items established in the Breakout Sheet. Failure to complete and submit the Breakout Sheet with the bid will cause the bid to be considered unresponsive.

Breakout Item	Description
C-1	Furnish and Install 10" PVC Force Main (L.F.)
C-2	Furnish and Install 24" DIP Force Main (L.F.)
C-3 thru C-9	Furnish and Install Bypass System (EA)
C-10	Furnish and Install 60" Combination Air Release / Vacuum valves and manholes (EA)
C-11	Furnish and Install Concrete Encasement (CY)

General Requirements:

As listed in Technical Specifications 00810, 01050, 01106, and 01400.

Any and all emergency repairs required during the period of this Contract shall be the responsibility of the Contractor. In the event the Owner or Engineer is unable to contact the Contractor for the immediate emergency repair items of work, or in the event the Contractor does not take action when contacted within a reasonable length of time, the Owner of the utility reserves the right to attend to any and all emergency repair work items and to resubmit the costs directly to the Contractor for complete payment.

Specifications:

DelDOT Standard Specification Sections 208.04, 209.04, 708.08, 708.14, 812.02, 812.03 (Class B), and 813

Technical Specification Sections 00810, 01050, 01106, 01400, 02200, 02731, and 02732

Contract Plans and Details

These Special Provisions

Submittals:

In addition to the shop drawings outlined in Article 1.02 of Technical Specification Section 02731, the Contractor shall submit for review by the Engineer a detailed plan for dewatering the work zone prior to beginning any sanitary sewer work. The plan must be signed and sealed by a licensed Delaware Well Driller. It is intended to place all pipe and manholes in a "dry trench", bedded on Delaware #57 stone or material meeting Borrow, Type B. Refer to Technical Specification Section 02200, Articles 1.06 and 1.10 for additional details.

Excavation support systems shall be submitted and signed by a Professional Engineer licensed in the State of Delaware.

The Contractor shall also submit design drawings for the proposed Line Stop and Bypass work required at each location of work. The submittal shall include specific reference to maintaining through traffic and traffic to businesses and entrances at each bypass location. No work may begin on any bypass locations until the submittal has been reviewed and approved by DelDOT and the Owner. Refer to Technical Specification Section 02732, Part 1 and the force main relocation plan notes for additional information. If directional drilling is proposed for any of the Bypass work, the Contractor shall submit the "Means and Methods" to the Engineer for approval prior to beginning work.

Materials:

Material requirements for pipe, bends, valves, fittings, joint restraints, and materials related to the sewer pipe installation, are as listed in the plan details and Technical Specification Section 02731, Parts 1 and 2.

Cast-in place Concrete shall meet the requirements of Section 812, Class B of the Delaware Standard Specifications.

Borrow, Type C, or existing material meeting Borrow, Type C requirements for backfilling shall conform to the requirements of Section 209.04 of the DelDOT Standard Specifications.

Pipe bedding shall meet the requirements of #57 Stone in accordance with Section 813, Borrow, Type B, or existing material meeting Borrow, Type B requirements in accordance with Section 209.04 of the DelDOT Standard Specifications.

Line Stops shall meet Technical Specification Section 02732, article 2.01

Precast Air Release Manhole materials, including castings and covers, shall conform to the notes, sanitary sewer detail plans, and article 2.05 of Technical Specification Section 02731. Shop drawings, including proposed mix design, pipe openings, and reinforcing details, shall be submitted to the Engineer for review and approval prior to fabricating the manholes.

Bypass Pipe shall meet Technical Specification Section 02732, Article 2.01 - Q.

Construction Methods:

Furnish and Install 10" PVC (Breakout Item C-1) and 24" DIP (Breakout Item C-2) Force Main Pipes –

All pipes shall be thoroughly cleaned before they are laid and shall be kept clean until the completed work is accepted. The Contractor shall place the pipe and related materials in accordance with Part 3 of Technical Specification Section 02731.

Sheeting, shoring, or an approved steel trench box shall be installed if necessary to meet all applicable OSHA requirements. Also refer to Technical Specification Section 02200, Articles 1.07, 1.08, and 1.10 for additional details.

Following dewatering, the excavation and backfill for the pipe shall be performed in accordance with the applicable requirements of DelDOT Standard Specification Section 208 including backfill requirements of Section 208.04. The trench width shall be as shown on the plan details. Type C borrow, or existing material meeting Type C borrow, shall be placed for the entire depth of trench from top of bedding to the bottom of permanent roadway patching materials under existing and proposed roadways and shoulders. In areas outside of the roadway or proposed roadway including shoulders, Type C material shall be placed at least one foot above the top of the sewer line. Excavated material may be used for backfill above the Type C borrow in areas outside

of roadway and shoulders provided it is dry and free of organic material. Sawcutting, pavement patching and restoration, maintenance of traffic, and final topsoil and seeding will be paid for under their respective bid items.

Should the designed bottom of pipe bedding or structure bedding elevation prove to be unstable, any additional excavation required to achieve a stable bottom shall be measured and paid for separately in accordance with Table 207-A of the DelDOT Standard Specifications. Item 208000 will be used for payment of this excavation, but only for the amount below the designed pipe bedding bottom. Backfill materials (#57 stone or Borrow, Type B) shall also be paid at their respective bid prices, but only for the amount required to backfill the area to the originally designed bottom of pipe bedding.

The pipe shall be installed at the locations and to the lines, grades, and dimensions shown on the Plans or as directed by the Engineer. Final tie-ins to the existing force mains are to be made with costs included in the linear foot price for the pipe.

During backfill of the force main the Contractor shall install the specified detectable warning tape at a depth of 18" below finished grade or as directed and approved by the Engineer/Owner. Detectable wire shall also be installed as detailed in the Technical Specifications. See Article 2.06 of Technical Specification Section 02731 for additional information.

No pipe shall be laid upon a foundation into which frost has penetrated or at any time when the Engineer or Owner shall deem that there is danger of the formation of ice or the penetration of frost at the bottom of the excavation.

Acceptance Testing of Force Main Pipe –

Prior to the request for inspection by the Engineer, it shall be the Contractor's responsibility to examine all completed pipe lines to insure that they are laid to the proper
alignment and grade and free from foreign material. After this has been done to the satisfaction of the Engineer, he/she will order tests to be made on all portions of the sewers built under the Contract.

The Contractor shall cooperate and furnish all assistance necessary to perform the tests as specified herein and as further required and directed by the Engineer and the representative of the Owner.

Testing of Force Mains shall be in accordance with Articles 3.04, 3.05, and 3.06 of Technical Specification Section 02731.

The Contractor shall furnish all equipment and personnel to conduct the tests specified and/or any proposed by the Owner of the utility.

All material and labor required for tests, including caps and plugs shall be furnished by the Contractor and the cost thereof included in the prices bid for Item 753558.

Furnish and Install Bypass System (Breakout Items C-3 thru C-9) –

Design of the Bypass piping systems shall be performed by the Contractor and reviewed by the Engineer and the Owner prior to beginning work on any bypass. Design parameters are included in Part 1 of Technical specification 02732.

Line Stops shall be installed in accordance with Technical Specification 02732, Part 3.
Sheeting, shoring, or an approved steel trench box shall be installed if necessary to meet all applicable OSHA requirements.

The excavation and backfill for the Line Stops shall be performed in accordance with the applicable requirements of DelDOT Standard Specification Section 208 including backfill requirements of Section 208.04. Type C borrow, or existing material meeting Type C borrow, or existing material meeting Type C Borrow requirements, shall be placed for the entire depth of excavation from top of bedding to the bottom of permanent roadway patching materials under existing and proposed roadways and shoulders. In areas outside of the roadway or proposed roadway including shoulders, Type C material shall be placed at least one foot above the top of the sewer line. Excavated material may be used for backfill above the Type C borrow in areas outside of roadway and shoulders provided it is dry and free of organic material.

All Bypass pipes shall be thoroughly cleaned before they are laid and shall be kept clean until the completed work is accepted. The Contractor shall place the pipe and related materials in accordance with the applicable

sections of Part 3 of Technical Specification Section 02732. In order to maintain traffic to businesses and residences, it is anticipated that Directional Drilling will be utilized to construct the bypass lines.

Sheeting, shoring, or an approved steel trench box shall be installed if necessary to meet all applicable OSHA requirements. Also refer to Technical Specification Section 02200, Articles 1.07, 1.08, and 1.10 for additional details.

The excavation and backfill for the bypass pipe shall be performed in accordance with the applicable requirements of DelDOT Standard Specification Section 208 including backfill requirements of Section 208.04. Type C borrow, or existing material meeting Type C borrow, shall be placed for the entire depth of trench from top of bedding to the bottom of permanent roadway patching materials under existing and proposed roadways and shoulders. In areas outside of the roadway or proposed roadway including shoulders, excavated material may be used for backfill provided it is dry and free of organic material. Sawcutting, pavement patching and restoration, maintenance of traffic, and final topsoil and seeding will be paid for under their respective bid items.

The pipe shall be installed at the locations shown on the Plans, as proposed by the Contractor and approved by the Engineer, or as directed by the Engineer.

Furnish and Install Combination Air Release / Vacuum Valves and Manholes (Breakout Item C-10) -

Precast Air Release Manhole materials shall conform to the notes, sanitary sewer detail plans, and Article 2.05 of Technical Specification Section 02731. Shop drawings, including proposed mix design, pipe openings, and reinforcing details, shall be submitted to the Engineer for review and approval prior to fabricating the manholes. The Contractor is responsible for assuring that the manhole will fit the field conditions encountered. No additional compensation will be considered to correct openings in the manhole that were not properly cast in the shop.

Castings and Manhole Covers shall conform to the plan notes, sanitary sewer detail sheets, and Article 2.05 of Technical Specification Section 02731.

Borrow Type C, or existing material meeting Borrow Type C requirements, for backfilling shall conform to the requirements of Section 209.04 of the DelDOT Standard Specifications.

Excavation and Backfilling for manhole installation shall conform to Sections 708.08 and 708.14 of the DelDOT Standard Specifications.

Sheeting, shoring, or an approved steel trench box shall be installed, if needed, to meet all applicable OSHA requirements. Also refer to Technical Specification Section 02200, Articles 1.07, 1.08, and 1.10 for additional details.

Manhole bedding shall be #57 stone per DelDOT Standard Specification 813.

Furnish and Install Concrete Encasement (Breakout item C-11) -

This item consists of constructing concrete encasement around Sewer, Utility or storm sewer pipe in accordance with the plan details. The item will be used in the event sufficient clearance between an adjoining pipe or sufficient cover cannot be maintained. A representative of the Owner and Engineer must approve the use of an encasement prior to beginning any installation. Concrete shall meet the requirements of DelDOT Standard Specification 812.03 (Class B).

Measurement and Payment:

Breakout items C-1 and C-2; Furnish and Install 10 inch PVC Force Main and 24 inch Ductile Iron Force Main –

Payment for installing sanitary sewer force mains as required by the Contract, measured horizontally along the centerline from end-to-end, shall be paid for at the Unit Breakout price per linear foot for "Furnish and Install Force Main", of the size(s) and type(s) required by the Contract, which price and payment will constitute full compensation for furnishing and installing sanitary sewer pipes, detectable warning tape and wire, bends, fittings, saddles, plugs, stoppers, caps, sleeves, spools, concrete thrust blocks, buttresses, joint restraints, pipe bedding, etc. as detailed on the plans and in the Technical Specifications.

Measurement will be made through the final installed lengths of pipes, bends, valves, air release valves, etc.

along all runs.

Included in the price per linear foot of the various force main pipe sizes is the furnishing, installation, and removal of sheeting and/or shoring, temporary support of existing Utilities if needed, pipe trench excavation (except for concrete items paid for under Item 758000 or excavation made below the designed pipe bedding elevation; excavation of hotmix pavement and base course, if required, shall be included in the linear foot price of the force main being installed), furnishing Type C backfill or existing excavation meeting Type C requirements, backfilling, pumping, dewatering or other disposal of water, disposal of excess soil, pipe testing and all related costs, final tie-ins to existing force main pipes; and for all labor, tools, equipment, and incidentals to complete the work and make the sewer system functional. Costs to abandon and/or remove existing items (including flowable fill if utilized) are incidental to the linear foot price of the various pipe sizes. Removal and disposal of any residual sewerage contained within the system that must be drained, pumped out, or otherwise removed in order to make the required connections to the existing system is also included in the item. Abandoned piping may be filled with flowable fill and capped on either end or removed by the Contractor. Other abandoned fittings or materials shall be removed and disposed of by the Contractor.

A total of five (5) percent of the unit price bid item will be withheld per linear foot until all final testing of the sewer force main is complete.

The "Sequence of Construction" outlined in the plans is to be followed unless approved otherwise by the Engineer and Owner. Costs to comply are incidental to Item 753558.

Breakout Items C-3 through C-9; Furnish and Install Bypass System –

Payment will be made per each Bypass System furnished, installed, and successfully removed following its use on the contract. Costs for Design by the Contractor, submission, and response to comments on each Bypass system shall be included in the price bid per each Bypass System. Also included in the price per each is furnishing and installing Line Stops in accordance with all requirements of Technical Specification Section 02732, excavation, shoring if required, dewatering, backfilling, Type C Backfill material, disposal of excess soil, removal and disposal of excess Line Stop and/or Bypass materials, temporary support of other Utilities if required, maintenance of the Bypass System, removal of the Line Stops when no longer in service, and for all labor, tools, equipment, and incidentals to complete the work.
Bypass piping will be installed between the connection points where the Bypass Pipe enters/exits the Line Stop apparatus at either end of the bypass run. Bypass pipe will not be measured separately, but shall be incidental to the unit bid price for each Bypass location. Pipes, bends, fittings, couplings, saddles, plugs, stoppers, caps, sleeves, spools, concrete thrust blocks, buttresses, joint restraints, directional drilling, etc. as detailed on the plans, in the Technical Specifications, and as required in the field shall also be incidental to the price bid per location. Abandoned bypass piping may be filled with flowable fill and capped on either end if below ground or removed by the Contractor. Other abandoned fittings, pipes, or materials shall be removed and disposed of by the Contractor. Costs to abandon and/or remove existing items, including flowable fill if utilized, are incidental to the Bypass System items.

If required, prior to constructing the tie-ins under this section, the Contractor shall coordinate with Sussex County and be prepared with tanker trucks and pumps to handle any excess flow during the Bypass operations. Sussex County personnel must be satisfied with the equipment and tanker trucks provided on site before allowing the bypass to proceed. Any excess flow in tankers shall be delivered to the County's "South Coastal Regional Wastewater Facility located in Frankford, DE. Costs are to be included in the price bid per each Bypass operation. No fee will be charged by Sussex County for disposing sewage from the project at this site.

A unit price per each Bypass will be indicated on the Breakout sheet to reflect the cost to Bypass that particular location. The Contractor may propose different methods at each location to result in the lowest total cost to DelDOT.

Bypass construction is required only for the 24" Force Main relocations. The 10" pipe is not active, so bypassing is not required.

The "Sequence of Construction" outlined in the plans is to be followed unless approved otherwise by the Engineer and Owner. Costs to comply are incidental to Item 753558. The Contractor may propose alternate bypass systems for review and approval by DelDOT and Sussex County, but such proposals must be approved prior to beginning any bypass operations and shall be performed at no additional cost to the contract.

Breakout Item C-10; Furnish and Install 60 inch Combination Air Release / Vacuum Valves and Manholes

The quantity of 60 inch Force Main Combination Air Release / Vacuum Relief Manholes (Sanitary Manholes, Special II) will be paid for at the Unit Breakout price per each. Price and payment will constitute full compensation for furnishing and placing materials, including precast concrete sections, joint material, bar reinforcement, frame and cover, bedding, concrete block supports, mortar, grout, Tapping Tee, air release valve/vacuum relief valve assembly, all related hardware, steps, and for all labor, equipment, tools, and incidentals necessary to complete this item. Also included in the price per each manhole is the excavation (except for concrete paid under Item 758000 or excavation required below the designed bottom of bedding elevation), sheeting or shoring if required to meet OSHA requirements, backfilling, Type C Backfill or excavated material meeting Type C requirements, work to tie-in any existing or installed pipes, and disposal of any excess excavation. Force main pipe running through the manhole will be measured and paid for separately under its respective item.

Breakout Item C-11; Furnish and Install Concrete Encasement

This item consists of constructing concrete encasement around Sewer, Utility or storm sewer pipe in accordance with the plan details. The item will be used in the event sufficient clearance between adjoining pipes or if sufficient cover cannot be maintained. A representative of the Owner and Engineer must approve the use of an encasement prior to beginning any installation. Concrete shall meet the requirements of DelDOT Standard Specification 812.03 (Class B).

Payment Clarification -

A percentage of the total Lump Sum will be paid based on the work performed in each pay period. The percentage will be calculated by multiplying the total units of each completed Breakout Item times the appropriate unit price; then adding the total dollars of completed work, divided by the total Lump Sum bid price for item 753558, Relocate Force Main. Final payment may result in less than 100% of the total Lump Sum based on actual work performed. Should the Lump Sum total be exceeded, additional funds will be added by Change Order based on the best available estimate at the time. Failure to fully complete the Breakout Sheet for this Item will result in the bid being declared non-responsive.

In addition to the One-year Warranty outlined in Article 6.19 of Technical Specification Section 00810, a Maintenance Bond representing 15% of the total price bid for Item 753558 shall be furnished to the Owner upon successful completion of the item and shall be in effect for three (3) Calendar Years. Costs to provide the warranty and furnish the Bond to be included in the Lump Sum price bid for item 753558.

8/9/13

759502 - FIELD OFFICE, SPECIAL I

Description:

This Field Office, Special I item is a field office complex the work of which consists of erecting, furnishing, equipping, maintaining, and removing one (1) double wide modular field office unit, its entrance, and its adjacent parking area. The Contractor shall submit a specific location layout drawing and construction details for the field office, its entrance, and its parking area for approval by the Engineer. The field office and its parking area shall be for the exclusive use of Department Officials, Engineers, Consultants, and Inspectors.

The field office structure shall be free of asbestos and/or other hazardous materials. The field office, its entrance, and its parking area shall be constructed and installed in accordance with all applicable city, county, state, and federal codes. The Contractor shall be responsible for obtaining all required licenses and permits for installation and placement of each field office, its entrance, and its parking area. The costs of obtaining such licenses and permits are to be incidental to the "Field Office, Special I" Item. The field office shall be available for use by the Department continuously throughout the duration of the project.

Construction of and Equipment for the Field Offices:

The double wide field office shall be new and have a minimum floor space of 1,200 square feet with minimum exterior dimensions of 50'-0" length by 24'-0" width. The floor to ceiling height of the field office shall be nominal 8'-0". The exterior walls, ceiling, and floor of the field office shall be insulated. The field office shall be of weather-proof construction, tightly floored and roofed, constructed with an air space above the ceiling for ventilation, supported above the ground, safely secured to its support if the support is an inground anchored foundation or otherwise by tie-downs to the ground, and fully skirted with rigid watertight covering overlapping the bottom of the exterior siding to the existing ground.

The Contractor shall provide entries to the field office by constructing a stair and deck platform with canopy at each exterior door. These entries shall be fabricated using treated dimension lumber, be constructed with hand and safety railing, be designed to last the life of the Contract, and conform to the requirements of the Architectural Accessibility Board and other federal, state and local boards, bodies and/or courts having jurisdiction in the Contract limits.

The Contractor shall construct and maintain an all-weather parking area adjacent to the field office of at least 6000 square feet and having a minimum of 12 functional parking spaces striped for full size cars. An entrance shall be constructed to the field office from its point of access to its parking area as determined by its approved location layout drawing and construction details, the cost to be incidental to the "Field Office, Special I" Item. All weather pathways from the parking area to the entrances of the field office shall also be constructed and maintained. This parking area and entrance pathways shall have a minimum of 2" type "C" hot mix on top of minimum 6" graded aggregate subbase. Snow and/or ice shall be removed from the entrance, the parking area, and the entrance pathways of the field office within 12 hours after each occurrence. Costs for furnishing, placing, and maintaining the aggregate base and hot mix, and for snow and/or ice removal, to be incidental to the "Field Office, Special I" Item.

The ground area 30'-0" from around the perimeter of the field office shall be landscaped and maintained. If the earthen grounds do not have a stand of weed free grass, the surface of this area shall be loosened to a depth of 4" and a satisfactory seedbed shall be prepared free of debris and extraneous matter. The area shall be seeded to a healthy stand of grass or sodded, after which the area shall be watered, mowed, and trimmed a minimum of three times a month during the growing seasons. Cost for this landscaping and maintenance is incidental to the "Field Office, Special I" Item.

The field office shall have full carpeting, kitchenette facilities, and interior and exterior paneling, lighting, and plumbing fixtures. The field office shall have a minimum of two (2) exterior doors, each door having a passage and a deadbolt lock. These door locks shall be keyed and at least 2 complete sets of keys shall be supplied to the Engineer's representatives. The exterior doors of the field office shall be insulated or have storm doors. The field office shall have a minimum of six (6) windows, each window having a minimum glass area of 1,150 square inches and a horizontal mini-blind covering the full glass area. The windows of the field office shall be insulated or have storm windows, shall be equipped with a locking device, and shall have screens installed and repaired when damaged.

At least two (2) outside water service connections shall be provided at the field office. Each water connection shall have a 3/4" frost proof hose bib with vacuum breaker and shall include 100 linear feet of 5/8" minimum diameter reinforced, industrial or commercial grade, soft rubber hose per connection.

The field office shall be provided with sufficient natural and artificial light and shall be adequately heated and cooled to provide comfortable working conditions.

The field office shall have satisfactory lighting, electrical outlets, heating equipment, and exhaust fan and air-conditioning connected to an operational power source. Plan and drawing areas shall have individual fluorescent lights situated over their worktables. Replacement fluorescent lights shall be furnished as required. Electrical current, water, and any fuel for heating equipment shall be furnished and the cost of such shall be borne by the Contractor. Maintenance of the heating, exhaust fan, and air-conditioning equipment for each field office shall be provided for by validated service contracts for the length of the Contract. These service contracts shall allow a Department authorized project person to deal directly with the service organization to request repair.

The Contractor shall furnish and maintain two fire extinguishers and provide one lighted "Exit" sign for each exterior passage door of the field office. Fire extinguisher(s) may be chemical or dry power and shall be UL Classification 10-B:C(min.) and shall be suitable for Types A:B:C fires. A commercial or industrial type first aid and safety kit suitable for project conditions and hazards (including snakebite) shall be provided and maintained to full capacity on a monthly basis in each field office.

The Contractor shall provide an alarm system in the field office for security with electronic, direct connection to a security service provider. The security systems shall have interior motion, window, and entrance detectors and built in manual fire alarms. All windows of the field office shall be covered with steel bar grids as a deterrent to forced entry. The Contractor shall provide validated monitoring and service contracts for the length of the Contract for the field office. These contracts shall allow a Department authorized project person to deal directly with the security service provider to request service and/or repair.

The Contractor shall furnish and maintain in the field office an adequate supply of cold potable water, a minimum 23 cubic foot new refrigerator, and a minimum 900-watt new microwave oven. Maintenance of the potable water supply equipment, refrigerator, and microwave shall be provided for by validated service contracts for the length of the Contract. These service contracts shall allow a Department authorized project person to deal directly with the service organization to request repair.

Suitable indoor toilet facilities, conforming to the requirements of the State and Local Boards of Health or of other bodies or courts having jurisdiction in the area, shall be provided for the field office. When separate facilities for men and women are not available or required, a sign with the wording "Rest Room" {letter heights of 1" minimum} shall be placed over the doorway and an adequate positive locking system shall be provided on the inside of the doorway to insure privacy. The facility(s) shall be maintained by the Contractor to be clean and in good working condition and shall be stocked by the Contractor with adequate lavatory and sanitary supplies at all times during the period of the Contract.

For each field office the Contractor shall be responsible for performing or for making arrangements for all necessary telephone connections and/or for their maintenance; for providing a new telephone equipment system, for payment of all connections and the new telephone system equipment and its installation; and for final disconnection of the telephones.

The telephone system for the field office shall have a total of 7 lines consisting of 6 direct single lines with call forward busy feature and 1 dedicated facsimile line and have 6 key sets consisting of 1 master key set having privacy feature, and 6 six-button key sets having privacy feature (1 set which may be for wall mounting), all for the official and exclusive use of the Engineer and other representatives of the Department. Location of telephone lines shall by as directed by the Engineer. Arrangement shall be made to allow a Department authorized project person to deal directly with the telephone company to report outages and/or request repair. The Contractor shall arrange for the installation and initial setup of the specified telephone system. Initial installation and setup costs shall be the responsibility of the Contractor as well. All subsequent monthly billings, after initial installation and setup, for each field office telephone system shall be received and paid by the Contractor. A copy of each of these subsequent bills shall be forwarded to the Project Resident for reimbursement on the contract pay estimate and the reimbursement will be for the amount of the bill only and shall not include any additional mark-up or profit.

For all other utilities, the Contractor shall be responsible for performing or for making arrangements for all necessary utility connections and/or for their maintenance; for payment of all utility connections, installations, service fees and bills; and for final disconnection of utilities.

The field office interior shall be furnished by the Contractor. The Contractor shall provide new and maintain the following office furnishings, all which are to be approved by the Engineer prior to installation in the field

office complex. Placement of these furnishings shall be as directed by the Engineer. These furnishings consist of 2 drafting tables with sufficient drawers for standard size plans, either attached to the tables or in cabinet form, each drafting table to have an ergonomic design spring back stool with five leg base having wheel casters, 6 full size office desks each with filing drawer and fully adjustable ergonomic design swivel chair with armrests and five leg base having wheel casters, 1 computer station with acoustical panels having minimum 60 NRC rating for privacy screen and fully adjustable ergonomic design swivel chair with armrests and five leg base having wheel casters, 1 large conference table for a minimum of 12 people with surrounding chairs with armrests, 2 folding tables minimum 6'-0" by 3'-0" each with ergonomic design straight back chair with armrests, 1 work table, 1 supply cabinet, 1 or more clothes closets of ample size to meet inspection manpower requirements, 2 rough plan racks, 4 legal size filing cabinets with 4 drawers, 2 legal size fire-resistant filing cabinets with lock and key with 4 drawers and meeting fire underwriters' approval for not less than one hour test, 2 book shelves minimum 3'- 6" by 4'- 6" each, 3 vertical surface legal size three compartment pockets, 1 dry erase board minimum 4' by 3' each with markers and erasers, and 1 cork bulletin boards minimum 3' by 2'. These office furnishings will remain the property of the Contractor at the conclusion of the project.

The Contractor shall also furnish new and maintain the following office equipment, all which are to be approved by the Engineer prior to installation. The required equipment will enable the Department to synchronize project record keeping and office functions. The equipment shall be delivered in working and useable condition:

4 heavy-duty calculators having extra large 12-digit fluorescent display, full size keyboard with contoured keys, two-color ribbon printer, and AC powered;

1Muratec MFX-2855D or Toshiba e-STUDIO 2330c or approved equal all-in-one copier which includes scanner, printer, and fax. Copier to have high speed wireless and network capability. Copier shall have all necessary software and cables for proper operation and shall be connected to high speed wireless and connected for use to share on a local network. Copier to have zoom and preset reduction and enlargement features, automatic two (2) sided copying, automatic document feeder with minimum 30 sheet capacity with automatic stapling capacity;

1 micro cassette recorder, having fast playback, voice-activated system, three-digit tape counter, silent auto-stop and pause, two tape speeds, one-touch and follow-up, built-in condenser microphone, cue and review, and rechargeable with combination battery charger/AC adapter;

1 telephone answering machine having all-digital recording, 14 minute message capacity, selectable message time, voice prompt assistance, day/time stamp, call screening, two-digit LED message indicator, toll saver, power failure memory back-up, and message interrupt from any station; and

2 digital cameras with minimum 1/2.7" 4.0 mega pixel, 3X optical / 6X precision digital zoom, 12-bit DXP A/D conversion, 2.5" 123K pixel LCD display, 5-mode program AE and each with dual media slots, SXGA/XGA/VGA image resolution, E-mail mode. Also intelligent flash with red-eye protection, MPEG movie mode, clip motion, light metering, TEXT mode (GIF), playback zoom and resize, white balance, lithium battery system and in-camera picture effects, memory stick (minimum 256MB) capability, and storage case.

Consumables as required to manage the business of the project for each field office shall be provided for all office equipment for the length of the Contract. These consumables shall be furnished on request and shall include but not be limited to paper, tapes, ribbons, rolls, toner, cleaning kits, microcassette tapes and batteries, answering machine cassettes, camera batteries and memory sticks and/or discs, DVD and CD R/RW media, etc.

Maintenance of all office equipment in each field office shall be provided for by a validated service contract for the length of the Contract. This service contract shall allow a Department authorized project person to deal directly with the service organization to request repair.

Computer Requirements for Each Field Office:

The field office shall have three (3) IBM compatible Microcomputer Systems which will be furnished and maintained by the Contractor for use by the Engineer, the cost to be incidental to the "Field Office, Special I" Item. The specified computer systems will synchronize the construction management functions of the Department to monitor, report, and perform the accounting of the project work. The computer systems and all their related equipment specified below shall be furnished new and remain the property of the Contractor at the conclusion of the Contract. A detailed listing of the proposed computer systems and all their related equipment to be provided by the Contractor shall be submitted for approval by the Engineer prior to furnishing the

Microcomputer Systems. The Microcomputer Systems shall be Laptop Computer Systems each with docking station, unless otherwise determined by the Engineer. In each field office the three (3) Microcomputer Systems shall consist of:

Central Processing Unit (CPU) – Lap Top

Pentium M processor, 740 (1.7 GHz) or better with integrated USB 2.0 and IEEE 1394 ports (firewire) and wireless networking included,

Minimum 1.0 GB RAM with expansion capability to at least 3.0 GB and clock/calendar card equivalent, and

Microsoft "Windows® 7 Professional, Service Pack 1" (or later version as approved by the Engineer) operating system;

Memory (Storage)

CD/DVD +/- RW with double layer write capability, and 80GB hard drive minimum, integrated Ethernet 10/100, and internal modem. Included software shall support double layer media writing and automatic backup of data;

Monitor (Cathode Ray Tube)

Monitor for docking station and docking station - Super Video Graphics Adapter (SVGA) minimum. 19" minimum diagonal visual area flat panel with .26 dot pitch capable of multiple frequency 256 color graphics and at least 1024 pixel resolution. Swivel base with low radiation and eyestrain protection, brightness and contrast control and

Laptop - shall have 15.4” display minimum;

Color Graphics Card

Card must be SVGA AGP interface with 64 MB onboard video memory having maximum resolution of at least 1280x720 with at least 16 bit color and video control hardware and software;

Keyboard

Keyboard shall be ergonomic, enhanced layout minimum with keyboard interface cable;

Printers

2 HP Color LaserJet CP3525n or Xerox Phaser 6280 or approved equal color printers with high speed wireless and network capability. Printers shall have all necessary software and cables for proper operation and shall be connected to high speed wireless and connected for use to share on a local network:

Software

The latest version programs for application management (operating system), word processing, spreadsheet, and anti-virus shall be provided with all user manuals. Upgrades, maintenance, and full technical support by the manufacturer shall be provided for the length of the Contract. The required software will enable the Department to synchronize accounting and record keeping functions between the project, District, and Department offices. A list of programs to be provided shall be submitted to the Engineer for approval. Software, other than for application management and anti-virus, is to be delivered unopened to the Department's administrative office. All software is to be compatible with and for use to run on "Windows® 7 Professional, Service Pack 1" or later version as approved by the Engineer. The required applications software follows and is to be latest version unless noted:

spreadsheet - "Microsoft Excel 2010" or later version approved by the Engineer,

suite - "Microsoft® Office 2010 Professional" or later version as approved by the Engineer,

antivirus - "Norton 360 Premier edition” (or later version approved by the Engineer), and

software supporting creation of DVD +/- R/RW disks (supporting double layer media writing) and

DVDR and DVDRW disks using DVDRW drive, for example: Ahead Nero, Roxio DVD/CD Creator, or some equivalent product. Note: software commonly included as part of the standard CDRW upgrade/standalone package is acceptable if included with the unit;

Related Equipment

Wireless networking hub/router, 802.11g or better, (or other high speed internet access) with all associated hardware (adapters, cables, etc) and software to enable wireless networking (or other high speed internet access) and internet connection sharing for all office computers and printers,

An electrical outlet with dedicated circuit for the main computer unit,

An optical mouse with proper driving software having complete Microsoft emulation,

An internal 56/28.8/14.4 fax modem with MNP5 error checking and complete Hayes emulation having high-speed 14.4 fax capability and regular data transmission between 2400 and 56 baud, with the latest version proper driving software,

Necessary cables for proper operation,

An uninterruptible power supply (UPS) units for protection from power loss or fluctuation, minimum of 6 outlets, adequate to provide a minimum of 30 minutes backup power for an orderly shut down of the computer system with software and connections for automatic system shutdown,

24 bit Sound Blaster compatible PCI soundcard with quality desktop speakers,

A combination surge, spike, and noise protection device with receptacles for all peripherals (may be in combination with the UPS power supply),

A wrist rest suitable for use with the furnished keyboard,

Cleaning kits for disk drives,

An anti-glare filter with grounding wire suitable for use with the furnished monitor, and

All cards, hardware, and operating, anti-virus, and equipment software to be fully installed and operational;

Maintenance and Service

Maintenance of all specified equipment and components shall be provided for by a validated service agreement for the length of the Contract. Maintenance (upgrades, replacement, full technical support) for each software application shall be provided for by validated maintenance agreement for the length of the Contract. These agreements shall allow an authorized project person to deal directly with the service organization to request repair or the maintenance organization to request assistance; and

Supplies

Consumables as required to manage the business of the project shall be provided for the Microcomputer Systems in each field office for the length of the Contract. These consumables shall be furnished on request and include but not be limited to 3-1/2" double sided high density micro floppy diskettes, compatible diskettes for provided digital cameras and memory stick media, DVDR and DVDRW media compatible supporting operational minimum to maximum speed of the DVD/RW drive unit, cut sheet paper and labels compatible with the printers, hardware and screen cleaners, and toner cartridges.

Maintenance Requirements for the Field Office:

Maintenance of the field office including its entrance and adjacent parking area, for the time required, shall consist of maintenance and/or replacement of all provided items, security system, furniture and equipment, computer systems, providing lavatory supplies, providing trash containers and waste baskets, providing entrance mats at each door, providing replacement items for lighting fixtures, maintaining all utilities, providing vermin and pest control by professional exterminator(s), providing satisfactory and sanitary janitorial and waste disposal services twice a week, providing cleanup of trash and debris on the parking lot and landscaped area once a week, and shall be included in the monthly unit cost.

The Contractor shall provide and deliver for each field office a current copy of all validated field office equipment and computer maintenance, service, assistance and/or monitoring agreements and/or contracts as mentioned hereinabove to the Department's administrative office on or before the first day each field office is ready for use.

Method of Measurement:

This item will not be measured but will be paid for on a monthly basis. Partial months will be paid at the rate of 0.033 months per day.

Basis of Payment:

The field office complex will be paid for on a unit price bid per month, which price shall be full compensation for performing the work specified and the furnishing of all materials, labor, tools, equipment and incidentals necessary to maintain the field office, entrance, and adjacent parking area and restore the field office area, entrance, and adjacent parking area to match the original site condition. No separate payment will be made for costs involved for removing hazardous material or underground tanks to install the field office, entrance, and parking areas. One (1) unit of payment will constitute erecting, furnishing, equipping, maintaining, and removing one (1) double wide field office, entrance, and parking area.

Payment will be made only for the actual number of months that the field office complex is acceptably provided by the Contractor.

The field office, entrance, and parking area shall be ready for use not later than forty-five (45) calendar days after the date of the fully executed Contract and before construction operations begin.

5/10/13

760507 - PROFILE MILLING, HOT-MIX
760508 - PROFILE MILLING, CONCRETE

Description:

This work consists of furnishing a pavement-milling machine or cold planer and planing the existing bituminous concrete pavement or P.C.C. Pavement at the locations and to the nominal depths shown on the Plans and/or as directed by the Engineer to obtain a smooth profile on the existing roadway surface. Unless otherwise noted on the Plans or specifications the Contractor shall reuse, salvage and/or dispose of the milled material.

Equipment:

The milling equipment shall be a commercially designed and manufactured milling machine capable of performing the work in a manner satisfactory to the Engineer.
The machine shall be power-operated and self-propelled, shall have sufficient power, traction and stability to remove a thickness of material to a specified depth. In addition, the machine must accurately and automatically establish profile grades by referencing the existing pavement surface. This shall be accomplished by means of 1.) a ski of 30 (9 m) minimum length with an accuracy of ±0.125 in 30 (3 mm in 9 m) or 2.) a minimum of three (3) ultra sonic, non-ground contacting sensors with an accuracy of ±0.100 in 25 (2.5 mm in 7.5 m). If noted on the Plans, a profile grade shall be established independent of the existing pavement surface. In such case the machine shall be capable of following the independent grade line (e.g. string line). The machine shall have an automatic system for controlling grade elevation and cross slope. The machine shall also be equipped with a means to effectively control dust generated by the cutting operation.

Construction Methods:

The surface resulting from the planing operation shall be in accordance with notes and details on the Plans and shall be characterized by uniform, discontinuous longitudinal striations and shall not be gouged or torn. Imperfections exceeding 5/16" (8 mm) at any point along the surface as a result of missing teeth or faulty operation shall be removed by approved methods.
Before opening the milled surface to traffic, all loose material shall be removed from the surface with a power vacuum sweeper.

Whenever the milling operation causes water to pond or lay within the wheelpaths of the roadway the Contractor shall alleviate this problem by cutting bleeders into the shoulder or median to provide positive drainage. Cost for such work will be incidental to this item.

If the road is to remain open to traffic, longitudinal vertical drop-offs in excess of 2" (50 mm) at lane lines or at the centerline shall not be left overnight.

Transverse faces at the beginning and end of the milling operation existing at the end of a work period shall be tapered 20:1 or flatter in a manner approved by the Engineer to avoid a hazard for traffic.

Surface material that cannot be removed by cold planing equipment because of physical or geometrical restraints shall be removed by other methods acceptable to the Engineer.

If independent grade reference is required, it shall be designated in the Plans and/or Contract documents and elevations shall be provided by the Plans or at the direction of the Engineer.

If a severe bump exist in the pavement surface extra effort shall be taken at these locations to improve the profile. Manual changes to the cutter head may be needed at these locations to achieve this. It is the intent to remove bumps and irregularities in the pavement and produce a smooth milled surface for hot-mix resurfacing.

If the existing bituminous surface is over concrete the intent is to remove all of the existing bituminous material to the top of the concrete surface unless otherwise directed by the Plans or the Engineer.

If milling to remove open graded hot mix, the milling operation must remove all of the open graded hot mix from the roadway surface.

Method of Measurement:

The quantity of pavement milling will be measured as the number of square yards per inch (square meters per 25 mm) of depth as shown on the Plans or established by the Engineer. The nominal depth shown on the Plans and initially set on the milling machine, even though it will vary automatically during profiling, will be the depth measured and paid.

Basis of Payment:

The quantity of pavement milling will be paid for at the Contract unit price per square yard per inch (square meter per 25 mm) of depth. Price and payment will constitute full compensation for furnishing an accepted pavement-milling machine and operator, for removal and disposal of the milled material or delivery to a designated site, for transporting equipment, for all labor, tools equipment and incidentals necessary to complete the item.

5/02/02

763501 - CONSTRUCTION ENGINEERING

Description:

This work consists of construction lay out including; stakes, lines and grades as specified below. Subsection 105.10 Construction Stakes, Lines and Grades of the Standard Specifications is voided.

Based on contract plans and information provided by the Engineer, the Contractor shall stake out right-of-way and easements lines, limits of construction and wetlands, slopes, profile grades, drainage system, centerline or offset lines, benchmarks, structure working points and any additional points to complete the project.

The Engineer will only establish the following:

(a) Original and final cross-sections for borrow pits.
(b) Final cross-sections for all excavation items.
(c) Line and grade for extra work added on to the project plans.

Equipment:

The Contractor shall use adequate equipment/instruments in a good working order. He/she shall provide written certification that the equipment/instrument has been calibrated and is within manufacturer's tolerance. The certification shall be dated a maximum of 9 months before the start of construction. The Contractor shall renew the certification a minimum of every 9 months. The equipment/instrument shall have a minimum measuring accuracy of [3mm+2ppmxD] and an angle accuracy of up to 2.0 arc seconds or 0.6 milligons. If the Contractor chooses to use GPS technology in construction stakeout, the Contractor shall provide the Engineer with a GPS rover for the duration of the contract. The GPS rover shall be in good working condition and of similar make and model used by the Contractor. The Contractor shall provide up to 8 hours of formal training on the Contractor's GPS system to a maximum of four Engineer's appointees. At the end of the contract, the Engineer will return the GPS rover to the Contractor. If any of the equipment/instruments are found to be out of adjustment or inadequate to perform its function, such instrument or equipment shall be immediately replaced by the Contractor to the satisfaction of the Engineer.

Engineering/Survey Staff:

The Contractor shall provide and have available for the project an adequate engineering staff that is competent and experienced to set lines and grades needed to construct the project. The engineering personnel required to perform the work outlined herein shall have experience and ability compatible with the magnitude and scope of the project. Additionally, the Contractor shall employ an engineer or surveyor licensed in the State of Delaware to be responsible for the quality and accuracy of the work done by the engineering staff. When individuals or firms other than the Contractor perform any professional services under this item, that work shall not be subject to the subcontracting requirements of Subsection 108.01 of the Standard Specifications. The Contractor shall assume full responsibility for any errors and/or omissions in the work of the engineering staff described herein. If construction errors are caused due to erroneous work done under Construction Engineering the Contractor accepts full responsibility, no matter when the error is discovered. Consideration will not be given for any extension of contract time or additional compensation due to delays, corrective work, or additional work that may result from faulty and erroneous construction stakeout, surveying, and engineering required by this specification.

Construction Methods:

Performance Requirements:

(a) Construction Engineering shall include establishing the survey points and survey centerlines; finding, referencing, offsetting the project control points; running a horizontal and vertical circuit to check the accuracy of given control points. Establishing plan coordinates and elevations marks for culverts, slopes, subbase, subsurface drains, paving, subgrade, retaining walls, and any other stakes required for control lines and grades; and setting vertical control elevations, such as footings, caps, bridge seats and deck screed. The Contractor shall be responsible for the preservation of the Department's project control points and benchmarks. The Contractor shall establish and preserve any temporary control points (traverse points or benchmarks) needed for construction. Any project control points (traverse points) or benchmarks conflicting with construction of the project shall be relocated by the Contractor. The Contractor as directed by the Engineer must replace any or all stakes that are destroyed at any time

during the life of the contract. The Contractor shall re-establish centerline points and stationing prior to final cross-sections by the Engineer. The Vertical Control error of closure shall not exceed 0.05 ft times [Square root of number of miles in the level run] (0.01 m times [square root of number of kilometers]). The Horizontal Control accuracy ratio shall not exceed an error of closure of 1 foot per 20,000 feet (1 meter per 20,000 meters or 1:20,000) of distance traversed prior to adjustment.

(b) The Contractor shall perform construction centerline layout of all roadways, ramps and connections, etc. from project control points set by the Engineer. The Contractor using the profiles and typical sections provided in the plans shall calculate proposed grades at the edge of pavement or verify information shown on Grades and Geometric sheets.

(c) The Contractor shall advise the Engineer of any horizontal or vertical alignment revisions needed to establish smooth transitions to existing facilities. The Contractor shall immediately bring to the attention of the Engineer any potential drainage problem within the project limits. The Engineer must approve any proposed variation in profile, width or cross slope.

(d) The Contractor shall establish the working points, centerlines of bearings on bridge abutments and on piers, mark the location of anchor bolts to be installed, check the elevation of bearing surfaces after they are ground and set anchor bolts at their exact elevation and alignment as per Contract Plans. Before completion of the fabrication of beams for bridge superstructures, the Contractor shall verify by accurate field measurements the locations both vertically and horizontally of all bearings and shall assume full responsibility for fabricated beams fitting and bearing as constructed. After beam erection and concurrently with the Department project surveyors, the Contractor shall survey top of beam elevations at a maximum of 10-ft (3.0-meter) stations and compute screed grades. These shall be submitted to the Engineer for review and approval before the stay in place forms are set. Construction stakes and other reference control marks shall be set at sufficiently frequent intervals to assure that all components of the structure are constructed in accordance with the lines and grades shown on the plans. The Contractor will be responsible for all structure alignment control, grade control and all necessary calculations to establish and set these controls.

(e) The Contractor, using contract plans, shall investigate proposed construction for possible conflicts with existing and proposed utilities. The Contractor shall then report such conflicts to the Engineer for resolution. All stakes for advanced utility relocation, which will be performed by others, shall be paid for under item 763597 – Utility Construction Engineering.

(f) The Contractor shall be responsible for the staking of all sidewalk and curb ramp grades in accordance with the plans and the Departments Standard Construction Details. The Contractor shall review the stakeout with the Engineer prior to construction. The Engineer must approve any deviation from plans, Department Standard Construction Details and Specifications in writing. The Contractor shall be responsible for any corrective actions resulting from problems created by adjustments if they fail to obtain such approval.

(g) If wetland areas are involved and specifically defined on the Plans the following shall apply:

i. It is the intent of these provisions to alert the Contractor, that he/she shall not damage or destroy wetland areas, which exist beyond the construction limits. These provisions will be strictly enforced and the Contractor shall advise his/her personnel and those of any Subcontractor of the importance of these provisions.

ii. All clearing operations and delineation of wetlands areas shall be performed in accordance with these Special Provisions. Before any clearing operation commences the Contractor shall demarcate wetlands at the Limits of Construction throughout the entire project as shown on the Plans labeled as Limits of Construction or Wetland Delineation to the satisfaction of the Engineer.

iii. The material to be used for flagging the limits of construction shall be orange vinyl material with the wording "Wetland Boundary" printed thereon. In wooded areas, the flagging shall be tied on the trees, at approximate 20-foot (6.1 meter) intervals through wetland areas. In open field and yard areas that have been identified as wetlands, 3 foot (one meter) wooden grade stakes shall be driven into the ground at approximate 20 foot (6.1 meter) intervals and tied with the flagging.

iv. If the flagging has been destroyed and the Engineer determines that its use is still required, the Contractor shall reflag the area at no cost to the Department. If the Contractor, after notification by the Engineer that replacement flagging is needed, does not replace the destroyed flagging within

48 hours, the Engineer may proceed to have the area reflagged. The cost of the reflagging by the Engineer will be charged to the Contractor and deducted from any monies due under the Contract.

v. At the completion of construction, the Contractor shall remove all stakes and flagging.

vi. The Contractor shall be responsible for any damages to wetlands located beyond the construction limits, which occurs from his/her operations during the life of the Contract. The Contractor shall restore all temporarily disturbed wetland areas to their preconstruction conditions. This includes restoring bank elevations, streambed and wetland surface contours and wetlands vegetation disturbed or destroyed. The expense for this restoration shall be borne solely by the Contractor.

Submittals:

All computations necessary to establish the exact position of all work from the control points shall be made and preserved by the Contractor. All computations, survey notes and other records necessary to accomplish the work shall be made available to the Department in a neat and organized manner at anytime as directed by the Engineer. The Engineer may check all or any portion of the stakeout survey work or notes made by the Contractor and any necessary correction to the work shall be made as soon as possible. The Contractor shall furnish the Engineer with such assistance as may be required for checking all lines, grades, and measurements established by the Contractor and necessary for the execution of the work. Such checking by the Engineer shall not relieve the Contractor of his/her responsibility for the accuracy or completeness of the work.

The Contractor shall submit any of the following at the Engineer's request:

(a) Proposed method of recording information in field books to ensure clarity and adequacy.

(b) A printout of horizontal control verification, as well as coordinates, differences and error of closure for all reestablished or temporary Control Points.

(c) A printout of vertical control verification, with benchmark location elevation and differences from plan elevation.

(d) Sketch of location of newly referenced horizontal control, with text printout of coordinates, method of reference and field notes associated with referencing control.

(e) Description of newly established benchmarks with location, elevation and closed loop survey field notes.

(f) All updated electronic and manuscript survey records.

(g) Stakeout plan for each structure and culvert.

(h) Computations for buildups over beams, screed grades and overhang form elevations.

(i) A report showing differences between supplied baseline coordinates and field obtained coordinates, including a list of preliminary input data.

(j) Any proposed plan alteration to rectify a construction stakeout error, including design calculations, narrative and sealed drawings.

(k) Baseline for each borrow pit location.

(l) Detailed sketch of proposed overhead ground mounted signs or signals showing obstructions that may interfere with their installation.

(m) Copies of cut sheets.

Method of Measurement:

The quantity of Construction Engineering will not be measured.

Basis of Payment:

Payment will be made at the Lump Sum price bid for the item "Construction Engineering". The price bid shall include the cost of furnishing all labor, equipment, instruments, stakes and other material necessary to satisfactorily complete the work as herein described under this item for all roads and structures that are a part of the contract. Adjustment in payment will be made for the deletion or addition of work not shown in the contract documents.

Monthly payment will be made under this item in proportion to the amount of work done as determined by the Engineer.

8/29/07

763503 - TRAINEE

Description:

The item shall consist of providing training in the construction crafts in accordance with the requirements stated in the General Notices of this proposal under the Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246).

Basis of Payment:

The payment for the item shall be made at a fixed rate of $.80 per hour toward the hourly rate of the trainee.

5/2/02

763508 - PROJECT CONTROL SYSTEM DEVELOPMENT PLAN
763509 - CPM SCHEDULE UPDATES AND/OR REVISED UPDATES

Description:

The Project Control System will be set up and maintained by the Department of Transportation to monitor and record work in progress and to coordinate and synchronize construction management functions. The Department will use Critical Path Method (CPM) scheduling to approve the Contractor's work schedule, review work progress, evaluate time extensions, identify problem areas, and recommend solutions to maintain the established work schedule. The Department will designate a Critical Path Method Administrator (CPMA) to oversee the Project Control System.

The Contractor shall designate a Critical Path Method Coordinator (CPMC) having proven experience in construction scheduling and in CPM concepts and scheduling. The CPMC shall be familiar with and have direct contact with both the Contractor's front office and field staff. The CPMC shall be knowledgeable of the status of all parts of the work throughout the length of the Contract in order to properly coordinate the Contractor's work schedule information and shall be available for consultation and preparation of documents on a daily basis. If this condition is not complied with the Contractor shall submit qualifications for a replacement CPMC to the CPMA for approval by the Engineer.

The CPMC shall submit a working drawing schedule, materials schedule, crew schedule; and shall prepare and provide the "look ahead", original, update, revised update, and final (as-built) update CPM work schedules, written CPM schedule narratives, and other CPM schedule information as required by the Project Control System Development Plan. The CPMC shall prepare and provide the Contractor's work schedule information by email as a single compressed database file in CPM format fully compatible with the WindowsÒ version of Primavera Project PlannerÒ used by the Engineer for generation of the CPM schedules.

The CPM format shall be the Precedence Diagram Method with days as the Planning Unit and shall be based on Calendar Days. Schedules will be developed using every day as a workday; schedules with calendars based in any manner on Working Days will not be allowed. The CPMA will receive the Contractor's CPM schedule databases for input to generate the CPM schedules. The generated CPM schedules are the Contractor's own work schedule and will be reviewed for approval by the Engineer. CPM schedules approved by the Engineer will have the word “schedule” in the center title block (layout name) of their graphic outputs and title line of their report outputs.

The scheduling of the construction is the responsibility of the Contractor; the Contractor is responsible to determine, by adequate planning, the most feasible order of work commensurate with the Contractor’s abilities and the Contract Documents.

The Contractor's compliance with the Project Control System Development Plan and CPM Schedule Updates and/or Revised Updates, and the Engineer's approval of the generated Original CPM schedule, its updates and/or revised updates will be required before processing monthly estimates for payment.

It is not the intent of this Contract that the Engineer by approving the CPM schedules agrees that it is reasonable in all respects or that the schedule, if followed, will result in timely completion of the Project. The Engineer's approval is based on a review of general conformity for compliance with the requirements of the Project Control System and on the items or time restrictions that the department and/or the Engineer have control. The Contractor is free to make assumptions regarding field conditions, estimated quantities, and/or subsurface conditions. However the Department's concurrence with the Contractor's schedule based on these assumptions does not relieve the Contractor from making necessary revisions to his schedule should his assumptions fail to hold true. No time extension to the Contract which is due to assumptions made by the Contractor and that do not hold true during construction will be considered by the Department. Discrepancies and/or changes initiated by the Department in proposed quantities or plans that cause an extension to the critical path will be considered by the CPMA. The Department's controls or time restrictions are identified hereinafter and in the Standard Specifications, Special Provisions, and on the Contract Plans as plan notes.

Development of the Project Control System (PCS):

The PCS development plan is as follows:

(a) Within seven (7) calendar days after the date of the fully executed Contract a workshop meeting will be held

with the Engineer, CPMA, Contractor, and CPMC. The CPMA will profile the basics and procedures of the Project Control System and discuss schedule model design at this meeting. Attendance is mandatory,

The Department's partially predetermined Coding Structure (CS) format having a maximum of seventeen (17) code classification levels will be used and will be furnished at the Workshop Meeting. The CS is a specific listing that illustrates the hierarchy of work needed for the project. The hierarchy is categorized into levels or classifications. The CS classifications organize activities into manageable groups through each level of the project, for example; locations, phasing (staging), landmark dates, roadway sections and bridge structures; footings, columns, and caps; contractor and subcontractor.

The CPMC shall assist in determining the breakdown and code title descriptions from south to north and west to east of the location code classification. Activity code values shall be perspicuous for each classification grouping. Additional activity code classifications and values as required by the Engineer from time to time shall be provided and added to the schedule database by the CPMC. The CPMC shall not alter the CS and properly code all activities with the approved CS activity code values for all code classifications including all railroad, waterway, and outside agency activities with approved code values, including classifications as added by the Engineer. Coding enables generation of organized reports and graphics that can summarize any level of the project schedule.

When the Department provides a format database for the Contract, it shall be used by the Contractor as the basis from which to develop their schedule. The CPMC may add, but not insert, code classifications in the format database;

(b) Within fourteen (14) calendar days after the workshop meeting, the CPMC:

(1) Shall submit a working drawing schedule, using the Department's application format or other format as agreed to by the Engineer. This schedule shall also include all other items having content that requires approval to allow any portion of the work to commence or continue. This schedule shall be submitted to the CPMA for approval by the Engineer and shall contain all required working drawings and also include but not be limited to reinforcing bar lists, formwork drawings and calculations, construction procedures, borrow pit security and traffic plans, precast structures, wetland work plans, construction sequencing, load tests, and wave equation analyses. Working drawing information shall include the identification number, description, type, anticipated submittal date, time frame for preparation and review, approval needed by date, and a resubmittal process (if expected) for each listed item. This information shall also give factory leadtime and expected delivery date, if applicable, for each listed item.

The Contractor should be aware that the Department's time frame for review of working drawings and other submittals properly submitted or resubmitted in accordance with Standard Specification Subsection 105.04 will be thirty (30) calendar days duration unless mutually agreed to by the CPMC and CPMA; this 30 day duration supersedes the time frame of the Subsection. If a working drawing or other submittal involves review by railroads, environmental agencies, municipalities, other states, federal agencies, or the U. S. Coast Guard the time frame for review will be sixty (60) calendar days unless mutually agreed to by the CPMC and CPMA. The time frame will begin on the date of receipt of the drawings by the reviewer and will end on the date of transmittal returning the drawings to the Contractor by the Department. No drawings will be accepted for review until an initial working drawing schedule has been accepted unless agreed to by the Engineer.

The working drawing schedule shall be updated and correlated with the activities of the "look ahead" and all other CPM schedules;

(2) Shall submit a materials schedule using the Department's application format or other format as agreed to by the Engineer. This schedule shall be submitted to the CPMA for approval by the Engineer and shall contain all required materials, samples, and sources of supply. The materials schedule information shall include the identification number, description, generic or brand name, sample requirement, and manufacturer's and supplier's name, address, and phone number for each listed item. The schedule shall also give the anticipated submittal date, time frame for preparation and review, approval needed by date, factory leadtime, and expected delivery date, if applicable, for each listed item.

The materials schedule shall be updated and for materials having long factory leadtimes shall be correlated with the activities of the "look ahead" and all other CPM schedules;

(3) Shall submit a crew schedule. This schedule shall be submitted to the CPMA for approval by the Engineer and shall be accompanied by a written narrative and shall contain all crews and their work plan.

The crew schedule shall be updated and correlated with the activities of the "look ahead" and all other CPM schedules;

(4) Shall prepare and provide a written narrative of the Contractor's work plan and an acceptable "look ahead" schedule database in CPM format. This schedule database shall reflect activities for the Contractor's overall work plan for the entire project detailing the “look ahead” period and shall be submitted to the CPMA for acceptance by the Engineer. The “look ahead” period shall be as determined by the Engineer. The “look ahead” schedule shall be maintained and updated until an Original CPM schedule is approved. The “look ahead” schedule shall also reflect the Sequence of Construction in the plans unless otherwise approved by the Engineer. This “look ahead” schedule, its updates and/or revised updates shall also be incorporated into the Original CPM schedule database. Issue of the Notice to Proceed is contingent upon receipt and acceptance of this schedule in accordance with Standard Specification Subsections 108.02 and 108.03; and

(5) Shall begin meeting with the CPMA at their office every third business day to prepare and provide a written narrative of the Contractor's work plan and a CPM schedule database until a useable, logical draft of the full CPM schedule network, responsive to the project requirements and correlated with the required schedules has been developed as determined by the Engineer. The CPMA will generate an initial CPM schedule from the CPMC's logical draft CPM schedule database for review by the Engineer. This initial schedule shall reflect the Sequence of Construction in the plans unless otherwise approved by the Engineer. This initial CPM schedule database, if acceptable, may be used to fulfill the Contractor's “look ahead” schedule requirements;

(c) If the initial CPM schedule is not acceptable to the Engineer, the CPMC shall continue to meet with the CPMA on every third business day and prepare and provide the Contractor's written narrative and CPM schedule database as necessary until a generated CPM schedule is acceptable to the Engineer; and

(d) Within twenty-eight (28) calendar days after the workshop meeting, an initial CPM schedule must be generated having the requirements for the Engineer's approval. This schedule shall reflect a clear understanding of the Contractor’s work plan, be adequate to determine the Department’s staffing requirements, have correct physical logic, incorporate construction and traffic phases, and display clarity of presentation for review and processing. Upon approval the CPMA will furnish the Contractor a graphic and report output of this CPM schedule. This CPM schedule, or Original CPM schedule, is the Contractor's own work schedule and the Contractor's responsibility to maintain.

The ending (cut-off) day for each monthly estimate period shall be proposed by the Contractor subject to Department approval. In the event of a conflict, the Engineer will have the authority to establish the ending day.

Processing of monthly estimates for payment will begin or continue only if the Contractor is in compliance as determined by the Engineer with the PCS Development Plan.

Any information required by the Engineer for analysis of the CPM schedules, their updates and/or revised updates; clarification of charts and other schedules; and evaluation of proposed changes or change orders shall be prepared and provided by the CPMC. A copy of the current approved CPM schedule, its updates and/or revised updates shall be on display at the field office of both the Department and the Contractor.

CPM schedule information and requirements:

The CPMC shall prepare and provide the Contractor's work schedule information in the form of work step and restraint activities:

(a) Work step activities are single step construction elements,
(b) Restraint activities are not construction elements but affect the start of other activities.

When setting forth work steps and restraints the breakdown on these activities shall address the following factors:

Work Step factors affecting the duration and/or sequence of activities;

1. Work at locations done at different times or requiring different crews,
2. Work requiring different materials,
3. Work requiring different crew or craft requirements,

4. Work requiring different equipment,
5. Work requiring different responsibility (subcontractors),
6. Structural work having distinct subdivisions,
7. Labor and equipment resource availability,
8. Work as reflected in the Contractor's estimating or accounting breakdown,
9. Work as reflected in the state's breakdown for bidding or payment,
10. Public, private, and/or Contractor utility work and limiting or outage schedules of public and/or private utility organizations, and
11. Maintenance of traffic.

Restraint factors affecting the start of other activities;

1. Preparation of working drawing and materials submittals,
2. Approval, return, and/or resubmittal of working drawings and materials,
3. Specialized material testing,
4. Long lead purchases - material and equipment availability,
5. Material and equipment fabrication time,
6. Testing of special equipment and in place testing,
7. Delivery of unusual shipment or scarce material,
8. Dependency on completion of utility work,
9. Dependency on the Department's approval of issues involving public, private, and/or other governmental agencies,
10. Dependency on completion of part or all of another Department contract or construction of other organizations, whether contiguous or not,
11. Protection and restoration of property, forest protection, special traffic controls, erosion control and water pollution, environmental controls and suspensions, safety, and foreseeable archeological and/or historical evidence delays,
12. Procurement of permits, and
13. Conditions as set forth in Standard Specification Subsection 107.01.

Activities must be identified by a name, symbol, and coding, and shall have duration, sequence, responsibility, and resources.

Activity names or titles shall be descriptive and be single identifiable work steps or restraints. A sample breakdown list of activity titles may be furnished to the Contractor by the Engineer on request. Activities shall be selected, as a minimum, on a structure by structure and/or section by section basis where relevant and have further breakdown into secondary components. Activities shall be inclusive and representative of the Contract work. Activity symbols, or ID's, shall be unique and systematic.

Activity codes shall have classifications and values. The approved CS will determine activity code classifications and values. The CPMC shall identify activities using these classifications and code values. Additional activity codes as required by the Engineer shall be provided by the CPMC.

Activity durations, or Original Durations, shall be reasonable and representative of the scope of the activity. If durations are considered excessive or insufficient, the industry standard will be used. Original Durations may not exceed thirty (30) calendar days unless approved by the Engineer. Durations of activities shall be determined by using productivity rates based on calendar days, not work days. Original Durations of activities may not be less than two (2) calendar days unless agreed to by the CPMA. The use of calendar day productivity rates in CPM scheduling allows for customary days during the work week that the Contractor does not work. Productivity rates used to establish durations shall reflect the time periods when work can be scheduled and exclude the non-work period of the activity's calendar. Activity calendars allow activities to be scheduled only when allowed by the nature of or restraints on the work. Calendars shall not exclude weekends, holidays, or other times the Contractor does not work.

All activities shall be identified by entry of their appropriate Calendar. A minimum of fourteen (14) shall be used and the first fourteen (14) shall be ordered and entitled as follows: 1) Full schedule, 2) Environmental, 3) Winter Condition, 4) Concrete Work, 5) Concrete Work Winter, 6) Concrete Deck, 7) Concrete Paving, 8) GABC, 9) Asphalt Base, and 10) Asphalt Surface, 11) SMA, 12) Night Paving Asphalt Base, 13) Night Paving Asphalt Surface, 14) Night Paving SMA. Calendar non-work periods shall reflect the environmental regulations for the location of the Contract work. The Contractor may perform work during its calendar non-work periods without compromising this specification and at no cost to the Department. When the Department provides a format database from which to develop the CPM schedule, the Contractor shall not modify the Calendars in the format database unless approved by the Engineer. The non-work periods of the calendars follow:

CALENDAR	NON-WORK PERIOD
1) Full schedule,	N/A
2) Environmental:	Varies; project specific,
3) Winter Condition:	December 1 thru March 15,
4) Concrete Work:	December 1 thru March 15,
5) Concrete Work Winter:	N/A (Protection provided at no cost to the Department)
6) Concrete Deck:	November 15 thru March 31,
7) Concrete Paving:	December 1 thru March 15,
8) GABC:	November 15 thru March 15,
9) Asphalt Base:	November 15 thru March 15,
10) Asphalt Surface:	November 15 thru March 15,
11) SMA	November 15 thru March 31,
12) Night Paving Asphalt Base:	October 15 thru April 30,
13) Night Paving Asphalt Surface:	October 15 thru April 30, and
14) Night Paving SMA:	October 15 thru April 30.

Activity durations are based on Calendar Days and shall reflect all time necessary to complete an activities work and its requisites. The Contractor shall include in their original schedule narrative their work day to calendar day conversion factors with a discussion of how these factors were determined. When scheduling using multiple resources each resource unit shall have a corresponding activity. All time to complete the activity shall include as a minimum all Contractor unscheduled work days, and all Contractor holidays, except for software generated calendars. Failure of a contractor and their subcontractors to provide sufficient resources are not means to recover costs or time due to delay. Inclement weather, if such impacts the critical path of the project, will allow for recovery of time, but not cost.

Activity sequence shall be typical of proficient scheduling practice. The sequence must be logical and representative of the Contractor's order of the work. Successors and predecessors determine the job logic or activity sequence. Successors are activities that follow an activity. Predecessors are activities that precede an activity. A given activity cannot start until all predecessors have been completed. The Precedence Diagram Method (PDM) shall be used. The PDM places the activities on nodes and the dependencies between them are defined by arrows. Only finish to start dependency relationships (links) shall be used; lag times may not be used unless approved by the CPMA. The Department reserves the right to request a resequencing of activities to effect competent scheduling practice and realistic job logic.

Activities shall be sequenced to reflect resource apportionment. When one crew (resource) is being utilized to perform all of many similar activities, these activities must be linked together in some sequence to reflect that one crew is performing the work. Additionally, when several crews are performing similar activities, these activities must have separate linked sequences equal to the number of crews performing the work. Activities shall be logically connected and coded to reflect the crew (resource) performing the operation. A summary list of crews, their crew codes, and their operation(s) shall be included with each schedule submission unless unchanged. Resource loading will not be required unless otherwise directed by the Engineer. If resource loading is directed, payment will be incidental to the Item “763509 – CPM Schedule Updates and/or Revised Updates”.

Activity responsibility shall be identified for each activity except those performed by the Contractor, if requested by the Engineer. Subcontractors, DBE's, utilities, performers of other contracts, and performers of adjoining work on other advertised contracts shall be identified by coding when responsibility for an activity is requested.

Activity resource loading shall be required only if the Contractor demonstrates the inability to maintain the CPM schedule. In this event, the Engineer shall have the authority to require resource information for all activities affecting project completion. Resource information includes manpower, equipment, materials, and/or services and has cost and has a range and amount of availability. Lack of sufficient resources will not be considered cause to extend durations when preparing the CPM schedule. By bidding to contract the work, the Contractor has ensured that sufficient resources are available or will be available in a suitable time frame to perform the work within the Contract Time, even if a resequencing of activities requires an activity or activities to shorten their Remaining Duration. In the event the Contractor demonstrates the inability to maintain the CPM schedule, the Engineer may require the Contractor to increase the number of shifts, begin overtime operations, work extra days including weekends and holidays, supplement construction plant and equipment, or all or any of the foregoing as a step to improve the Contractor's work progress all without additional cost to the Department.

Work activities shall as a minimum be representative of all construction work for each operation, each phase (stage), and each location.

Working drawings shall be included as activities. Preparation and leadtime (order, manufacture, and delivery time), shall be included as activities for each applicable working drawing item. A separate activity shall be used to begin the submittals of working drawings. Time extension(s) will not be considered when submittal activity(s) affects the critical path except for owner caused delay as recognized by the Engineer. If working drawings require resubmittal(s), activities for their preparation and activities for their approval (having the Department's review time) shall be included in the next CPM schedule update database. Time extension will not be considered when resubmittal activity(s) affects the critical path except for owner caused delay as recognized by the Engineer. Working drawing activities and leadtime activities not requiring submittal shall not be on the critical path of the Original CPM schedule.

Materials having long leadtime and/or manufacture time or that are difficult to acquire and/or fabricate shall have materials approval and leadtime activities included in the schedule for each applicable material item. A separate activity shall be used to begin the submittal of these materials. These material approval and leadtime activities shall not be on the critical path of the Original CPM schedule.

Administrative milestones shall be included as activities. Each milestone of the bidding through first chargeable day process shall be an activity.

Utility work shall be included as activities and shall be identified accordingly. Each utility item on the plans or listed in the Contract's Utility Statement shall be an activity. The activity description shall indicate the utility company and include the number of each listed item or be numbered according to the item's order in the Utility Statement. A separate activity shall be used to begin utility work. Utility activities shall not be impactive on the Original CPM schedule unless authorized by the Engineer.

Agency agreements and/or arrangements and other submittals for approval shall be included as activities. A separate activity shall be used to begin the agency items and other submittals for approval.

The effect of other Department contracts or construction of other organizations on the completion of part or all of this Contract shall be included as activities. A separate activity shall be used to begin these items.

Phasing (staging) shall be included as activities. These activities shall be correlated with the sequence or suggested sequence of construction on the plans and/or in the specifications. A separate start and finish milestone activity shall be used to start and to complete each phase.

When multiple crews are performing an operation or a string of operations, each crew shall be logical connected and coded to reflect the crew performing the operation.

Surcharge durations and special testing, if applicable, shall also be included as activities. Sufficient duration times for these activities will be allowed as per the plans and specifications or as agreed to by the Engineer.

Activity types must be either "task", "start milestone", or finish milestone. "Hammock" type activities may be allowed as agreed to by the Engineer. If the Department requires resource loading, "task" activities may be converted to "independent" type as agreed to by the Engineer.

Date constraints, float and duration constraints, and/or flags for activities will not be allowed. Milestones that do not constrain the schedule shall be allowed as agreed to by the Engineer when unique or unusual events cause a restraint to the Contractor's work schedule. The use of "Start No Earlier Than" (SNET) and "Zero Free Float" (ZFF) constraints for activities may be allowed for the purpose of schedule clarity or definitude if acceptable to the CPMA.

Total Float is defined as the difference between the current schedule finish date and the Contract Completion Date that is entered by constraint ("Project must finish by:" date) in the schedule.

Free float is defined as the amount of time between when an activity "can finish" (the early finish) and when an activity "must finish" (the late finish). Free float is float shared with all other activities and is defined as the amount of time an activity can be delayed without affecting the critical path of the schedule. It shall be understood by the Contractor and the Department that free float is a shared commodity, not for the exclusive use or financial benefit of either party. Either party has the full use of the free float until it is depleted.

The critical path is defined as the series of activities in a CPM schedule network that has the longest path in

time. The submitted activity sequence and durations must generate a CPM schedule having only one (1) critical path; a schedule with multiple or near multiple critical paths will not be allowed. Work like project wide Maintenance of Traffic, Construction Engineering, or Temporary Erosion Control that by their nature are ongoing for long durations or the duration of the project and are basically complementary to other activities, shall be divided and condensed into "establish" and "conclude" activities to prevent this type of work from being the major portion of the critical path or its entirety.

The Project Start Date, or initial Data Date, of the Original CPM schedule shall be the first chargeable day of work. The first schedule activity related to productive work shall be entitled "First Chargeable Day" and shall be a start milestone. Nonproductive work and administrative activities may begin and/or end prior to the Project Start Date and shall be statused as such in the Original CPM Schedule. The submitted activity sequence and durations must generate an Original CPM schedule using all the Contract Time and a critical path having zero total float. An early completion schedule will not be allowed. The Contractor's original schedule shall reflect the use of the entire Contract Time. The schedule ending date that uses all the Contract Time in the Original CPM schedule will be the original Contract Completion Date. This Contract Completion Date shall be fixed (Project must finish by:) in the Original CPM schedule and shall remain unchanged unless a time extension is awarded.

The Contractor's Original CPM schedule shall allocate the work over the entire Contract Time. The Contractor shall not anticipate early completion in bid preparation and shall distribute all time-driven and/or time-dependent costs uniformly over every day of the Contract Time when preparing the bid. No early completion schedules will be accepted.

After the Original CPM schedule utilizing all the allocated Contract Time has been approved, job conditions or logic changes may occur which require revision to the schedule. Only an update may be revised. These revised updates must be reflective of the Contractor's actual intent in constructing the project. The revision may cause the project completion date to be earlier than the completion date of the current approved schedule. This is acceptable to the Department; but no claims will be considered for time-driven and/or time-dependent costs (such as delay and/or extended overhead expense) which are a result of not meeting this new project "early finish" date. Consideration for these costs would occur only for approved extensions that force actual project completion past the originally advertised Contract Time including authorized time extension(s). However, no credits for non-expended overhead will be requested should a Contractor successfully achieve completion of the project prior to the use of all the Contract Time.

If the project is delayed, the contractor must demonstrate the inability to perform other critical or near critical work to receive consideration for an extension of Contract Time.

CPM schedule databases shall be calculated using the relevant Data Date prior to submittal to the CPMA. The Data Date of CPM schedule updates and revised updates shall be the next day after the end of the update period. Schedule calculations of CPM databases shall be based on retained logic, contiguous durations, and total float as finish float.

Activity Log (memo) information is allowed, but must be factual; shall be removed, if redundant; and shall not be masked, but indicated for printing to output reports. Punctuation is not required for activity and Activity Log information unless necessary for clarity.

Statusing or contract progress of activities for updates is the entering of Actual Start dates, Suspend Date(s), Resume Date(s), Actual Finish dates, and changes in Remaining Durations to the database. An activity's Original Duration may not be changed. An activity that begins (has an Actual Start Date) must have its Remaining Duration reduced by at least 1 day.

Activity Suspend and/or Resume Dates shall be added to the activity record and the factual reasons for the cause shall be added to the respective activity Log. If an activity is suspended again it shall be curtailed and assigned an Actual Finish Date equal to the latest suspension date, and a new activity (portion 2) comprising the balance of remaining duration shall be created and inserted in succession; both activities shall indicate by log comment the facts causing this condition.

Log statusing shall be used when an activity has out-of-sequence progress and no Actual Finish Date. Out-of-sequence progress occurs when any previous predecessor of an activity has no Actual Finish date. Log statusing is the entering of the Actual Start date to the Activity Log of the database in the Departments format. These entries are not to be masked, but indicated for printing to output reports. Changes in Remaining Durations shall be entered to the database but not the Activity Log. When progress is no longer out-of-sequence or all previous predecessors of the activity have Actual Finish dates, the activity's Actual Start shall be taken out

of log status and entered to the database. Log statusing provides schedule output that prevents graphic distortion of schedule activities and preserves the design sequence of the CPM schedule plan. The Engineer shall have the authority to require a revision of the CPM schedule because of out-of-sequence progress. A suspended activity that requires log statusing shall be treated in the same manner as though it was suspended again.

Each original, update, and revised update schedule database and subsequent draft submitted for approval shall have a unique and manifest Project Name and shall be uniquely identified by entry (Number/Version) in the schedule database.

Corrections are defined as entries to the database that rectify coding and activity identification errors. Corrections shall be identified by written narrative and/or as agreed to by the CPMA. Exception(s) taken in PCS or other Department correspondence shall be complied with in the subsequent update and/or a revised update of the CPM schedule.

Written narratives shall be included with each submission of initial or revised update databases. The narratives must conceptualize work plans, modifications, and/or corrections but may be summary unless otherwise directed by the Engineer. These narratives shall describe where and the crews and order of what is to be done; narratives that are a listing of the work will not be acceptable. The Department will only accept schedule databases that reflect the work plans, modifications, and/or corrections reflected by their respective written narratives.

Inaccurate and/or faulty databases of any CPM schedule update and/or revised update will be unacceptable and shall be summarily corrected and resubmitted. Resubmittals shall be labeled "2nd Draft", "3rd Draft", etc. as appropriate and identified by entry (Number/Version) in the schedule database.

Any activity(s) or activity information that is necessary to generate a CPM schedule acceptable to the Engineer and/or schedule information that is requested by the Engineer shall be prepared and provided by the CPMC.

The CPMA will generate the CPM schedule network reflecting the Contractor's scheduling information. Upon approval of the Original CPM schedule and subsequent CPM schedule updates and/or revised updates, the CPMA will furnish the Contractor graphic and report outputs of these schedules. These CPM schedules are the Contractor's own work schedule and the Contractor's responsibility to maintain.

Monthly CPM Schedule Updates:

The CPMC shall meet with the Contractor and Resident Engineer and prepare the required work schedule progress information (status reports) to update the CPM schedule. This information shall be submitted on status forms provided by the Department that are generated from the Original Schedule and thereafter from the previous CPM schedule update or revised update(s). This update information shall reflect the current state of completed project work. The update information shall include all activities on which work was performed and/or there was progress during the update period and shall include as a minimum their actual start dates, suspend dates, and resume dates; and the estimated remaining durations or actual finish dates. The update information shall be as agreed to and signed-off and dated by the Resident Engineer and the CPMC. The CPMC shall use the signed-off and dated information to status and/or log status the update database.

The Contractor shall submit the CPM schedule database update and a copy of the signed off update information within five (5) calendar days after the end of each monthly update period. The database and signed off information must match. The CPMA will generate a CPM schedule update reflecting the Contractor's update information. The five (5) calendar day submittal period will enable the Department to discuss current schedule information at the monthly progress meeting held the following week.

If the critical path of the generated CPM schedule update has less than minus ten (-10) calendar days of total float the CPM schedule update shall be revised.

Upon approval of the CPM schedule update, the CPMA will furnish the Contractor a graphic and report output of this update. This CPM schedule update is the Contractor's own updated work schedule and the Contractor's responsibility to maintain.

CPM Schedule Revised Updates:

The CPM schedule shall be revised if the critical path has less than minus ten (-10) calendar days of total float, conditions require the Contractor to modify the work schedule, the Contractor chooses to make a

significant change in the sequence of work, or the Department requests the schedule to reflect the current state of the work and/or the Contractor's acknowledged work plans. The revised update shall reflect the Contractor's current order of work and include new and/or previous activities affected by the change and shall include a written narrative of these changes. Revision as required by this Specification or as requested by the Department does not constitute acceleration unless agreed to by the Engineer. Revisions shall be identified as the revised update of the current approved CPM schedule update. Revisions are to be singular in modification and not lumped together in the same revised update unless otherwise directed by the Engineer. Additional revision(s) of the same update is therefore acceptable. The Department reserves the right to request a resequencing of activities to effect a completion date within the Project Time.

The CPMC shall meet as needed with the CPMA at the Engineer's office within five (5) calendar days after revision is required, formal request for a revision, or the Contractor announces intent to submit a revision. The purpose of the meetings shall be to prepare the Contractor's revised update CPM schedule database and its written narrative of changes. These meetings shall continue until a useable, logical draft of the revised update CPM schedule network, responsive to the modification requirements, has been developed that will generate a workable, CPM schedule revised update having a completion date using or within the Contract Time or that allowable by this specification. The submitted CPM schedule database revised update must reflect its written narrative. Revised updates inconsistent with their written narratives will not be acceptable. The CPMA will generate the CPM schedule revised update reflecting the Contractor's new information. The reports generated by the CPM schedule revised update shall be used to prepare the update information for the next CPM schedule update.

Reduction of activity durations will not be considered acceptable criteria for revision to bring the project back on schedule unless activity quantities have been reduced or the Contractor provides a narrative describing how their means and methods to construct the work shall change and/or their resource allocation to perform the work shall increase.

For activities using like resources, modification of activity relationships to be concurrent (run parallel) with each other will not be considered acceptable criteria for revision to bring the project back on schedule unless the Contractor provides a narrative describing how their crews and/or resource allocation to perform the work shall increase.

A CPM revised update having the requirements for the Engineer's approval must be completed before preparation of the next CPM schedule update. Processing of the next monthly estimate for payment will begin only after the Engineer's approval of the signed CPM schedule revised update.

Upon approval of the CPM schedule revised update, the CPMA will furnish the Contractor a graphic and report output of this revised update. This CPM schedule revision is the Contractor's own revised work schedule and the Contractor's responsibility to maintain.

In the event that the Contractor fails to maintain his CPM schedule in a satisfactory manner, the Engineer reserves the right to enforce the provisions as set forth in Standard Specification Subsection 108.10.

Change Orders and adjustment of completion time:

A Change Order will only be considered for extension of Contract Time when the modified critical path shows requirement of additional time because of the added activity or activities and\or there is justifiable delay as recognized and determined by the Engineer. For any change order that affects the schedule, the Department reserves the right to request a resequencing of activities to effect a completion date within the Project Time.

If the CPM schedule has been updated and/or revised and positive total float has been created, no additional time will be given for added activity(s) unless the modified critical path shows requirement of additional time and/or there is justifiable delay as recognized and determined by the Engineer. Compensation for additional overhead costs will not be considered until all of the original Contract Time has been utilized. The Engineer reserves the right to "bank" (postpone the award of) approved time extensions if the project is ahead of schedule.

If a change order represents issues for which the effect on contract time can be readily determined, then any time adjustment will be agreed upon by the CPMC and CPMA prior to final execution of the change order. Determination of time adjustment will be based on the effect of the issue on the CPM schedule, the current approved CPM schedule update or approved CPM revised update, and the Department's Time Evaluation Worksheet (TEW) submitted by the Contractor.

However, if the issues represented by the change order require further analysis and review in order to

accurately and fairly evaluate the effect on contract time, then the change order contract time assessment block may be marked "not considered at this time". This will be done in order to not delay payment to the contractor for completed work included on a particular change order while the time analysis is being performed. In these cases, final resolution of any time related issues would be made as soon as all required information is received and analyzed by the Department and the Contractor.

After signature by all parties, the change order is considered approved, and work activities and any time modifications as shown on the approved TEW that affect the CPM schedule shall be reflected in the next CPM schedule update or revised update and be documented by written narrative. Only activities on the approved TEW may be included as activity(s) in schedule databases. Updates reflecting change order(s) that are inconsistent with their change order narratives will not be acceptable. No change orders will be processed until their effect on the CPM schedule has been determined, unless otherwise approved by the Engineer. A change order may not be included in a monthly estimate for payment unless approved by the Department on or before the cutoff date of the estimate. All official time extensions will be granted by letters from the applicable District Construction Engineer or his/her designated representative.

Issues involving potential time extensions must be addressed in the CPM schedule update period in which they occur or they cannot be considered. If the Contractor proposes a change to the Contract work, any time the Contractor spends in discussion and preparation, and any time the Department requires for review in the approval or disapproval process for this proposed change to the Contract work will not be considered for granting of additional contract time. It is the obligation of the Contractor to complete the project on time according to the original contract documents including current approved changes notwithstanding any change submitted for approval that may or not be accepted. The Contractor is obligated to prosecute the work at any time according to the Contract Documents in covenant at that time.

The following definitions regarding weather days will be utilized:

Weather day – Any Calendar Day (including weekends and Holidays) on which a weather event prohibits contract work on critical path activities. Events include, but are not limited to rain, snow, or extreme temperatures.

Lost day – Any Calendar Day (including weekends and Holidays) on which residual effects from a weather event prohibit contract work on critical path activities. Examples include, but are not limited to, wet conditions from a previous rain event, snow cover, or frozen ground.

The Contractor and the Department will record and agree on weather days and lost days. A day will be considered a weather or lost day if it prevents progress of the current or next work activity on the critical path of the schedule, unless it occurs during a calendar non-work period of the current or next work activity on the critical path of the schedule in which case the day will not be counted as a weather day. Weekends and holidays will also be excluded from consideration for weather and lost days during calendar non-work periods.

The Contractor will be awarded a day for each day weather or conditions due to previous weather events prevent progress of the current or next work activity on the critical path of the schedule. When weather affects an activity not on the critical path and the activity becomes the critical path, the allowable days of time extension will be only for the days the activity was on the critical path. The Contractor and the Department will record and agree on these weather days. Inability to prosecute work not shown as activities in progress on the most recent CPM schedule will not be considered when determining an extension of Contract Time. The Engineer will have the final decision as to the number of calendar days the Contractor's work was limited to because of weather.

Final (As Built) CPM Schedule Update:

The CPMC shall meet with the Contractor and Resident Engineer and prepare the required as-built work schedule information and corrective work schedule information to finalize the CPM schedule. The progress reports generated by the previous CPM schedule update or revised update will be used to prepare this update information. This final update information shall reflect the final state of the project work. The final update information shall include all activities on which work was performed and/or corrections since the last update period and shall include as a minimum the activity ID and title, the actual start and finish dates, and the actual completion date. The final update information shall also include any revisions and change orders not previously included in the CPM schedule. These correction, revision, and change order modifications shall be reflected by a final update written narrative. The final update information will be as agreed to and signed off by the Resident Engineer and the CPMC. The CPMC will use the signed off information to status the CPM schedule database to prepare the final update schedule.

The Contractor shall submit the final CPM schedule database and a copy of the signed off final update information within five (5) calendar days after formal request for this update. The database and signed off information must match. The CPMA will generate a final CPM schedule update reflecting the Contractor's new information. Upon approval of the final CPM schedule update, the CPMA will furnish the Contractor graphic and report outputs of this final update.

The CPMC shall submit two (2) signed copies of the final CPM schedule update to the CPMA. Processing of the final estimate for payment will begin only after these signed copies are received. This final (as built) CPM schedule is the Contractor's final work schedule.

Method of Measurement:

The Project Control System will be portioned into two (2) items. The item, "Project Control System Development Plan", will be bid price lump sum. The item, "CPM Schedule Updates and/or Revised Updates", will be unit bid price per each approved update.

Basis of Payment:

The item, "763508 - Project Control System Development Plan", will be paid for at the Contract lump sum bid price, on the next monthly estimate after completion of the requirements of the Project Control System Development Plan, which includes approval of the Original CPM schedule.

The item, "763509 - CPM Schedule Updates and/or Revised Updates", will be paid for at the Contract unit bid price per each approved CPM schedule update. Revised updates are incidental to this item, except that each revised update(s) requested by the Department for purposes of incorporating Plan Revisions will be paid as one (1) approved CPM schedule update.

7/17/2013

763597 - UTILITY CONSTRUCTION ENGINEERING

Description:

Utility Construction Engineering consists of providing construction and right-of-way/easement information to utility companies performing work (as defined in the Utility Statement) within the project limits. This may include but not necessarily be limited to staking right-of-way/easement lines, tops of cuts, bottoms of slopes, clear zones, drainage facilities, fill and cut grades, and other features that will enable utility companies to coordinate their work and correctly locate/relocate their facilities. Engineering/surveying required for utility work bid as part of the Contract is included in item 763501.

It is the intent of this item to cover engineering/surveying work that is done solely for utility companies and that is beyond the work performed under item 763501 - Construction Engineering. Work covered under Utility Construction Engineering will generally fall into two categories:

1. Engineering/surveying work that is not necessary for construction of the project, i.e. staking the clear zone line, providing cut/fill grades at proposed utility pole locations, staking back of drainage structures, and staking right-of-way lines where construction of the project (exclusive of utilities) is obviously well within the right-of-way.

2. Engineering/surveying work that is necessary for construction, but has to be provided for utility companies well in advance of the Contractor's need and will likely need to be redone later. This can essentially be any of the Construction Engineering work that when done early cannot be reasonably expected to remain undisturbed until needed for construction of the project (non-utility).

The Engineer must approve all requests for Utility Construction Engineering before the work begins. To this end, the Contractor should instruct utility companies to submit their requests to the Engineer. The Engineer will decide if the requested work meets the criteria for Utility Construction Engineering or is normal Construction Engineering and pass the requests along with his/her decisions to the Contractor. When the Engineer determines that the requested work qualifies as Utility Construction Engineering, the Department will reimburse the Contractor on a per hourly basis for each and every hour the Contractor's survey crew is in the field actively engaged in performing the Utility Construction Engineering work. The survey crew size shall be adequate to efficiently perform the work required and shall meet the approval of the Engineer. Office work associated with Utility Construction Engineering will be considered as incidental to the item.

The personnel engaged in and the equipment used for Utility Construction Engineering shall meet the requirements as described in item 763501 - Construction Engineering.

Method of Measurement:

The quantity of Utility Construction Engineering will be measured as the actual number of hours the Contractor's survey crew is in the field actively engaged in utility construction engineering work.

Basis of Payment:

The quantity of Utility Construction Engineering will be paid for at the Contract unit price per hour. Price and payment will constitute full compensation for furnishing all labor, equipment, instruments, stakes and other materials necessary to complete the work.

02/28/09

763626 - DIESEL FUEL COST PRICE ADJUSTMENT

I. Description: This section defines the criteria for payments to the Contractor to reflect increases or decreases in the cost of diesel fuel consumed in the performance of applicable construction work. To have the Diesel Fuel Cost Price Adjustment provisions apply to this project, a properly completed Diesel Fuel Cost Price Adjustment Option form must be submitted to the Department with the Bidder's bid proposal. If a properly completed Diesel Fuel Cost Price Adjustment Option form is not provided by the bidder, the Department will consider the option to apply the Diesel Fuel Cost Price Adjustment provisions for the project to be declined. No further opportunity to elect Diesel Fuel Cost Price Adjustment for the project will be made available.

a. General. These price adjustment provisions apply to contract items in the contract schedule of prices as grouped by category. Specific pay items to be adjusted are attached as an appendix to this Special Provision. General category descriptions and the fuel usage factors which are applicable to each are as follows:

1. Categories

1.a. Category A: Earthwork. The combined total of the applicable item plan quantities must exceed 5,000 CY.

1.b. Category B: Subbase and Aggregate Base Courses. The combined total of the applicable item plan quantities must exceed 500 tons.

1.c. Category C: Flexible Bases and Pavements. The combined total of the applicable item plan quantities must exceed 500 tons.

1.d. Category D: Rigid Bases and Pavements. The combined total of the applicable item plan quantities must exceed 5,000 CY.

1.e. Category E: Structures. Contract items will be based upon the total square foot price for each structure including any associated items of work, i.e. items not grouped under Categories A thru D.

2. Diesel Fuel Usage Factors – ENGLISH UNITS

Category	Factor	Units
A – Earthwork	0.34	Gallons per CY
B – Subbase and Aggregate Base Courses	0.62	Gallons per ton
C – Flexible Bases & Pavements	2.98	Gallons per ton
D – Rigid Bases & Pavements	0.98	Gallons per CY
E – Structures	8.00	Gallons per $1,000 of work performed

3. Quantity Conversion Factors – ENGLISH UNITS

Category	Conversion	Factor
B	SY to ton	90 lbs/Inch of depth/SY
C	SY to ton	112.5 lbs/Inch of depth/SY
D	SY to CY	Inches of depth/36

II. The posted index price will be the monthly price most recent data published by the U.S. Department of Energy, U.S. Energy Information Administration. The source information for the posted price for Central Atlantic (PADD 1B) No 2 Diesel Ultra Low Sulfur (0-15 ppm) Retail Prices (Dollars per Gallon) may be viewed at the following website:

http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EMD_EPD2DXL0_PTE_R1Y_DPG&f=M

The release date for the U.S. Department of Energy, U.S. Energy Information Administration average price data

occurs the first Monday of the following month, i.e. October prices are released the first Monday of November and used as the November Price Index.

The price index, FB, is the index price posted by the Department, determined as specified above, on the project advertisement date.

PRICE INDEX (FB) FOR DIESEL FUEL

PER GALLON = $ 3.938

The price index, FP, will be the index price posted by the Department, determined as specified above, for the month during which the Notice to Proceed (NTP) is issued, and every 90 calendar days thereafter.

III. Price Adjustment Criteria and Conditions. The following criteria and conditions will be considered in determining a price adjustment for diesel fuel cost fluctuations.

a. Price Adjustment Calculation. When the ratio FP/FB is calculated to be less than 0.95 or calculated to be greater than 1.05, the Department will adjust unit bid price prices in accordance with the following formula:

AUP = (FP-FB)(F)+(UBP)
where:
AUP = Adjusted Unit Price
FP = Fuel Price Index for the month in which prices are adjusted for applicable construction work.
FB = Fuel Price Index in the Bid Proposal
F = Diesel Fuel Usage Factor
UBP = Unit Bid Price specified in the Contractor's Bid Proposal

b. Payment of Adjusted Unit Prices. The unit bid prices of work items affected by the fuel escalation will be adjusted by work order, either up or down, at Notice to Proceed and every 90 Calendar Days thereafter.

c. Expiration of Contract Time. If the Contractor exceeds the authorized allotted completion time, the adjusted item prices on the last authorized allotted work day shall be the prices used during the time liquidated damages are assessed. However, if the posted price for diesel fuel goes down, the item prices shall be adjusted downward accordingly

d. Final Quantities. Upon completion of the work and determination of final pay quantities, an adjusting work order will be prepared to reconcile any difference between estimated quantities previously paid and the final quantities. In this situation, the value for FP used in the price adjustment formula will be the average of all FP's previously used for computing price adjustments.

e. Inspection of Records. The Department reserves the right to inspect the records of the prime contractor and its subcontractors and material suppliers to ascertain actual pricing and cost information for the diesel fuel used in the performance of applicable items of work.

f. Extra Work. When applicable items of work, as specified herein, are added to the contract as Extra Work in accordance with the provisions of Section 110.03, no price adjustment will be made for fluctuations in the cost of diesel fuel consumed in the performance of the extra work, unless otherwise approved by the Engineer. The current price for diesel fuel is to be used when preparing required backup data for extra work to be performed at a negotiated price. For extra work performed on force account basis, reimbursement for material and equipment along with specified overhead and profit markups will be considered to include full compensation for the current cost of diesel fuel.

g. Subcontractors. Any Price Increases or Price Rebates that are calculated based on items of work performed by subcontractors will be added to or deducted from payments due to the Contractor in the appropriate pay period. The Contractor shall then accurately record on the appropriate CN-91 or CN-103 form the additions or deductions into adjusted contract value. The Contractor shall make payment to the subcontractor(s) who actually performed the work in accordance with DelCode Title 17, Chapter 8.

11/10/11

763655 - STEEL COST PRICE ADJUSTMENT

.01 Description: The Department will adjust monthly progress payments up or down as appropriate for cost changes in steel used on specific items of work identified in the contract in accordance with this provision.

The following steel items will be eligible for consideration under this provision:

1. structural steel (rolled beams, plate girders, diaphragms, plate bearings, etc.);
2. reinforcing steel (plain & epoxy coated);
3. overhead sign structures;
4. guardrail, posts;
5. standard sign or lighting supports;
6. railing;
7. steel encasement pipe;
8 steel piles (end bearing or friction);
9. steel strand (used for pre-tensioned or post-tensioned finished elements); and
10. sheet piles.

Inventoried materials from the listing of eligible items and fasteners of any kind are specifically excluded for consideration. Fasteners include but are not limited to, bolt, nuts, washers, rivets, and welding rods.

The requirements of this provision shall apply only to material cost changes that occur between the date of bid opening and the date the material is shipped to the fabricator. To be eligible for this price adjustment, the Contractor is required to place purchase order(s) for eligible steel items for price adjustment identified in the contract within 30 days after final execution of the contract by the Department. All items eligible must be submitted and used on the project for any item to be eligible for adjustment.

For steel items to be eligible for adjustment, once shipped to the fabricator, the items shall be specifically stored, labeled, or tagged, recognizable by color marking, and identifiable by project for inspection and audit verification.

This provision allows for price adjustment for embedded steel used for pre-tensioned or post-tensioned precast components where furnishing steel is included in the unit price of the finished bid item. Steel used for post-tensioned or pre-tensioned elements shall be evaluated for price adjustment in the same manner as other steel material eligible under the requirements of this provision except that adjustment shall only apply to the tonnage or poundage of steel strand used in the pre-tensioned or post-tensioned element.

This provision shall only apply to material cost changes of steel that occur between the date of bid opening and the date the material is shipped to the Contractor, subcontractor or supplier/fabricator placing the steel into the finished component.

Submit material price quotes, bid papers, or other documentation satisfactory to the Department within 15 days after the date of the Award letter for the bid items the Contractor is requesting a steel price adjustment. This documentation shall support the completion of the form establishing the average price per pound for the eligible steel bid item. The Contractor must use the format as shown with this provision; no other format for presenting this information will be permitted. Certification is required that all items of documentation are original and were used in the computation of the amount bid for the represented eligible pay items for the month bids were opened. The documentation will be used to support the base line material price ("Base Price") of the steel item only. No adjustment will be made for changes in other components of the contract unit bid price, including, but not limited to, fabrication, shipping, storage, handling, and erection.

Failure to submit specifically required information such as purchase order, price data, bill of lading, material information or other requested information as noted herein will result in the Contractor not being eligible for price adjustment of steel items.

Price adjustment of each qualifying item under consideration will be subject to the following condition:
There must be an increase or decrease in the cost of eligible steel materials in excess of 10% up to a maximum of 60% from the Base Price when compared with the latest published price index ("Price Index") in effect at the time material is shipped to the fabricator.

The Price Index the Department is using is based on The U.S. Department of Labor, Bureau of Labor Statistics, Producers Price Index (PPI) which measures the average price change over time of the specific steel eligible item from the perspective of the seller of goods. The specific PPI to be used to adjust the price for the eligible steel items is shown in the table below. **Please note**: The PPI is subject to revision four months after

original publication, therefore, price adjustments and payments will not be made until the index numbers are finalized.

The following table indicates the PPI steel category index items and the corresponding I.D. numbers to which the steel items will be compared:

Steel Item	Bureau of Labor Statistics PPI Series I. D. Number WPU#
Reinforcing steel (plain & epoxy coated) Steel Strand (Pre-tensioning & Post-tensioning)	WPU101704 (http://data.bls.gov/pdq/SurveyOutputServlet?years_option=all_years&output_view=data&periods_option=all_periods&output_format=text&reformat=true&request_action=get_data&initial_request=false&data_tool=surveymost&output_type=column&series_id=WPU101704)
Plate girders & rolled beams (Standard & High strength, diaphragms, plate bearings, etc.) Steel piling (H-pile, pipe piles & sheet piles)	Average of WPU1017 & WPU101 (http://data.bls.gov/pdq/SurveyOutputServlet?series_id=WPU1017&data_tool=XGtable & http://data.bls.gov/pdq/SurveyOutputServlet?series_id=WPU101&data_tool=XGtable)
Steel encasement pipe Overhead sign structures, posts, poles, guardrail, sign or lighting supports, & railing	WPU101706 (http://data.bls.gov/pdq/SurveyOutputServlet?years_option=all_years&output_view=data&periods_option=all_periods&output_format=text&reformat=true&request_action=get_data&initial_request=false&data_tool=surveymost&output_type=column&series_id=WPU101706)
Guardrail	Average of WPU1017 & WPU101707 (http://data.bls.gov/pdq/SurveyOutputServlet?series_id=WPU1017&data_tool=XGtable & http://data.bls.gov/pdq/SurveyOutputServlet?years_option=all_years&output_view=data&periods_option=all_periods&output_format=text&reformat=true&request_action=get_data&initial_request=false&data_tool=surveymost&output_type=column&series_id=WPU101707)

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

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

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

such delays.

The need for application of the adjustments herein to extra work will be determined by the Engineer on an individual basis and, if appropriate, will be specified on the Change Order.

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

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

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

.02 Method of Measurement:

Price increase/decrease will be computed as follows:

Sample Calculation of a Price Adjustment (increase)			
Project bid on	Tuesday, April 28, 2009		
Project has structural steel in the amount of:		**450,000**	Lbs
Orders placed in timely manner and according to contract.			
Contractor's F.O.B. supplier price for the structural steel in bid:		**$ 0.28**	/lb
Adjusted** BLS Producers Price Index most recently published average at time of bid:			**157.0**
** final change after 4 months			
All steel shipped to fabricator in same month, October 2009.	October-09		
Adjusted BLS Producers Price Index (PPI) most recently published average for month of October:			173.7
Adjustment formula is A = B X P X Q			
Where:	A =	Steel price adjustment in lump sum dollars	
	B = $ 0.28	Average weighted price of steel submitted with bid on project in $/lb = $0.28	
	P = 0.0064	Adjusted percentage change in PPI average from shipping date to bid date minus 10% threshold = (173.7-157.0)/157.0 – 0.10 = 0.0064	
	Q = 450,000	Total quantity of steel shipped to fabricator in October 2004 for this project in lb = 450,000 lb	
	A = $ 802.55	0.28 x 0.0064 x 450,000	
	A = $ 802.55	Lump Sum adjustment paid to Contractor	

Sample Calculation of a Price Adjustment (decrease)			
Project bid on April 27, 2009.			
Project has structural steel.		**450,000**	Lbs
Orders placed in timely manner and according to contract.			
Contractor's F.O.B. supplier price for the structural steel in bid:		**$ 0.28**	/lb
Adjusted** BLS Producers Price Index most recently published average at time of bid:			**173.7**
** final change after 4 months			
All steel shipped to fabricator in same month, October 2009.	October-09		
Adjusted BLS Producers Price Index (PPI) most recently published average for month of October:			**157.0**

Adjustment formula is A = B X P X Q		
Where:	A =	Steel price adjustment in lump sum dollars
	B = $ 0.28	Average weighted price of steel submitted with bid on project in $/lb = $0.28
	P = -0.0039	Adjusted percentage change in PPI average from shipping date to bid date minus 10% threshold = (173.7- 157.0)/157.0 – 0.10 = -0.0039
	Q = 450,000	Total quantity of steel shipped to fabricator in October 2009 for this project in lb = 450,000 lb
	A = $ (486.01)	0.28 x 0.0039 x 450,000
	A = $ (486.01)	Lump Sum credit from Contractor

.03 Basis of Payment: The price adjustments will be made as a lump sum payment for eligible steel products placed and accepted.

2/1/11

763695 - SNOW REMOVAL BY CONTRACTOR

Description:

The work consists of furnishing and operating equipment to perform snow removal operations within the contract limits on an as-needed basis. The Contractor will be given notice that such services will be required, and to what degree, at the beginning of each snow removal season. The Contractor will perform this work under the direction of DelDOT inspection personnel.

Informational Meeting:

On or about October 15 of each Calendar Year between Notice to Proceed and Final Contract Acceptance, a meeting will be held between the Contractor, DelDOT South II Construction, and DelDOT South District Maintenance. Discussion will focus on Contractor responsibilities with regard to snow removal (if any) for the upcoming season, required lead time for mobilization of equipment, billing forms to be submitted by the Contractor, points of contact for all parties involved, and processing of payment to the Contractor following snow removal work.

Safety:

All equipment supplied under this item shall have Two (2) fully functioning Headlights and as a minimum one (1) Rear Work Light along with the Safety Lighting as described as follows:

Safety lighting shall be provided in accordance with the current Manual on "Delaware Traffic Controls for Streets and Highway Construction, Maintenance, Utility, and Emergency Operations."

Flashing Lights on Vehicles - Any and All Vehicles within the Work Area Shall Be Equipped With and Display Flashing Lights as Described Below:

1. On Expressways and other high-volume, high-speed roadways (above 50 M.P.H.) an approved light bar or other high-powered strobe system will be required.

2. The referenced flashing lights are not the vehicle emergency flashers, but a separate large rotating amber beacon or strobe light. Said beacon or strobe light shall be mounted on the vehicle in such a manner as to be clearly visible 360 degrees from all directions around the vehicle.

3. These warning lights shall be visible from a distance of not less than 500 feet under normal nighttime atmospheric conditions.

It will be DelDOT's responsibility to inspect the equipment supplied under this item to confirm that the Contractor equipment meets the above safety lighting standard. Equipment that is found not meeting the above safety lighting standard will not be permitted to be utilized by the Contractor.

If DelDOT discovers the Contractor's Equipment is working without meeting the Safety Lighting requirements, the equipment shall be removed from service, and no work completed by the deficient equipment shall be paid. When the Contractor corrects the safety lighting deficiency the equipment can be placed back into service.

Property Damage Responsibility:

It will be the sole responsibility of the Contractor to repair and /or replace in kind any and all property damage created while performing snow removal under this contract. DelDOT will review property damage complaints to verify whether the Contractor caused the property damage as reported. If it is determined that the Contractor caused the property damage, the Contractor will have twenty-working-days to correct the property damage as identified by DelDOT. Property damage not corrected by the Contractor within the twenty-working-days shall give DelDOT the authority to hire the services of another contractor to perform the corrective repairs and the invoice for the cost of all work performed will be provided to the Contractor for payment or deducted from payments owed to the Contractor for the contract.

Measurement and Payment:

Records of snow removal operations will be tracked per hour of actual operating time for each piece of equipment furnished and utilized by the Contractor. The price bid per hour for each piece of equipment plus operator as indicated on the Breakout Sheet for this Item will be utilized to determine the total payment to be made under this item. A percentage of the total Lump Sum will be paid based on the work performed in the pay period. The percentage will be calculated by multiplying the total operating hours of each piece of equipment actively used for snow removal, times the appropriate hourly rate, divided by the total Lump Sum bid price for item 763695, Snow Removal by Contractor. Final payment may result in less than 100% of the total Lump Sum based on actual work performed. Should the Lump Sum total be exhausted, additional funds will be added based on the best available estimate at the time. Failure to fully complete the Breakout Sheet for this Item may result in the bid being declared non-responsive.

4/25/13

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

SHAILEN P. BHATT
SECRETARY

STATE CONTRACT No. T200411210
F.A.P. # ESTP-S026 (6)
Project ID # 04-00800

SR 26, ATLANTIC AVENUE FROM CLARKSVILLE TO ASSAWOMAN CANAL SUSSEX COUNTY, DELAWARE

The following companies maintain facilities within the contract limits:

• Delmarva Power Electric Distribution	Electric
• Delaware Electric Cooperative, Inc.	Electric
• Verizon Delaware Inc.	Communications
• Mediacom	Communications
• Windstream	Communications
• Tidewater Utilities, Inc.	Water
• Town of Ocean View	Water
• Sussex County Engineering Department	Sewer

The SR 26, Atlantic Avenue from Clarksville to Assawoman Canal project will be constructed in four (4) Sections of Construction. The Sections of Construction are as described below:

Section One: Beginning at the eastern project limits and continue west to and including Woodland Avenue.

Section Two: Beginning at the end of Section One and continue west to and including Bridge 427.

Section Three: Beginning at the end of Section Two and continue west to Sta. 67+00.

Section Four: Beginning at the end of Section Three and continue west to the western project limits in Clarksville.

In order to allow the State's contractor to work while the utilities are being relocated, three locations within the project limits have been moved out of the above listed Sections and into Section One; or in "advance" of the Sections. The utilities in these three

advance areas will need to be relocated before the remainder of the contract. These three advance areas are as described below:

Section 1 – Phase 3 - Windmill Road: Roadway improvements on the south side of SR 26 from Sta. 109+50 to Sta. 113+00 including Windmill Road.

Section 1 – Phase 4 - Cedar Drive Re-alignment: All roadway improvements between Old Mill Road and Sta. 149+14 including the Cedar Drive Re-alignment.

Section 1 – Phase 6 - Clarksville: Begin at the Western project limits and construct up to and including the roadway culvert at Sta. 20+18. This includes Omar and Powell Farm Roads.

The State initiated relocations of the aerial facilities in the fall of 2012. As of May 1, 2013 the following relocations have been completed:

Section 1 – Phase 3
Section 1 – Phase 4
Section 1 – Phase 6
Section 1 – Remainder of relocations between Assawoman Canal to Woodland Avenue

Utility work shall be performed concurrent with the proposed roadway construction where possible. Utilities shall also work in Sections where there is no roadway construction activities in order to advance the construction schedule. Any utility work is subjected to the maintenance of traffic restrictions associated with the project.

Note: All bidders are to determine the extent completion of the advanced utility work, and predicate their bid prices on the extent of utility work completed and anticipated to be completed prior to the start of construction.

The following is a breakdown of the Utilities involved and the associated changes with the facilities.

Delmarva Power Electric Distribution maintains the following <u>aerial</u> electric facilities within the project limits:

Delmarva Power Electric Distribution maintains aerial utilities throughout the project limits. A pole line runs between Clarksville and the Assawoman Canal with several crossings of SR 26 as well as lines heading north and south beyond the project limits. A detailed description of these facilities can be found in Appendix A.

Delmarva Power Electric Distribution maintains the following <u>underground</u> electric facilities within the project limits:

Delmarva Power Electric Distribution maintains underground facilities for the length of the project. These facilities are defined in Appendix A.

Delmarva Power Electric Distribution proposes changes to the aerial facilities including, but not limited to:

Delmarva Power Electric Distribution will install new poles & anchors as defined in Appendix A.

Once the poles are relocated by each Utility company in each Section of construction, Delmarva Power Electric Distribution will relocate their existing aerial facilities to the new poles. The aerial relocations will be as described in Appendix A and will be completed per Section of construction.

Delmarva Power Electric Distribution proposes changes to the underground facilities including, but not limited to:

The existing underground facilities will remain in place if the facilities are not impacted. Several areas will need to be relocated due to impacts with proposed construction of the project. These relocations are described in detail in Appendix A.

The time required for Delmarva Power Electric Distribution to complete these relocations is as follows:

Delmarva Power Electric Distribution can begin working to complete these changes after the company has been given a minimum of 30 calendar days advance notice that work shall begin and that clearing and grubbing is complete, right-of-way and proposed work has been laid out in the field by the State's contractor.

Pole, Aerial and Underground Relocations:
Note: Aerial relocations will begin after all of the utility poles in a Section have been relocated. Underground relocations associated with relocated utility poles (line drops etc.)

Section 1 & 2 – 63 Calendar Days
Section 3 & 4 – 98 Calendar Days

Any other adjustments and/or relocations of the Company's existing facilities will be done by the appropriate Company's forces as necessary during construction.

Delaware Electric Cooperative, Inc. maintains the following underground electric facilities within the project limits.

Delaware Electric Cooperative, Inc. maintains underground facilities for the length of the project. Underground relocations will be done while the State's contractor is on site.

1. Line begins on pole DEC 19004 at station 349+30 (Irons Lane) and heads south to a manhole at station 34+40 on SR26. The line then turns and heads east on the south side of SR26 to a manhole at station 651+30 on SR17.

Delaware Electric Cooperative, Inc. proposed changes to the <u>underground</u> facilities include, but are not limited to:

CONSTRUCTION SEQUENCE SECTION 4

1. Adjust conduit at sta. 37+00 to avoid the proposed storm drain pipe.
2. Adjust conduit as sta. 45+55 to avoid the proposed storm drain pipe.
3. Adjust conduit at sta. 56+50 to avoid the proposed storm drain pipe.
4. Adjust conduit at sta. 63+05 to avoid the proposed storm drain pipe.
5. Adjust conduit at sta. 63+54 to avoid the proposed storm drain pipe.
6. Adjust all manholes within this section of construction (3 manholes).

Delaware Electric Cooperative, Inc. will complete these adjustments with their company forces. These relocations will be completed when the contractor is on the job site. The time required to complete each location is as follows:

Station 37+00 – 2 Calendar Days
Station 45+55 – 2 Calendar Days
Station 56+50 – 2 Calendar Days
Station 63+05 – 2 Calendar Days
Station 63+54 – 2 Calendar Days
Manholes - 3 Calendar Days

Delaware Electric Cooperative shall complete these relocations in the time given above after receiving seven (7) days advance notice that the contractor will have the roadway ready. DEC shall begin work and remain on site and continue working at each location until the work has been completed and the State's contractor can continue.

Any other adjustments and/or relocations of the Company's existing facilities will be done by the appropriate Company's forces as necessary during construction.

Verizon Delaware Inc. maintains the following <u>aerial</u> communications facilities within the project limits:

Verizon Delaware Inc. maintains aerial utilities within the project limits. A pole line runs between Clarksville and the Assawoman Canal with several crossings of SR 26 as well as lines heading north and south beyond the project limits. A detailed description of these facilities can be found in Appendix B.

Verizon Delaware maintains the following <u>underground</u> communications facilities within the project limits:

Verizon Delaware Inc. maintains underground facilities for the length of the project. These facilities are more clearly defined in Appendix B. Underground relocations associated with relocated utility poles shall be done in advance of the State's contractor. Underground relocations associated with the existing duct bank will be done while the State's contractor is on site.

Verizon Delaware Inc. proposes changes to the aerial facilities including, but not limited to:

Verizon Delaware Inc. will install new poles & anchors as defined in Appendix B. Once the poles are relocated by each Utility company in each Section of construction and the power lines have been relocated, Verizon Delaware Inc. will relocate their existing aerial facilities to the new poles. The aerial relocations will be as described in Appendix B and will be completed per Section of construction.

The time required for Verizon Delaware Inc. to complete these relocations is as follows:

Verizon Delaware Inc. can begin working to complete these changes after the company has been given a minimum of 30 calendar days advance notice that work shall begin and the clearing and grubbing is complete, right-of-way and proposed work has been laid out in the field by the States contractor.

Pole, Aerial and Underground Relocations:
Note: Aerial relocations will begin after all of the utility poles in a Section have been relocated Underground relocations associated with relocated utility poles (line drops etc.)

Section 1 & 2 – 126 Calendar Days
Section 3 & 4 – 224 Calendar Days

Underground Relocations:

All underground relocations associated with the duct bank will be completed as the contractor is on the job site. DelDOT's contractor will perform the excavation required for the relocations. Verizon's approved contractor will perform the actual conduit relocations/adjustments. Time required to complete these relocations will be as follows:

Approximate Sta. 165+00 - 7 Calendar Days
Woodland Avenue - 10 Calendar Days
Central Avenue - 12 Calendar Days
West Avenue – 12 Calendar Days
Approximate Sta. 194+00 - 7 Calendar Days
Approximate Sta. 202+00 - 7 Calendar Days
Approximate Sta. 204+00 - 7 Calendar Days

Verizon Delaware Inc. will be required to have a contractor on site to begin these relocations within 7 days of notice from the State's contractor.

Any other adjustments and/or relocations of the Company's existing facilities will be done by the appropriate Company's forces as necessary during construction.

Mediacom maintains the following aerial and underground communication facilities within the project limits:

Mediacom maintains aerial and underground utilities throughout the project limits. A detailed description of these facilities can be found in Appendix C.

Mediacom proposes changes to the aerial facilities including, but not limited to:

Once the poles are relocated by each Utility company in each Section of construction and the power lines have been relocated, Mediacom will relocate their existing aerial facilities to the new poles. The aerial relocations will be as described in Appendix C and will be completed per Section of construction.

Mediacom proposes changes to the underground facilities including, but not limited to:

The existing underground facilities will remain in place if the facilities are not impacted by the project. Several areas will need to be relocated due to impacts with proposed construction of the project. These relocations are called out in Appendix C.

The time required for Mediacom to complete these relocations is as follows:

Mediacom can begin working on the relocations after Delmarva Power Distribution and Verizon have completed installing poles and their aerial lines have been relocated.

Aerial Relocations:

Aerial relocations will begin after all of the utility poles in a Section have been relocated. The time required to complete the aerial relocations are as follows:

Section 1 & 2 – 35 Calendar Days
Section 3 & 4 – 50 Calendar Days

Underground Relocations:

Section 1 & 2 – 30 Calendar Days
Section 3 & 4 – 30 Calendar Days

Any other adjustments and/or relocations of the Company's existing facilities will be done by the appropriate Company's forces as necessary during construction.

Windstream Communications maintains the following underground and aerial fiber optic communications facilities within the project limits:

1. Beginning in the manhole on the north side of SR 26 at station 183+00, underground fiber optic heads east to pole CON 61436/99603 where it becomes aerial and heads east to the project limits.
2. Beginning in the manhole on the north side of SR26 at station 183+00, underground fiber optic heads south crossing SR26 to pole DST 11 where it becomes aerial and heads east to the project limits.

Windstream Communications proposed changes to the facilities include, but are not limited to:

CONSTRUCTION SEQUENCE SECTION 1

1. Install new fiber optic from the manhole on the north side of SR 26 at station 183+00, to pole CON 61436/99603 and then install new aerial fiber optic to the project limits.
2. Install new fiber optic from the manhole on the north side of SR26 at station 183+00, heading south crossing SR26 to the new pole (DST 11) location. Then install new aerial fiber optic east to the project limits.

Windstream Communications will complete these changes. These relocations and/or adjustments are expected to take approximately 30 calendar days to complete after the Company has been given a minimum of 30 calendar days advance notice that work shall begin and Delmarva Power and Verizon has completed installing their new poles and aerial line work.

Any other adjustments and/or relocations of the Company's existing facilities will be done by the appropriate Company's forces as necessary during construction.

Tidewater Utilities Inc. maintains the following underground water facilities within the project limits:

1. Line begins on the north side of SR26 at station 85+40 where it crosses SR26 and heads south on the west side of Warren Rd. to the project limits.
2. Line begins on the north side of SR26 at station 85+40 and heads east to station 88+20 where it turns and heads north on the west side of Whites Neck Rd. to the project limits.
3. A 12" main on the west side of Railway Road from the northern project limits to sta. 671+30 where it crosses to the east side through a casing pipe. On the east side it continues east along the north side of SR26 until sta. 112+75 where it

crosses SR26 in a casing pipe and runs along the east side of Windmill Road to the project limits.

4. Line begins on the south side of SR26 at station 126+90 and heads east to station 133+20 where it crosses SR26.
5. Line begins on the north side of SR26 at station 133+20 where the line splits. One main heads north on the east side of Old Mill Road to the project limits. The other main goes east on the north side of SR26 to station 155+00.
6. At station 155+00 the line crosses SR26 and heads south on the east side of Old School Lane to the project limits. The line continues heading east on the north side of SR26 to station 164+00.

Tidewater Utilities Inc. proposed changes to the facilities include, but are not limited to:

1. Lower line on the west side of Warren Road crossing SR 26 at sta. 85+85 to avoid storm drainage system. This relocation should take approximately one week (7 calendar days) and will be performed during Section 3.
2. No relocation anticipated.
3. No relocation anticipated.
4. Install new line from sta. 127+98 to sta. 131+49 where it will tie into the existing water main. This relocation is expected to take approximately 30 calendar days and will be performed during Section 2.
5. Install new line from sta. 140+78 to sta. 146+59 where it will tie into the existing water main. This relocation should take approximately 60 calendar days and will be performed during Section 2. Some tie-ins within this section may require night time work.
6. Install new line from sta. 150+09 to sta. 163+89 where it will tie into the existing water main. This relocation should take approximately 60 calendar days and will be performed during Section 2. Some tie-ins within this section may require night time work
7. The Company proposes to install a new 12" PVC water main along the north side of SR26 from sta. 89+00 to sta. 108+75 connecting to a water main along the west side of Railway Road. This work should take approximately 60 calendar days and will be performed during Section 3.
8. The Company proposes to install a new 12" PVC water main along the south side of SR26 from sta. 112+80 to sta. 126+90 connecting to an existing water main st the Fire House. This work should take approximately 60 calendar days and will be performed during Section 2.

Tidewater Utilities will be responsible for adjusting the water valves to the approximate grade. If the valve will be in the proposed roadway improvements the State's contractor will perform the final vertical adjustment of the water valves to match proposed grades.

Tidewater Utilities Inc. will complete these changes. These relocations/adjustments are expected to take approximately:

Section 1 & 2 – 210 Calendar Days
Section 3 & 4 – 67 Calendar Days

After the Company has been given a minimum of 30 calendar days advance notice that work shall begin.

Any other adjustments and/or relocations of the Company's existing facilities will be done by the appropriate Company's forces as necessary during construction.

The Town of Ocean View maintains the following water facilities within the project limits:

1. A 12" line begins at a valve at sta. 164+00 and heads east to sta. 182+50 where it splits. An 8" line heads north out of the project limits. The second, a 12" line, heads south and crosses Central Ave. at sta. 904+40.
2. A 12" line begins on the east side of Central Ave. south of the project limits and continues north to SR26 to a valve at sta. 184+73. A 12" line then continues east on the south side of SR26 from the valve. Line continues across West Ave., where it turns and heads north crossing SR26 and continuing outside of the project limits.
3. 10" line begins at the intersection of West Ave. and SR26 on the east side of West Ave. and heads south beyond the project limits.
4. A 12" line begins at West Ave. on the north side of SR26 and heads east to sta. 195+75. Line then crosses SR26 and continues east to sta. 208+00.
5. An 8" line crosses SR26 at sta. 194+55.
6. An 8" line begins on the west side of Tyler Dr. on the south side of SR26 at sta. 199+30 and heads north beyond the project limits.
7. An 8" line crosses SR26 at sta. 207+75 and continues north outside of the project limits.
8. A 12" line begins on the east side of Woodland Ave. south of the project and continues north crossing SR26 at sta. 175+25. A 10" line begins at this crossing and heads north on the east side of Woodland Ave. beyond the project limits.

The Town of Ocean View proposed changes to their facilities include, but are not limited to:

1. Directional bore approximately 120' of new 12" main between sta. 162+30 and sta. 163+50 to avoid conflicts with the proposed drainage. The bore will tie into the existing main.
2. No relocation anticipated.
3. No relocation anticipated.
4. A new section of 12" main will be installed from approximate sta. 189+50 to approximate sta. 192+50 where it will tie into the existing main. The new pipe will include sections of PVC and DI materials. The existing main is to be abandoned.

5. No relocation anticipated.
6. No relocation anticipated.
7. No relocation anticipated.
8. No relocation anticipated.

The proposed work will require 180 calendar days to complete and will be accomplished during Sections 1 & 2 of the construction.

The adjustments and/or relocations to the existing water main, water valves and fire hydrants will be performed by the State's Contractor as shown on the plans. The contractor shall refer to the Town of Ocean View's water main relocation plans included in the plan set for the proposed work and details.

The **State's contractor will perform the aforementioned adjustments and relocations**. The work shall comply with the Town's standards and specifications. Any additional adjustments and/or relocations of the Town's existing facilities will be done by the State's Contractors forces as necessary during construction.

Sussex County maintains the following underground Sewer facilities within the project limits:

1. A sewer line begins at a manhole at sta. 75+50 and continues to sta. 132+22 where it turns and heads north on the west side of Old Mill Road to the project limits.
2. 10" line begins in a manhole at station 136+40 and heads east on SR26 to the manhole at the intersection of SR26 and Woodland Ave. at station 175+00. At sta. 136+40 a line runs north to Doc's Place and south to the Millville Town Center.
3. At station 175+00 an 8" line heads south to the project limits and a 21" line heads north to the project limits. The main heads east 350' to a manhole at station 178+50 where it turns south to the project limits. An 8" line continues east to from the manhole to station 179+40.
4. At the intersection of SR26 and Central Ave. at station 184+30 a sewer line begins in the manhole and heads north to station 843+90. A 10" line heads south to the project limits and a 10" line heads east to a manhole at station 187+00.
5. At the intersection of SR26 and West Ave. at station 189+30 an 8"line heads north and south to the project limits. A 10"line continues heading east to station 210+00 where it turns north to the project limits
6. An 8" line beginning in the manhole at station 195+55 heads south to the pumping station.
7. Beginning at the pump station on SR26 at station 195+50, a 6"FM heads west to a manhole at station 187+00.
8. A 10" and 24" FM begin on the north side of SR26 at station 210+00 and heads west to station 196+00 where they cross SR26 and continue heading west on the south side of SR26 to station 189+00 where they turn and head south on the west side of West Ave. to the project limits.

9. Beginning at station 189+00 there are two (2) 24" FM heading west on SR26 to station 185+50 where they turn and head south on Central Ave. to the project limits.
10. Service laterals are located throughout the limits of the existing gravity sewer.

Sussex County proposed changes to the facilities include, but are not limited to:

1 – 7. No anticipated changes to the existing sewer facilities.
8 – 9. The following adjustments will be made to the existing sewer force mains. This work will be performed during Section 1.

1. Vertical relocation of 24" FM from Central Ave. sta 905+30 to SR26 sta. 184+70.
2. Vertical relocation of 24" FM on West Ave. sta 367+65 to sta. 368+45.
3. Relocation of 24" FM along south side of SR 26 to be under the proposed sidewalk behind the proposed drainage. Approximate sta. 189+45 to sta. 191+15.
4. Relocation of 24" FM along south side of SR 26 to be under the proposed pavement to avoid the proposed drainage. Approximate sta. 192+50 to sta. 195+00.
5. Relocation of 10" FM along south side of SR 26 to be under the proposed pavement behind the proposed drainage. Approximate sta. 192+50 to sta. 195+00.
6. Relocation of 24" FM along north side of SR 26 to be under the proposed pavement to avoid the proposed drainage. Approximate sta. 200+00 to sta. 202+20.
7. Relocation of 24" FM along north side of SR 26 to be under the proposed pavement to avoid the proposed drainage. Approximate sta. 205+80 to sta. 207+55.
8. Vertical relocation of 24" FM from sta. 208+70 to sta. 209+45.
9. Vertical relocation of 10" FM from approximate sta. 210+00 north out of the project limits.
10. Vertical relocation of 24" FM from approximate sta. 210+00 north out of the project limits.

The **State's contractor shall perform the sewer relocations and adjustment work** in accordance with Sussex County's standards and specifications. The proposed work is expected to take approximately 150 calendar days to complete after the Contractor has been given notice to proceed.

All adjustments to the service laterals, manholes, etc. as shown on the utility relocation plans will be completed by the State's Contractor. The contractor shall refer to Sussex County's water main relocation plans included in the plan set for the proposed work and details.

Sussex County proposes to expand its existing sewer facilities to include, but are not limited to:

1. Install a new force main and gravity fed sewer facility beginning at the existing manhole at sta. 75+50 and heading west to the project limits at approximate sta. 7+95. The work shall include manholes, laterals, service feeds (to right of way), casing pipes and other items required to complete the installation as shown on the sewer expansion plans included in this plan set.

The State's contractor shall perform the sewer expansion work in accordance with Sussex County's standards and specifications. The western most portion of work at the intersection of SR26 & Powell Farm Road, shall be included in Section 1-6. The remaining work shall be completed in Section 4. The proposed work in Section 1-6 is expected to take approximately 60 calendar days to complete after the Contractor has been given notice to proceed. The remaining work in Section 4 is estimated to take 240 calendar days

General Notes

1. The contractor's attention is directed to Section 105.09 Utilities, Delaware Standard Specifications, August 2001.The Contractor shall contact Miss Utility (1-800-282-8555) two working days prior to any excavation. The Contractor is responsible for the support and protection of all utilities when excavating. The Contractor is responsible for ensuring proper clearances, including safety clearances from overhead utilities for construction equipment. The contractor is advised to check the site for access purposes for his equipment and, if necessary make arrangements directly with utility companies for field adjustments for adequate clearances.

2. It is understood and agreed that the contractor has considered in his bid all permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans or described in the utility statement and/or are readily discernible and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him/her to any interference from the utility facilities and appurtenances or the operation of moving the utilities, except that the contractor may be granted an equitable extension of time.

3. The Contractor shall follow all requirements of the Delaware Code, Title 26, Chapter 8. Underground Utility Damage Prevention And Safety. Chapter 8 includes, among other requirements, Section 806. Duties of Excavators which contains the requirement for the Contractor to excavate prudently and carefully and to take all reasonable steps necessary to properly protect, support and backfill underground utility lines. This protection shall include but may not be limited to hand digging, within the limits of the planned excavation or demolition, starting 2 feet of either side of the extremities of the underground utility line for other than

parallel type excavations and at reasonable distances along the line of excavation for parallel type excavations.

4. The states contractor is responsible for rough grading as required by the roadway construction prior to the utility companies placing their proposed facilities unless indicated on the plans and /or outlined elsewhere in these specifications.

5. The Contractor shall note that the Delaware Code, Chapter 74B, Section 7405B requires notification to and mutually agreeable measures from the public utility for any person intending to carry on any function, activity work or operation within dangerous proximity of any high voltage overhead lines

NOTE: Coordination and cooperation among the utilities and the State's Contractor are of prime importance, therefore, the Contractor is directed to contact the following Utility Representatives with any questions in regard to this work prior to submitting bids and work schedules. Proposed work schedules should reflect the Utility Companies' proposed relocations.

Mr. Bob Weigner	Delmarva Power Electric Distribution	(302)-934-3354
Mr. David Shapley	Delaware Electric Cooperative	(302)-349-3142
Mr. George Zang	Verizon Delaware Inc.	(302)-422-1238
Mr. Steve Parker	Mediacom	(302)-462-5120
Mr. Mike Scherer	Windstream	(302)-218-3696
Mr. Greg Corey	Tidewater Utilities	(302)-734-7500
Mr. Charles McMullen	Town of Ocean View	(302)-539-1208
Mr. Josh Turner	Tidewater Utilities (Ocean View work)	(302)-747-1349
Mr. Mike Izzo	Sussex County Engineering	(302)-855-7718

PREPARED AND RECOMMENDED BY:

CENTURY ENGINEERING, INC. — 5/30/13 DATE

APPROVED AS TO FORM BY:

UTILITIES SECTION, DELDOT — 6/3/13 DATE

APPENDIX A – Delmarva Power Facilities

Delmarva Power Existing Aerial Facilities

1. Line begins on pole DPL 59818/99785/ BJ30 on SR 26 (SR26) at station 14+40 and heads west crossing Vines Creek Rd. (S334) to pole DPL 59793/99793 and heads north to pole DPL 59778/99805/132-33. Line turns crossing S334 at station 329+00 to pole DST 33N-1.
2. Line begins on pole DPL 59818/99785/BJ30 on SR 26 at station 14+40 and heads west to pole DPL 59813/99783/BJ 31 and then crosses Powell Farm Rd. (S365) to pole DPL 59800/99772/IB2 continuing west crossing Omar Rd. (S54) to pole (no #) where it continues heading west on the north side of S 54 to the project limits.
3. Line begins on pole DPL 59813/99783/BJ31 on SR 26 at station 13+90 and heads south on the east side of S 365 to pole BJ30 where it continues to pole DST 2.
4. Line begins on pole DPL 59818/99785/ BJ30 on SR 26 station 14+40 and heads east on the south side of SR26 to pole DPL 60172/99877 at station 53+10 where it crosses SR26 to pole DPL 60211/99869/BJ-6.
5. Line continues heading east on the north side of SR26 to pole CONN 61705/9950 at station 212+00 to the project limits.
6. Line begins on pole DPL 59818/99785/BJ30 at station 14+40 crossing SR26 to pole (no #).
7. Line begins on pole DPL 59841/99799 at station 17+00 crossing SR26 to pole DPL 59837/99803/DST BJ28N.
8. Two Lines begin on pole DPL 59879/99819 at station 21+50 crossing SR26 one line to pole DPL 59870/99824 and one line to pole DST BJ26N.
9. Line begins on pole DPL 59899/99830 25 at station 23+80 crossing SR26 to pole DPL 59890/99832.
10. Line begins on pole DPL 59915 24 at station 25+45 crossing SR26 to pole DPL 59910/99843.
11. Line begins on pole DPL 59966/99864 1143BJ21 at station 31+15 crossing SR26 to house.
12. Line begins on pole DPL 59986/99876 BJ20 at station 33+82 crossing SR26 to pole DPL 59985/99875.
13. Line begins on pole DPL 60034/99894 147 17 at station 39+00 crossing SR26 to house.
14. Line begins on pole DPL 60054/99890 148 16 at station 41+05 crossing SR26 to house.
15. Line begins on pole DPL 60074/99894 at station 43+05 crossing SR26 to pole BJ15.
16. Line begins on pole DPL 60113/99888 151 at station 47+10 crossing SR26 to pole DPL 60112/99895/DST 12.
17. Line begins on pole DPL 60133/99884 at station 49+32 crossing SR26 to pole BJ DST10.
18. Line begins on pole DPL 60237/99854 at station 59+20 crossing SR26 to pole DPL60241/99844.

19. Line begins on pole DPL 60265/99839 at station 62+90 crossing SR26 heading south on the west side of SR17 to the project limits.
20. Line begins on pole DPL 60340/99843 at station 70+50 crossing SR26 to pole 60334/99836.
21. Line begins on pole CON 60360/99845 at station 72+40 crossing SR26 to pole CON 60358/99840.
22. Line begins on pole DPL 60378/99848 at station 74+40 crossing SR26 to pole 60379/99843.
23. Line begins on pole DPL 60396/99849 at station 76+10 crossing SR26 to pole DPL 603391/99840.
24. Line begins on pole CON 60435/99840 at station 80+10 crossing SR26 to pole DST 59 VG/59.
25. Line begins on pole DPL 60452/99832 at station 82+00 crossing SR26 to pole DST 58.
26. Line begins on pole DPL 60490/99811 at station 86+50 crossing SR26 to pole DPL 60488/99806 VG/55-1.
27. Line begins on pole DPL 60512/99799 at station 89+00. Line goes north and south. North line goes to pole DPL 60511/99809 to project limits. South line crossing SR26 to pole VG/54.
28. Line begins on pole DPL 60529/99789 at station 91+00 crossing SR26 to pole 60519/99788.
29. Line begins on pole DPL 60547/99779 at station 93+10 crossing SR26 to pole DPL 60545/99774.
30. Line begins on pole DPL 60561/99772 at station 94+60 crossing SR26 to pole DPL 60559/99767.
31. Line begins on pole DPL 60591/9963 at station 97+85 crossing SR26 to pole 60589/99758.
32. Line begins on pole DPL 60622/99760 at station 99+00 crossing SR26 to pole DST47.
33. Line begins on pole DPL 60643/99751 at station 103+20 crossing SR26 to pole DST44.
34. Line begins on pole DPL 60655/99747 at station 104+60 crossing SR26 to pole DPL60653/99741.
35. Line begins on pole DPL 60673/99739 at station 106+50 crossing SR26 to pole DPL60671/99734.
36. Line begins on pole DPL 60692/99735 at station 108+50 crossing SR26 to pole DPL60687/99732.
37. Line begins on pole DPL 60692/99735 at station 670+30 crossing S350 to pole DPL60698/99742.
38. Line begins on pole DPL 60708/99736 at station 110+20 crossing SR26 to pole DPL60701/99731 and also crossing to pole DST 39.
39. Line begins on pole DPL 60735/99738 at station 112+90 crossing SR26 and crossing Windmill Road to pole CON 60729/99726.
40. Line begins on pole DPL 60767/99734 at station 116+05 heading north to project limits.

41. Line begins on pole DPL 60783/99728 at station 117+90 crossing SR26 to pole DST34.
42. Line begins on pole DPL 60802/99720 at station 120+00 crossing SR26 to pole CON 60798/99709 on the west side of Dukes Dr.
43. Line begins on pole DPL 60825/99717 at station 122+40 crossing SR26 to pole VG30.
44. Line begins on pole DPL 60837/99717 at station 123+60 crossing SR26 to pole DST29.
45. Line begins on pole DPL 60570/99717 at station 126+60 crossing SR26 to pole DPL 60871/99712.
46. Line begins on pole DPL 60970/99707 at station 137+00 crossing SR26 to project limits.
47. Line begins on pole DPL 61010/99697 at station 141+00 crossing SR26 to pole DST18.
48. Line begins on pole DPL 61085/99675 at station 148+50 crossing SR26 to pole DPL 61084/99670.
49. Line begins on pole DPL 61109/99669 at station 151+00 crossing SR26 to pole DPL 6111/99665.
50. Line begins on pole DPL 61133/99663 at station 153+40 crossing SR26 to pole 208.
51. Line begins on pole DPL 61152/99659 at station 155+25 crossing SR26 to pole DPL 61157/99652.
52. Line begins on pole DPL 61213/99647 at station 161+25 crossing SR26 to pole DPL 61210/99641.
53. Line begins on pole DPL 61235/99642 at station 163+80 crossing SR26 to pole DST 4.
54. Line begins on pole DPL 61274/99634 at station 168+00 crossing SR26 to pole DPL 61626/99630.
55. Line begins on pole DPL 61294/99631 at station 170+00 crossing SR26 to pole DPL 61291/99626.
56. Line begins on pole DPL 61313/99626 at station 172+00 crossing SR26 to pole DST 2.
57. Line begins on pole DPL 61327/99624 at station 173+40 crossing SR26 to pole DPL 61323/99618.
58. Two lines begin on pole DPL 61346/99619 at station 175+25 one line heads north to the project limits and one line crossing SR26 to pole DST AA4 and continues south to the project limits.
59. Line begins on pole DPL 61365/91916 at station 177+30 crossing SR26 to pole DST 6.
60. Line begins on pole DPL 61379/99613 at station 178+60 crossing SR26 to pole DST 7.
61. Line begins on pole DPL 61398/99609 at station 180+60 crossing SR26 to pole DST 8.
62. Line begins on pole DPL 61418/99606 at station 182+60 crossing SR26 to pole DST 10.

63. Line begins on pole CON 61436/99603 at station 183+55 and line turns and heads north on the west side of Central Ave. to the project limits. Line also turns south crossing SR26 at station 183+55 to pole DPL 61430/99599. Line continues south on the west side of Central Ave. to the project limits.
64. Line begins on pole DPL 61470/99594 at station 187+50 crossing SR26 to pole DST14.
65. Line begins on pole DPL 61483/99590 at station 189+10 turning north and south to the project limits.
66. Line begins on pole DPL 61534/99577 at station 194+30 crossing SR26 to pole DPL 61535/99572.
67. Line begins on pole DPL 61551/99572 at station 196+30 crossing SR26 to pole CON 61546/99566 and also crossing SR26 to pole DST 21.
68. Line begins on pole DPL 61570/99567 at station 197+90 crossing SR26 to pole DPL 61568/99563.
69. Line begins on pole DPL 6158/99565 at station 199+60 crossing SR26 to pole DPL 61586/99858 on the west side of Tyler Dr.
70. Line begins on pole DPL 61640/99564 at station 205+50 crossing SR26 to pole DST AA30.

Delmarva Power Existing Underground Facilities

1. Line begins on pole DST 33N at station 10+80 and heads east 30' to DST pedestal BJ 33E.
2. Line begins on pole DPL 59800/49772 1B 2 at station 543+00 (Omar Road) and heads south 10' to meter pan.
3. Line begins on pole DPL 59837/99803 at station 16+95 and heads north 145' to meter pan.
4. Line begins on pole DPL 59860/99809 at station 19+25 and heads north 90' to DPL transformer.
5. Line begins on pole DPL 59870/99824 at station 21+00 and heads north out of project limits.
6. Two lines begins on pole 59915 24 at station 25+46 both lines head south 80' to meter pan.
7. Line begins on pole DPL 59966/99864 at station 31+40 and heads south to meter pan.
8. Line begins on pole DPL 59986/99876 at station 33+85 and heads south to meter pan.
9. Line begins on pole DPL 59985/99875 at station 348+40 on Irons Lane (S348) and heads north on the west side to transformer 5984/99907 at station 351+00.
10. Line begins in transformer 59984/99907 at station 351+00.and heads south 5' to street light 5984/99904.
11. Line begins on pole DPL 59997/99881 at station 35+00 and heads south to meter pan.
12. Line begins on pole DPL 60034/99894 at station 39+00 and heads south to meter pan.

13. Line begins on pole DPL 60094/99891 at station 45+00 and heads south to meter pan.
14. Line begins on pole DPL 60113/99888 at station 47+10 and heads west 40' then turns south to project limits.
15. Line begins on pole DPL 60133/99884 at station 49+35 and heads south 40'
16. Two lines begin on pole DPL 60154/99881 at station 51+30, one line heads south to meter pan and one line heads north crossing SR26 to a pedestal on the north side of SR26,Where the line splits in to two lines and both lines head north to a meter pan.
17. Line begins on pole DPL 60172/99877 at station 53+20 and heads south to meter pan.
18. Line begins on pole DPL 60211/99869 at station 56+25 and heads west for 190' then the line turns and heads north 60' to transformer 60190/99908.
19. Two lines begins on pole DPL 60224/99862 at station 57+80 one line heads north to a meter pan and one line crosses SR26 heading south to a meter pan.
20. Four lines begin on pole DPL 60241/99844 at station 60+20 all four lines head south to four meter pans.
21. Line begins on pole DPL 60298/99839 at station 66+10 and heads east for 45' then turns north to project limits.
22. Line begins on pole DPL 60320/99841 at station 68+45 and heads south to a meter pan.
23. Line begins on pole DPL 60334/99836 at station 70+00 and heads south to a meter pan.
24. Line begins on pole DPL 60379/99843 at station 74+50 and heads south to project limits.
25. Line begins on pole DPL 603911/99840 at station 75+50 and heads south to project limits.
26. Line begins on pole DPL 60452/99832 at station 82+00 and heads west for 90' then north to project limits.
27. Line begins on pole DPL 60469/99822 at station 84+10 and heads north to project limits.
28. Line begins on pole DPL 60488/99806 at station 86+50 heading west to Warren Rd. then turning south to project limits.
29. Line begins on pole DPL 60547/99779 at station 93+10 and heads south to a meter pan.
30. Line begins on pole DPL 60561/99772 at station 94+75 and heads north to meter pan.
31. Line begins on pole DPL 60571/99768 at station 95+80 and heads north to meter pan.
32. Line begins on pole DPL 60591/9963 at station 97+85 and heads north to meter pan.
33. Line begins on pole DPL 60622/99760 at station 99+10 and heads north to meter pan.
34. Line begins on pole DPL 60622/99756 at station 101+10 and heads north to the project limits.
35. Line begins on pole DST 45 at station 102+00 and heads south to a meter pan.

36. Line begins on pole DPL 60653/99741 at station 104+60 and heads south to a meter pan.
37. Line begins on pole DPL 60701/99731 at station 109+60 and heads south to a meter pan.
38. Line begins on pole DPL 60726/99737 at station 112+10 and heads north out of the project limits.
38. Line begins on pole DPL 60767/99734 at station 116+20 and heads north to a meter pan.
39. Line begins on pole DPL 60570/99717 at station 126+55 and heads north to a meter pan.
40. Line begins on pole DPL 60871/99712 at station 126+65 and heads south to a meter pan.
41. Two lines begin on pole DPL 60903/99718 at station 130+40 one line heads south to the project limits and one line heads north to a meter pan.
42. Two lines begin on pole DPL 60970/99707 at station 137+00 one line heads north on the east side of Docs Place to the project limits. And one line heads west to the west side of Docs Place then turns north to the project limits.
43. Line begins on pole DST 18 at station 140+60 and head south to a meter pan.
44. Line begins on pole DPL 61021/99685 at station 142+30 and heads south to a meter pan.
45. Line begins on pole DPL 61042/99686 at station 144+10 crossing SR26 to the project limits.
46. Line begins on pole #6 at station 146+65 and heads south to a meter pan.
47. Two lines begin on pole DPL 61084/99670 at station 148+20 one line heads south to a meter pan. And one line heads east 35' then turns north crossing SR26 to a meter pan.
48. Line begins on pole DPL 61109/99669 at station 151+00 and heads west crossing Grants Ave. and then turns north to project limits.
49. Line begins on pole DPL 6111/99665 at station 151+20 and heads south to a meter pan.
50. Line begins on pole DPL 61110/99667 at station 151+90 and heads north to a meter pan.
51. Line begins on pole 208A at station 153+00 and heads south to a meter pan.
52. Line begins on pole DPL 61152/99659 at station 155+30 and heads north to a meter pan.
53. Two lines begin on pole DPL 61170/99564 at station 157+20 both lines head north to a meter pan.
54. Line begins on pole DPL 61212/99649 at station 161+20 and heads north to a meter pan.
55. Two Lines begins on pole DPL 61210/99641 at station 161+20 and both lines head south to a meter pan.
56. Line begins on pole DST 4 at station 163+50 and heads south to a meter pan.
57. Line begins on pole DPL 61235/99642 at station 163+80 and heads north to a meter pan.
58. Line begins on pole DPL 61274/99634 at station 168+00 and heads north to a meter pan.

59. Line begins on pole DPL 61291/99626 at station 169+80 and heads south to a meter pan.
60. Line begins on pole DPL 61294/99631 at station 170+00 and heads north to a meter pan.
61. Line begins on pole DST 2 at station 171+20 and heads south to a meter pan.
62. Two Lines begins on pole DPL 61379/99613 at station 178+65 both lines head north to a meter pan.
63. Line begins on pole DPL 61318/99306 at station 182+50 and heads north to a meter pan.
64. Line begins on pole DPL 61405/99591 at station 903+00 on Central Ave. and heads north to a meter pan.
65. Line begins on pole DPL 61450/99599 at station 185+65 and heads north to a meter pan.
66. Line begins on pole DST 14 at station 187+10 and heads south to a meter pan.
67. Line begins on pole AA20-1 at station 194+55 and heads south to the project limits.
68. Line begins on pole DPL 61548/99569 at station 195+80 and heads south to a meter pan.
69. Line begins on pole DPL 61551/99572 at station 196+00 and heads north to a meter pan.
70. Line begins on pole DPL 61587/99565 at station 199+75 and heads north to a meter pan.
71. Line begins on pole DPL 61586/99858 at station 199+70 and heads south to the project limits.
72. Line begins on pole DPL 61609/99565 at station 202+15 and heads north to a meter pan.
73. Line begins on pole DPL 61640/99564 at station 205+50 and heads north to a meter pan.
74. Line begins on pole DST AA30 at station 205+80 and heads south to a meter pan.
75. Line begins on pole DPL 61650/99562 at station 206+65 and heads east 90' then turns and heads north to the project limits.
76. Line begins on pole DPL 61670/99558 at station 208+50 and heads north to the project limits.
77. Line begins on pole DPL 61686/99553 at station 210+10 and heads north to a meter pan.
78. Line begins on pole CONN 61705/9950 at station 211+80 and heads south 90' crossing SR26, then turns east for 40' then turn south to project limits.

Delmarva Power Proposed New Pole Locations

CONSTRUCTION SEQUENCE SECTION 4

1. Install light standard on existing pole at station 10+90 30' right of baseline.
2. Install new pole for light standard at station 12+25 27' left of baseline.
3. Install new pole at station 13+20 38' right of baseline. Install light standard.

4. Install new pole at station 607+50 33' right of baseline (Powell Farm Road). Install light standard.
5. Install light standard on existing pole at station 14+85 40 left of baseline.
6. Install new pole for light standard at station 15+35 30' right of baseline.
7. Install new pole at station 16+90 25' left of baseline. Install light standard.
8. Install new pole at station 19+25 25' right of baseline.
9. Install new pole and anchor at station 21+50 40' right of baseline.
10. Install new pole at station 23+80 40' right of baseline.
11. Install new pole at station 25+45 40' right of baseline.
12. Install new pole at station 27+40 40' right of baseline.
13. Install new pole at station 29+38 40'right of baseline.
14. Install new pole at station 31+42 40' right of baseline.
15. Install new pole at station 31+90 36' left of baseline.
16. Install new pole at station 33+32 38' right of baseline.
17. Install new pole on Irons Lane at station 348+29 38' left of baseline. Install light standard
18. Install new pole on Irons Lane at station 348+66 54' right of baseline. Install light standard.
19. Install new pole at station 35+00 45' right of baseline.
20. Install new pole and push pole at station 37+00 42' right of baseline.
21. Install new pole and push pole at station 39+10 62' right of baseline.
22. Install new pole and push pole and anchors at station 41+07 45' right of baseline.
23. Install new pole and push pole at station 42+00 26' right of baseline.
24. Install new pole at station 43+07 25' right of baseline.
25. Install new pole at station 45+05 27' right of baseline.
26. Install new pole at station 47+12 33' right of baseline.
27. Install new pole at station 49+40 40' right of baseline.
28. Install new pole at station 50+90 42' right of baseline.
29. Install new pole and anchors at station 56+30 40' left of baseline.
30. Install new pole at station 57+78 40' left of baseline.
31. Install new pole and anchor at station 59+37 40' left of baseline.
32. Install new pole and anchors at station 60+20 40' right of baseline. Install light standard.
33. Install new pole and anchor at station 61+30 47' left of baseline. Install light standard.

CONSTRUCTION SEQUENCE SECTION 3

1. Install new pole for light standard at station 62+50 35' right of baseline.
2. Install new pole and push pole at station 63+50 36' left of baseline. Install light standard.
3. Install new pole for light standard at station 64+75 33' right of baseline.
4. Install new pole for light standard on SR 17 at station 651+00 29' left of baseline.
5. Install new pole for light standard on SR 17 at station 651+28 35' right of baseline.
6. Install new pole at station 64+78 45' left of baseline.

7. Install new pole at station 70+50 45' left of baseline.
8. Install new pole and anchor at station 74+40 40' left of baseline.
9. Install new pole and anchor at station 74+50 40' right of baseline.
10. Install new pole and anchor at station 76+10 40' left of baseline.
11. Install new pole at station 76+25 38' right of baseline.
12. Install new pole and anchor at station 77+55 40' left of baseline.
13. Install new pole and anchor at station 77+65 38' right of baseline.
14. Install new pole and anchor at station 78+23 38' left of baseline.
15. Install new pole and anchor at station 80+71 26' left of baseline.
16. Install new pole and anchor at station 82+05 28' left of baseline.
17. Install new pole at station 86+50 39' right of baseline.
18. Install light standard on existing pole station 89+10 36' left of baseline.
19. Install new pole at station 91+00 40' left of baseline.
20. Install new pole at station 90+27 36' right of baseline.
21. Install new pole at station 93+15 40' left of baseline. Install light standard.
22. Install new pole and anchor at station 93+10 36' right of baseline.
23. Install new anchors for pole at station 94+72 25' left of baseline.
24. Install new pole and anchor at station 94+90 36' right of baseline.
25. Install new pole at station 95+80 25' left of baseline. Install light standard.
26. Install new pole at station 97+85 25' left of baseline. Install light standard.
27. Install new pole at station 99+05 25' left of baseline.
28. Install new pole at station 101+05 25' left of baseline.
29. Install new pole and anchor at station 103+34 25' left of baseline.
30. Install new pole at station 104+57 27' left of baseline.
31. Install new pole and anchors at station 104+63 25' right of baseline.
32. Install new pole and anchor at station 106+55 26' right of baseline.
33. Install new pole at station 108+10 25' left of baseline. Install light standard.
34. Install new pole and anchor at station 108+07 26' right of baseline.
35. Install new pole at station 109+58 25' right of baseline.
36. Install new pole and anchor at station 109+85 36' left of baseline. Install light standard.
37. Install new anchors on existing pole on Railway Road station 670+91 24' right of baseline. Install light standard.
38. Install new pole at station 109+58 25' right of baseline.
39. Install new pole and anchor at station 109+84 36'left of baseline. Install light standard.
40. Install new pole and anchor at station 111+80 30' left of baseline. Install light standard.
41. Install new pole at station 112+85 27' left of baseline. Install light standard.
42. Install new pole and anchor at station 113+90 25' left of baseline.

CONSTRUCTION SEQUENCE SECTION 2

1. Install new pole and anchor at station 115+08 25' left of baseline.
2. Install new pole and anchor at station 116+53 25' left of baseline. Install light standard.

3. Install new pole at station 117+93 25' left of baseline.
4. Install new pole at station 119+16 25' left of baseline.
5. Install new pole at station 120+70 25' left of baseline.
6. Install new pole at station 122+44 25' left of baseline.
7. Install new pole and anchor at station 123+63 25' left of baseline.
8. Install new pole at station 124+95 25' left of baseline. Install light standard.
9. Install new pole and anchor at station 126+75 25' left of baseline.
10. Install new pole at station 126+90 25' left of baseline.
11. Install new pole at station 128+33 25' left of baseline.
12. Install light standard on existing pole at station 130+33 39' left of baseline.
13. Install new pole at station 131+60 36' right of baseline. Install light standard.
14. Install new pole at station 131+66 33' left of baseline. Install light standard.
15. Install new pole for light standard at station 133+13 34' left of baseline.
16. Install new pole for light standard at station 135+62 34' left of baseline.
17. Install new light standard on existing pole at station 139+07 34' left of baseline.
18. Install new pole at station 142+26 25' right of baseline.
19. Install new pole and anchor at station 142+30 25' left of baseline.
20. Install new pole and anchor at station 146+70 35' left of baseline.
21. Install new pole at station 148+20 25' right of baseline.
22. Install new pole and anchor at station 148+53 33' left of baseline.
23. Install new pole at station 150+80 33' left of baseline.
24. Install new pole and anchor at station 151+23 25' right of baseline.
25. Install new pole at station 151+90 25' left of baseline.
26. Install new pole and anchor at station 152+70 25' left of baseline.
27. Install new pole at station 153+25 25' left of baseline.
28. Install new pole at station 155+28 25' left of baseline.
29. Install new pole at station 157+16 25' left of baseline.
30. Install new pole at station 158+32 25' left of baseline.
31. Install new pole at station 159+37 25' left of baseline.
32. Install new pole at station 160+14 25' left of baseline.
33. Install new light standard on existing pole at station 161+20 40' left of baseline.
34. Install new pole at station 162+50 25' left of baseline.
35. Install new pole at station 163+85 25' left of baseline. Install light standard.
36. Install new pole at station 165+87 25' left of baseline.
37. Install new pole at station 167+40 25' right of baseline.
38. Install new pole at station 167+83 25' left of baseline. Install light standard.
39. Install new pole at station 169+98 25' left of baseline. Install light standard.
40. Install new pole at station 171+95 25' left of baseline. Install light standard.
41. Install new pole at station 173+33 25' left of baseline.
42. Install new pole for light standard at station 174+15 35' right of baseline.
43. Install new pole at station 174+57 26' left of baseline. Install light standard.
44. Install new pole for light standard on Woodland Ave. at station 730+75 14' left of baseline.
45. Install new pole on Woodland Ave. at station 730+87 25' right of baseline.
46. Install new pole for light standard on Woodland Ave. at station 732+50 28' left of baseline.

47. Install new pole on Woodland Avenue at station 732+94 15' right of baseline. Install new light standard.
48. Install new pole at station 175+82 35' left of baseline. Install light standard.
49. Install new pole at station 177+21 33' left of baseline.
50. Install new pole and anchor at station 178+65 25' left of baseline. Install light standard.
51. Install new pole at station 180+55 25' left of baseline.
52. Install new light standard on existing pole at station 182+51 27' left of baseline.
53. Install new light standard on existing pole at station 183+64 30' left of baseline.

CONSTRUCTION SEQUENCE SECTION 1

1. Install new light standard on existing pole on Central Avenue at station 903+30 15' right of baseline.
2. Install new pole on Central Ave. at station 904+95 25' left of baseline. Install light standard.
3. Install new light standard on existing pole on Central Avenue at station 905+43 26' right of baseline.
4. Install new pole for light standard on Central Avenue at station 906+80 40' right of baseline.
5. Install new light standard on existing pole on Central Avenue at station 909+03 24' left of baseline.
6. Install new pole and anchor at station 185+66 35' left of baseline. Install light standard.
7. Install new pole at station 186+52 25' left of baseline.
8. Install new pole at station 187+63 25' left of baseline. Install light standard.
9. Install new pole for light standard at station 188+65 45' right of baseline.
10. Install new pole at station 189+02 32' left of baseline. Install light standard.
11. Install new pole at station 189+68 29' right of baseline. Install light standard.
12. Install new pole on West Avenue at station 367+39 31' right of baseline. Install light standard.
13. Install new pole for light standard on West Ave. at station 368+22 28' left of baseline.
14. Install new pole on West Avenue at station 361+62 16' left of baseline. Install light standard.
15. Install new pole at station 192+88 23' left of baseline. Install light standard.
16. Install new pole at station 194+25 25' left of baseline.
17. Install new pole at station 194+63 33' right of baseline.
18. Install new pole and anchor at station 196+05 24' left of baseline.
19. Install new pole and anchor at station 199+72 32' left of baseline.
20. Install new pole and anchor at station 202+11 35' left of baseline.
21. Install new light standard on existing pole at station 205+44 33' left of baseline.
22. Install new pole and anchor at station 206+74 33' left of baseline.
23. Install new light standard on existing pole at station 208+52 31' left of baseline.

24. Install new light standard on existing pole at station 210+16 42' left of baseline.

Delmarva Power Electric Distribution proposed changes to the aerial facilities include, but are not limited to:

CONSTRUCTION SEQUENCE SECTION 4

1. Maintain the existing facilities as is SR 26 sta. 14+40 crossing Vines Creek Road.
2. Maintain the existing facilities as is SR 26 sta. 14+40, crossing Powell Farm Road and heading west along Omar Road.
3. Delmarva Power will transfer the existing power Line from pole BJ30 to the new DST pole at station 369+40.
4. Install new lines on the south side of SR26 beginning at station 14+40 to station 53+10
5. Install new lines beginning on the south side of SR26 at station 53+10 crossing SR26 to pole DPL 60211/99869 on the north side of SR26 and the continue to pole 61705/9950 station 212+00 at the project limits.
6. Maintain the existing facilities as is at SR 26 sta. 14+40 and crossing SR 26.
7. Install a new line across SR26 at station 17+00 from pole DPL 59841/99799 to pole DPL 59837/99803.
8. Install a new line across SR26 at station 21+50 from pole DPL 59879/99819 to pole DPL 59870/99824 also from pole DPL 59879/99819 to pole DSTBJ28N.
9. Install a new line across SR26 at station 23+80 from pole DPL 59899/99830 25 to pole DPL 59890/99832.
10. Install a new line across SR26 at station 25+45 from pole DPL 59915 24 to DPL 59890/99832.
11. Install new house service at station 31+15.
12. Install a new line across SR26 at station 33+82 from pole DPL 59986/99876 BJ20 to DPL 59985/99875.
13. Install new house service at station 39+00.
14. Install new house service at station 41+05.
15. Install a new line across SR26 at station 43+05 from pole DPL 60074/99894 to pole BJ15.
16. Install a new line across SR26 at station 47+10 from pole DPL 60113/99888 to pole DPL 60112/99895 DST12.
17. Install a new line across SR26 at station 49+32 from pole DPL 60113/99884 to pole DST10.
18. Install a new line across SR26 at station 59+20 from pole DPL 60237/99854 to pole DPL60241/99844.
19. Install new line from pole DPL 60265/99839 crossing SR26 at station 62+90 heading south on the west side of SR17 to the project limits.

CONSTRUCTION SEQUENCE SECTION 3

20. Install a new line across SR26 at station 70+50 from pole DPL 60340/99843 to pole DPL60334/99836.
21. Install a new line across SR26 at station 72+40 from pole DPL 60360/99845 to pole DPL60358/99840.
22. Install a new line across SR26 at station 74+40 from pole DPL 60378/99848 to pole DPL60379/99843.
23. Install a new line across SR26 at station 76+10 from pole DPL 60396/99849 to pole DPL603391/99840.
24. Install a new line across SR26 at station 80+10 from pole DPL 60435/99840 to pole DST 59.
25. Install a new line across SR26 at station 82+00 from pole DPL 60452/99832 to pole DST 58.
26. Install a new line across SR26 at station 82+00 from pole DPL 60490/99811 to pole DPL 60488/99806 VG/55-1.
27. At station 89+00 on pole DPL 60512/99799 transfer the existing line to the new pole location also install a new line across SR26 to the new pole VG/54.
28. Install a new line across SR26 at station 91+00 from pole DPL 60529/99789 to pole DPL 60519/99788.
29. Install a new line across SR26 at station 93+10 from pole DPL 60547/99779 to pole DPL 60545/99774.
30. Install a new line across SR26 at station 94+60 from pole DPL 60561/99772 to pole DPL 60559/99767.
31. Install a new line across SR26 at station 97+85 from pole DPL 60591/9963 to pole DPL 60589/99758.
32. Install a new line across SR26 at station 99+00 from pole DPL 60622/99760 to pole DST 47.
33. Install a new line across SR26 at station 99+00 from pole DPL 60622/99760 to pole DST 47.
34. Install a new line across SR26 at station 104+60 from pole DPL 60655/99747 to pole DPL60653/99741.
35. Install a new line across SR26 at station 106+50 from pole DPL 60673/99739 to pole DPL60671/99734.
36. Install a new line across SR26 at station 108+50 from pole DPL 60692/99735 to pole DPL60687/99732.
37. Install a new line across SR350 at station 350+30 from pole DPL 60692/99735 to pole DPL60698/99742.
38. Install a new line across SR26 at station 110+20 from pole DPL 60708/99736 to pole DPL60701/99731 also install a new line from pole 60708/99736 to DST 39.
39. Install a new line across SR26 at station 112+10 from pole DPL 60735/99738 to pole DPL60729/99726 and then continue to pole DPL 60727/99709.
40. Transfer the existing line at station 116+05 from pole DPL 60767/99734 to the new pole location on Clubhouse Road.

CONSTRUCTION SEQUENCE SECTION 2

41. Install a new line across SR26 at station 117+90 from pole DPL 60783/99728 to pole DST34.
42. Install a new line across SR26 at station 119+90 from pole DPL 60802/99720 to pole DPL 60810/99714 continuing south to pole DPL 60798/99709.
43. Install a new line across SR26 at station 122+40 from pole DPL 60825/99717 to pole VG 30.
44. Install a new line across SR26 at station 123+60 from pole DPL 60837/99717 to pole DST29.
45. Install a new line across SR26 at station 126+60 from pole DPL 60570/99717 to pole DPL 60871/99712.
46. Install a new line across SR26 at station 137+00 from pole DPL 60970/99707 to the project limits.
47. Install a new line across SR26 at station 141+00 from pole DPL 61010/99697 to pole DST 18.
48. Install a new line across SR26 at station 148+50 from pole DPL 61085/99675 to pole DPL 61084/99670.
49. Install a new line across SR26 at station 151+00 from pole DPL 61109/99669 to pole DPL 6111/99665.
50. Install a new line across SR26 at station 153+40 from pole DPL 61133/99663 to pole 208.
51. Install a new line across SR26 at station 155+25 from pole DPL 61152/99659 to pole DPL 61157/99652.
52. Install a new line across SR26 at station 161+25 from pole DPL 61213/99647 to pole DPL 61210/99641.
53. Install a new line across SR26 at station 163+80 from pole DPL 61235/99642 to pole DST 4.
54. Install a new line across SR26 at station 168+00 from pole DPL 61274/99634 to pole DPL 61626/99630.
55. Install a new line across SR26 at station 170+00 from pole DPL 61294/99631 to pole DPL 61291/99626.
56. Install a new line across SR26 at station 172+00 from pole DPL 61313/99626 to pole DST 2.
57. Install a new line across SR26 at station 173+40 from pole DPL 61327/99624 to pole DPL 61323/99618.
58. Transfer the existing line to the north to the new pole location ,install a new line cross SR26 at station 175+25 from pole DPL61346/99619 to pole DST AA4 and continue south to the project limits.

CONSTRUCTION SEQUENCE SECTION 1

59. Install a new line across SR26 at station 177+30 from pole DPL 61365/91916 to pole DST 6.
60. Install a new line across SR26 at station 178+60 from pole DPL 61379/99613 to pole DST 7.
61. Install a new line across SR26 at station 180+60 from pole DPL 61398/99609 to pole DST 8.

62. Install a new line across SR26 at station 182+60 from pole DPL 61418/99606 to pole DST 10.
63. Install a new line across SR26 at station 183+55 from pole DPL 61436/99603 to pole DPL 61430/99599 line also continues south to the project limits.
64. Install a new line across SR26 at station 187+50 from pole DPL 61470/99594 to pole DST 14.
65. Install a new line across SR26 at station 189+10 from pole DPL 61483/99590 to pole DPL 61487/99573 also install a new line to pole DPL 61585/99602.
66. Install a new line across SR26 at station 194+30 from pole DPL 61534/99577 to pole DPL 61535/99572.
67. Install a new line across SR26 at station 196+30 from pole DPL 61551/99572 to pole DPL 61546/99566 also install a new line across SR26 to pole DST 21.
68. Install a new line across SR26 at station 197+90 from pole DPL 61570/99567 to pole DPL 61568/99563.
69. Install a new line across SR26 at station 199+60 from pole DPL 6158/99565 to pole DPL 61586/99858.
70. Install a new line across SR26 at station 205+50 from pole DPL 61640/99564 to pole DST AA30.

Delmarva Power Electric Distribution proposed changes to the Underground facilities include, but are not limited to:

CONSTRUCTION SEQUENCE SECTION 4

1. At station 10+80 maintain the existing facilities as is.
2. At station 12+20 maintain the existing facilities as is.
3. At station 16+95 relocate the existing cable to the new pole (DPL 59837/99803) location.
4. At station 19+25 install new cable from the new pole (DPL 59860/99809) crossing SR26 to the existing transformer.
5. At station 21+00 maintain the existing facilities as is.
6. At station 25+46 relocate the existing cable to the new pole (59915 24) location.
7. At station 31+40 relocate the existing cable to the new pole (DPL 59966/99864) location.
8. At station 33+85 relocate the existing cable to the new pole (DPL 59986/99876) location.
9. Install new cable from the new pole DPL 59985/99875 to station 349+50 then splits to the existing cable.
10. At station 351+00 maintain the existing facilities as is.
11. At station 35+00 relocate the existing cable to the new pole (DPL 59997/99881) location.
12. At station 39+00 relocate the existing cable to the new pole (DPL 60034/99894) location.
13. At station 45+00 relocate the existing cable to the new pole (DPL 60094/99891) location.

14. At station 47+10 relocate the existing cable to the new pole (DPL 60113/99888) location.
15. At station 49+35 relocate the existing cable to the new pole (DPL 60133/99884) location.
16. At station 51+30 relocate the existing cable going south to the new pole (DPL 60154/99881) location, and install new cable crossing SR26 to the existing pedestal.
17. At station 53+20 relocate the existing cable to the new pole (DPL 60172/99877) location.
18. At station 56+25 relocate the existing cable to the new pole (DPL 60211/99869) location.
19. At station 57+80 relocate the existing cable to the new pole (DPL 60224/99862) location and install new cable crossing SR26 to the existing meter pan.
20. At station 60+20 relocate the existing cable to the new pole (DPL 60241/99844) location

CONSTRUCTION SEQUENCE SECTION 3

21. At station 66+10 relocate the existing cable to the new pole (DPL 60298/99839) location
22. At station 68+45 splice the existing cable and install new cable to the new pole (DPL 60320/99841) location.
23. At station 70+00 maintain the existing facilities as is.
24. At station 74+50 relocate the existing cable to the new pole (DPL 60379/99843) location
25. At station 70+00 maintain the existing facilities as is.
26. At station 82+00 relocate the existing cable to the new pole (DPL 60452/99832) location
27. At station 84+10 maintain the existing facilities as is.
28. At station 86+50 relocate the existing cable to the new pole (60488/99806) location
29. Splits and extend the existing cable to the new pole (DPL 60541/99779) location at station 93+10.
30. At station 94+50 maintain the existing facilities as is.
31. At station 95+80 relocate the existing cable to the new pole (DPL 60571/99768) location.
32. At station 97+85 relocate the existing cable to the new pole (DPL 60591/9963) location.
33. At station 99+10 relocate the existing cable to the new pole (DPL 60622/99760) location.
34. At station 101+10 relocate the existing cable to the new pole (DPL 60622/99756) location.
35. At station 102+10 relocate the existing cable to the new pole (DST 45) location.
36. At station 104+60 relocate the existing cable to the new pole (DPL 60653/99741) location.

37. At station 109+60 relocate the existing cable to the new pole (DPL 60701/99731) location.

CONSTRUCTION SEQUENCE SECTION 2

38. At station 116+20 relocate the existing cable to the new pole (DPL 60767/99734) location.
39. At station 126+55 relocate the existing cable to the new pole (DPL 60570/99717) location.
40. At station 126+65 relocate the existing cable to the new pole (DPL 60871/99717) location.
41. At station 130+40 Splice relocate the existing cable going north to the new pole (DPL 60903/99718) location, relocate the line heading south to the new pole location.
42. At station 137+00 replace the existing cable crossing SR26 outside of the road box.
43. At station 140+60 relocate the existing cable to the new pole (no#) location.
44. At station 142+30 relocate the existing cable to the new pole (DPL 61021/99685) location.
45. At station 144+10 replace the existing cable crossing SR26 outside of the road box.
46. At station 146+65 relocate the existing cable to the new pole (#6) location.
47. At station 148+20 relocate the existing cable to the new pole (DPL 61084/99670) location; replace the existing cable crossing SR26 outside of the road box.
48. At station 151+00 replace the existing cable crossing Grants Ave. outside of the road box.
49. At station 151+20 relocate the existing cable to the new pole (DPL 6111/99665) location.
50. At station 151+90 relocate the existing cable to the new pole (DPL 61110/99667) location.
51. At station 153+00 maintain the existing facilities as is.
52. At station 155+30 relocate the existing cable to the new pole (DPL 61152/99659) location.
53. At station 157+20 relocate both lines to the new pole (DPL 61170/99564) location.
54. At station 161+20 splice and extend the existing cable to the new pole (DPL 61212/99649) location.
55. At station 161+20 maintain the existing facilities as is.
56. At station 163+50 relocate the existing cable to the new pole (DST 4) location.
57. At station 163+80 relocate the existing cable to the new pole (DPL 61235/99642) location.
58. At station 168+00 install new cable from the new pole (DPL 61274/99634) location to the meter pan.
59. At station 169+80 maintain the existing facilities as is.
60. At station 170+00 relocate the existing cable to the new pole (DPL 61294/99631) location.

61. At station 171+20 relocate the existing cable to the new pole (DST 2) location.

CONSTRUCTION SEQUENCE SECTION 1

62. At station 178+65 relocate the existing cable to the new pole (DPL 61379/99614) location.
63. At station 182+50 relocate the existing cable to the new pole (DPL 61318/99306) location.
64. At station 81+00 relocate the existing cable to the new pole (DPL 61405/99591) location.
65. At station 185+65 relocate the existing cable to the new pole (DPL 61450/99599) location.
66. At station 187+10 relocate the existing cable to the new pole (DST 14) location.
67. At station 194+55 relocate the existing cable to the new pole (AA20-1) location.
68. At station 195+80 relocate the existing cable to the new pole (DPL 61548/99569) location.
69. At station 196+00 relocate the existing cable to the new pole (DPL 61551/99572) location.
70. At station 199+75 relocate the existing cable to the new pole DPL 61587/99565) location.
71. At station 199+70 maintain the existing facilities as is.
72. At station 202+15 relocate the existing cable to the new pole (DPL 61609/99565) location.
73. At station 205+50 relocate the existing cable to the new pole (DPL 6150/99564) location.
74. At station 205+80 splice and extend the existing cable to the new pole (DST AA30) location.
75. At station 206+65 relocate the existing cable to the new pole (DPL 6150/99562) location.
76. At station 208+50 relocate the existing cable to the new pole (DPL 61670/99558) location.
77. At station 210+10 maintain the existing facilities as is.
78. At station 211+80 relocate the existing cable outside of the road box.

APPENDIX B – Verizon Delaware Inc. Facilities

Verizon Delaware, Inc. existing aerial facilities:

1. Line begins on pole DPL 59813/99783/ BJ31 on SR 26at station 13+90 and heads west crossing Vines Creek Rd. (S334) to pole DPL 59793/99793and heads north to pole DPL 59778/99805/132-33, where it continues to the project limits.
2. Line begins on pole DPL 59818/99785/BJ30 on SR 26 at station 14+40 and heads west crossing Powell Farm Rd. (S365) to pole DPL 59800/49772/IB2 continuing west crossing Omar Rd. (S54) to pole (no #) where it continues heading west on the north side of S54 to the project limits.
3. Line begins on pole DPL 59813/99783/BJ31 on SR 26 at station 13+90 and heads south on the east side of Rd. 365 to the project limits.
4. Line begins on pole DPL 59818/99785/ BJ30 on SR 26 at station 14+40 and heads east on the south side of SR26 to pole DPL 60054/99890/148-16 at station 41+00 where it crosses SR26 to pole BJ15.
5. From pole BJ 15,line heading east on the north side of SR26 to pole DPL 60378/99848 at station 74+40 where it crosses SR26 to pole DPL 60379/99843/VG/64.
6. Line begins on the south side of SR26 on pole DST 63 at station 76+00 and continues east to pole 61548/99569 at station 195+85 where the line splits. One line continuing to pole DPL 61568/99563 and one line crossing SR26 to pole DPL 61570/99567 where the line continues east on the north side of SR26 to the project limits.
7. Line begins on pole DPL 59841/99799 at station 17+00 crossing SR26 to pole DPL 59837/99803.
8. Line begins on pole DPL 59879/99819 at station 21+25 crossing SR26 to pole DPL 59870/99824.
9. Line begins on pole DPL 59899/99830 at station 23+50 crossing SR26 to a pole (no#).
10. Mid span tap at station 24+50 crossing SR26 to a pole (no#).
11. Line begins on pole DPL 59966/99864 at station 31+10 crossing SR26 to house.
12. Line begins on pole DPL 59997/99881 at station 34+80 crossing SR26 to pole DEC 19004.
13. Line begins on pole BJ15 at station 42+40 crossing SR26 to pole DPL 60064/99895.
14. Line begins on pole BJ15 at station 42+40 crossing SR26 to pole DPL 60074/99894.
15. Line begins on pole DST BJ/14/49768 at station 44+10 crossing SR26 to house.
16. Line begins on pole DST BJ/14/49768 at station 44+10 crossing SR26 to pole DPL 60094/99891.
17. Line begins on pole 60340/99843 at station 70+50 crossing SR26 to pole 60334/99836.
18. Line begins on pole DPL 60378/99848 at station 74+50 crossing SR26 to pole 60379/99843.
19. Line begins on pole DST58 at station 82+00 crossing SR26 to pole 60452/99832.

20. Line begins on pole DST VG/56 at station 85+40 crossing SR26 to pole commercial building.
21. Line begins on pole DST 52 at station 91+60 crossing SR26 to pole DPL 60529/99789.
22. Line begins on pole DPL 60559/99767 at station 94+60 crossing SR26 to pole DPL 60561/99772.
23. Line begins on pole DPL 60569/99762 at station 95+65 crossing SR26 to pole DPL 60571/99768.
24. Line begins on pole DPL 60589/99758 at station 97+80 crossing SR26 to pole DPL 60591/9963.
25. Line begins on pole DST 47 at station 98+80 crossing SR26 to pole DPL 60622/99760.
26. Line begins on pole DST 45 at station 102+00 crossing SR26 to pole DPL 60622/99756.Another line also crosses SR26 to pole DST 45N.
27. Line begins on pole DPL 60653/99741 at station 104+50 crossing SR26 to house.
28. Line begins on pole DST VG38 at station 112+05 two lines crossing SR26 one line to pole DPL 60726/99739 and one line to the house.
29. Line begins on pole DST 37 at station 113+80 crossing SR26 to pole DPL 60745/99738.
30. Line begins on pole DPL 60764/99729 at station 116+05 crossing SR26 to the project limits.
31. Line begins on pole DPL 60801/99714 at station 119+90 crossing SR26 to pole DPL 60802/99720 line continues west on the north side of SR26 to pole DPL 60783/99728.
32. Line begins on pole VG31 at station 120+90 crossing SR26 to pole DPL 60811/99717.
33. Line begins on pole VG30 at station 122+40 crossing SR26 to pole DPL 60825/99717.
34. Line begins on pole DST 29 at station 124+10 crossing SR26 to pole DPL 60873/99717.
35. Line begins on pole DST 28 at station 125+50 crossing SR26 to pole DPL 60851/99717.
36. Line begins on pole DPL 60871/99712 at station 126+50 crossing SR26 to pole DPL 60570/99717.
37. Line begins on pole DPL 66837/99712 at station 128+60 crossing SR26 to pole DPL 60884/99718.
38. Line begins on pole VG16 at station 146+60 crossing SR26 to pole DPL 61067/99680.
39. Line begins on pole DPL 61804/99675 at station 148+20 crossing SR26 to pole DPL 61085/99675.
40. Line begins on pole DPL 6111/99665 at station 151+20 crossing SR26 to pole DPL 61109/99669.
41. Line begins on pole 208A at station 153+00 crossing SR26 to pole DPL 61133/99663.
42. Line begins on pole DST 5 at station 161+10 crossing SR26 to pole DPL 61213/99647.

43. Line begins on pole DST 4 at station 163+55 crossing SR26 to pole DPL 61235/99642.
44. Line begins on pole DPL 61626/99630 at station 167+50 crossing SR26 to pole DPL 61274/99634.
45. Line begins on pole DPL 61291/99626 at station 169+70 crossing SR26 to pole DPL 61284/99631.
46. Line begins on pole DPL 61323/99618 at station 173+25 crossing SR26 to pole DPL 61327/99624.
47. Line begins on pole DST 7 at station 178+60 crossing SR26 to pole DPL 61370/99613.
48. Line begins on pole DST 8 at station 180+00 crossing SR26 to pole DPL 61398/99609.
49. Line begins on pole DPL 61430/99599 at station 184+00 and heads south on the west side of Central Ave. to the project limits.
50. Line begins on pole DST AA12 at station 184+50 and heads south on the east side of Central Ave. to the project limits.
51. Line begins on pole DST 61448/99594 at station 185+60 crossing SR26 to pole DPL 61450/99599.
52. Mid-span tap at station 178+40 crossing SR26 to house.
53. Line begins on pole DST 15 at station 188+30 crossing SR26 to house.
54. Line begins on pole DST 16 at station 189+60 crossing SR26 to pole AV6A and continuing north to the project limits.
55. Line begins on pole DPL 61548/99569 at station 195+80 crossing SR26 to pole DPL 61551/99572.
56. Line begins on pole DPL 61548/99569 at station 195+80 crossing SR26 to pole DPL 61551/99572.
57. Line begins on pole DPL 6158/99565 at station 199+60 crossing SR26 to pole DPL 61586/99858.
58. Line begins on pole DPL 61609/99565 at station 202+10 crossing SR26 to house.
59. Line begins on pole DPL 61640/99564 at station 205+50 crossing SR26 to pole DST AA30.

Verizon Delaware maintains the following underground communications facilities within the project limits:

1. Line Begins on pole DST 3 at station 165+20 and heads north crossing SR26 to a manhole MH VG/3 on the north side of SR26.
2. Line begins in a manhole MH VG/3 on the north side of SR26 at station 165+20 and heads east on the north side of SR26 to a manhole MH AA/4at the intersection of Woodland Ave. at station 174+70
3. Line Begins in a manhole MH AA/4 on the north side of SR26 at station 174+70 and crosses SR26 heading south on the west side of Woodland Ave. to the project limits.
4. Line Begins in a manhole MH AA/4 on the north side of SR26 at station 174+70 and continues heading east to a vault at station 183+00 where the line splits, one

line heads south crossing SR26 to pole AA 11 at station 183+30 and four lines heads north to the Telephone office.

5. Two Lines Begins in the vault at station 183+00 one line heads east for 145' to station 184+55 where it turns and heads north on the east side of Central Ave. to a pole AB/2 at station 87+00 the line also continues to pole AB/3 at station 88+00. And one line continues heading east from the vault at station 183+00 to a manhole MH AA/16 at station 189+65.
6. Two lines begin in the manhole MH AA/16 at station 189+65 and heads south crossing SR26 where one line turns and heads east to a pole DST 16 and one line heads south on the east side of West Ave. to the project limits.
7. The duck bank continues heading east on the north side of SR26 from manhole MH AA/16 at station 189+65 to a manhole at station 198+65 the line continues heading east to a manhole at station 203+70.and continues to a manhole at station 209+50.
8. Line begins in a manhole at station 209+50 where the line turns northeast outside of the LOC to a pole where the line changes to overhead lines and crosses Assawoman canal.
9. Two lines begin on pole DPL 59778/99805/132 33 on the west side of Vines Creek Rd. at station 11+00 both lines go down the pole to a pedestal one line heads west for 25' then turns north crossing SR26 at station 10+65 and then heads to enclosure. And the second one crosses SR26 at station 10+90 and then heads to enclosure.
10. Line begins on pole BJ DST 28N at station 17+00 heads west 5' to a pedestal; Line continues heading north serving a business on the north side of SR26.
11. Line begins on pole DPL 59879/99819 at station 21+25 crossing SR26 to pedestal.
12. Line begins on pole 59915 24 at station 25+25 and heads south to a house.
13. Line begins on pole 59966/99855 at station 29+40 and heads south to a house.
14. Line begins on pole 1143BJ21 at station 31+40 and heads south to a house.
15. Line begins on pole BJ20 at station 33+85 and heads south to a house.
16. Two Lines begins on pole 145 19 at station 35+00 one F/O line heads west for 60' then turns north crossing SR26 and continues on the east side of Irons Lane (S348) to the project limits. And one line heads north crossing SR26 turning west for 70' then turns north to a pedestal at station 349+05
17. Line begins in pedestal at station 349+05 heads west crossing Irons Lane then turning north 70' turning west to project limits.
18. Line begins on pole 147 17 at station 39+00 and heads south to a house.
19. Line begins on pole DPL 60074/99894 at station 43+05 and heads south to a house.
20. Line begins on pole DPL 60094/99891 at station 45+00 and heads south to a business.
21. Line begins on pole DPL 60113/99888 at station 47+10 and heads west for 50' then turns and heads south to project limits.
22. Line begins on pole BJ DST 10 at station 49+35 and heads north to a house.
23. Line begins on pole DPL 60133/99884 at station 49+35 and heads south to a house.

24. Line begins on pole VZ 8 at station 52+25 and heads north to a house.
25. Line begins on pole VZ 8 at station 52+25 and heads south crossing SR26 then turning east.
26. Line begins on pole DPL 60211/99869 at station 56+30 and heads east for 100' then turning south crossing SR26, then turning east for 30' then turning south to a house.
27. Line begins on pole DPL 60224/99862 at station 57+80 and heads north to a house.
28. Line begins on pole DPL 60241/99844 at station 60+15 and heads south to a house.
29. Line begins on pole DPL 159 60253/99844 at station 61+25 and heads down the pole to a pedestal.
30. Line begins on pole CON 60298/99839 at station 66+25 and heads down the pole to a pedestal.
31. Line begins in a pedestal at station 66+25 and heads east for 50' then turns north to the project limits.
32. Line begins in a pedestal at station 66+25 and heads south crossing SR26 to a pedestal. Where the line splits, one line heads west to the intersection of Roxana Road (SR17) where the line turns south on the east side of Roxana Road to the project limits.
33. Line begins in a pedestal at station 66+25 on the south side of SR26.The line continues heading east on the south side of SR26 to a pedestal at station 69+85
34. Line begins in a pedestal at station 69+85 on the south side of SR26 and continues heading east on the south side of SR26 to a pedestal at station 72+30
35. Line begins in a pedestal at station 72+30 on the south side of SR26 and the line continues heads east on the south side of SR26 to a pole at station 74+50
36. Line begins on pole 60379/99843 at station 74+50 on the south side of SR26 and the line continues heads east on the south side of SR26 to a pedestal at station 76+15
37. Line begins on pole DPL 60452/99832 at station 82+00 and heads west for 80'then turns heading north to a business.
38. Line begins on pole DST X6 at station 85+35 and heads south to a pedestal
39. Line begins on pole DPL 60561/99772 at station 94+70 and heads north to a house.
40. Line begins on pole CONN 60571/99768 at station 95+70 and heads north to a house.
41. Line begins on pole VG48 at station 97+90 crossing SR26 to a pedestal on the north side of SR26 and the line continues heading north to a business.
42. Line begins on pole DPL 60622/99760 at station 99+10 and heads north to a business
43. Line begins on pole DPL 60653/99741 at station 104+10 and heads south to a house.
44. Line begins on pole DPL 60701/99731 at station 109+60 and heads south to a house.

45. Line begins on pole DPL 60701/99731 at station 109+60 and heads north crossing SR26 and continues heading north on the east side of Railway Road to the project limits.
46. Line begins on pole DST VG38 at station 112+20 and heads south to a house on Windmill Road.
47. Line begins on pole DPL 60825/99717 at station 122+45 and heads north to a house.
48. Line begins on pole DPL 60851/99717 at station 125+00 and heads north to a business
49. Line begins on pole 60871/99712 at station 126+80 and heads south to a business
50. Line begins on pole VG 26 at station 128+60 and heads north crossing SR26 to a house.
51. Line begins on pole (no#) at station 130+50 and heads south to a business.
52. Line begins on pole DPL 60920/99719 at station 132+00 and heads down the pole to a pedestal. Line continues heading north to the project limits.
53. Line begins on pole DST 21 at station 136+30 and heads west 50' then turns north crossing SR26 to the west side of Docs Place then heads north to the project limits.
54. Line begins on pole DST 19 at station 139+30 and heads west to the intersection of Cedar Drive then the line turns south to the project limits.
55. Line begins on pole (no#) at station 140+60 and heads south to a house.
56. Line begins on pole DST 16 at station 143+45 and heads south to a house.
57. Line begins on pole DPL 61067/99680 at station 146+70 and heads north to a pedestal.
58. Line begins on pole 61085/99675 at station 148+53 and heads north to a house.
59. Line begins on pole 61109/99669 at station 150+90 and heads north to a house.
60. Line begins on pole 61109/99669 at station 150+90 and heads north on the east side of Grants Ave. to project limits.
61. Line begins on pole 208 A at station 153+00 and heads south to a house.
62. Line begins on pole DPL 61152/99659 at station 155+25 and heads down the pole to a pedestal, where the line continues heading north to a business.
63. Line begins on pole DPL 61157/99652 at station 156+20 and heads north crossing SR26 to a business.
64. Line begins on pole DPL 61180/99646 at station 158+35 and heads south.
65. Line begins on pole DST 6 at station 160+15 and heads south.
66. Line begins on pole DPL 61212/99649 at station 161+20 and heads north.
67. Line begins on pole DST 5 at station 161+90 and heads south.
68. Line begins on pole DST 4 at station 163+55 and heads south to a business.
69. Line begins on pole DPL 61235/99642 at station 163+85 and heads north to a business.
70. Line begins on pole DPL 61274/99634 at station 168+00 and heads north to a business.
71. Line begins on pole 61291/99626 at station 169+80 and heads south to a business.
72. Line begins on pole DST 2 at station 171+20 and heads south to a business.
73. Line begins on pole DPL 61379/99613 at station 178+60 and heads north to a business.

74. Line begins on pole DPL 61398/9969 at station 180+60 and heads down the pole to a pedestal, from the pedestal three lines heads north to three business.
75. Line begins on pole (no#) at station 83+50 on south Central Ave. and heads south.
76. Line begins on pole DPL 61450/99599 at station 185+60 and heads north to a business.
77. Line begins on pole DST14 at station 187+10 and heads south to a business.
78. Line begins on pole AA20-1 at station 194+60 and heads south to a business.
79. Line begins on pole DPL 61551/99572 at station 196+00 and heads east to a pedestal AA23W from the pedestal the line heads north to a business.
80. Line begins on pole DPL 61609/99565 at station 202+10 and heads north to a business.
81. Line begins on pole DPL 61627/99564 at station 203+85 and heads down the pole to a pedestal then heads north to a business.
82. Line begins on pole DPL 6160/99564 at station 205+40 and heads north to a business.
83. Line begins on pole DST AA30 at station 205+85 and heads south to a business.
84. Line begins on pole Conn 61705/9950 at station 211+80 and heads south crossing SR26 then turns east for 40' then turn south to the project limits.

Verizon Delaware Inc. will install new poles and anchors at the following stations

CONSTRUCTION SEQUENCE SECTION 4

1. Install new pole at station 606+13 32' right of baseline. Install light standard.
2. Install new pole at station 16+90 25' left of baseline. Install light standard.
3. Install new pole at station 52+50 45' left of baseline.
4. Install new pole at station 54+45 55' left of baseline.

CONSTRUCTION SEQUENCE SECTION 3

1. Install new pole and head guy at station 78+27 35' right of baseline
2. Install new pole at station 80+08 39' right of baseline.
3. Install new pole and anchor at station 80+66 37' right of baseline.
4. Install new pole at station 82+08 38' right of baseline.
5. Install new pole at station 83+87 35' right of baseline.
6. Install new pole at station 85+40 36' right of baseline.
7. Install new pole at station 87+57 40' right of baseline. Install light standard.
8. Install new pole at station 89+10 38' right of baseline.
9. Install new pole and anchor at station 91+83 40' right of baseline.
10. Install new pole at station 97+85 25' right of baseline.
11. Install new pole at station 98+82 25' right of baseline.
12. Install new pole at station 100+46 25' right of baseline.
13. Install new pole at station 102+03 25' right of baseline.
14. Install new pole at station 103+32 25' right of baseline.

15. Install new pole and anchor at station 110+72 35' right of baseline. Install light standard.
16. Install new pole and anchor at station 111+77 58' right of baseline. Install light standard.
17. Install new pole at station 112+90 25' right of baseline.
18. Install new pole and head guy at station 113+90 25' right of baseline. Install light standard.

CONSTRUCTION SEQUENCE SECTION 2

1. Install new pole at station 115+05 25' right of baseline.
2. Install new pole at station 117+35 33' right of baseline.
3. Install new pole at station 118+60 30' right of baseline.
4. Install new pole and anchor at station 128+35 35' right of baseline. Install light standard.
5. Install new pole at station 130+50 35' right of baseline.
6. Install new pole at station 131+60 35' right of baseline. Install light standard.
7. Install new pole at station 128+60 25' right of baseline.
8. Install new light standard on existing pole at station 133+60.
9. Install new pole at station 136+30 35' right of baseline.
10. Install new pole at station 138+15 35' right of baseline.
11. Install new pole at station 140+04 35' right of baseline. Install light standard.
12. Install new pole at station 140+60 25' right of baseline.
13. Install new pole at station 143+46 25' right of baseline.
14. Install new pole at station 144+98 25' right of baseline.
15. Install new pole at station 149+78 25' right of baseline.
16. Install new pole at station 152+73 25' right of baseline.
17. Install new pole at station 160+13 25' right of baseline.
18. Install new pole at station 161+85 25' right of baseline.
19. Install new pole at station 163+55 25' right of baseline.
20. Install new pole and anchor at station 165+15 25' right of baseline.

CONSTRUCTION SEQUENCE SECTION 1

1. Install new pole at station 166+80 25' right of baseline.
2. Install new pole at station 171+15 25' right of baseline. Install light standard.
3. Install new pole at station 173+20 35' right of baseline.
4. Install new pole at on Woodland Avenue station 731+60 25' right of baseline. Install light standard.
5. Install new pole at station 175+68 25' right of baseline. Install light standard.
6. Install new pole at station 177+30 25' right of baseline.
7. Install new pole and anchor at station 178+55 25' right of baseline.
8. Install new pole at station 180+03 25' right of baseline.
9. Install new pole at station 181+50 25' right of baseline. Install light standard.
10. Install new pole at station 182+33 25' right of baseline.
11. Install new pole at station 183+11 25' right of baseline. Install light standard.

12. Install new pole at station 184+96 25' right of baseline. Install light standard.
13. Install new pole at station 185+55 25' right of baseline.
14. Install new pole at station 187+10 25' right of baseline. Install light standard.
15. Install new pole and anchor on West Avenue at station 361+70 18' right of baseline.
16. Install new pole at station 190+55 35' right of baseline.
17. Install new pole at station 190+70 35' left of baseline. Install light standard.
18. Install new pole at station 201+77 25' right of baseline.
19. Install new pole at station 205+85 25' right of baseline.

Verizon Delaware Inc. proposed changes to the aerial facilities include, but are not limited to:

CONSTRUCTION SEQUENCE SECTION 4

1. Maintain the existing facilities as is at sta. 13+90 and crossing Vines Creek Road.
2. Maintain the existing facilities as is at sta. 14+40 and crossing Powell Farm Road and continuing to Omar Road.
3. Transfer the existing line from pole BJ30 to the new DST pole at station 369+40.
4. Install new lines begins on pole DPL 59818/99785/ BJ30 on SR 26 at station 14+40 and then head east on the south side of SR26 to pole DPL 60054/99890/148-16 at station 41+00 and the cross SR26 to pole BJ15.
5. Install new lines from pole BJ15 on the north side of SR26 to pole DPL 60378/99848 at station 74+40 and then continue to pole VG/64.
6. Install new lines from pole DST 63 at station 76+00 to pole 61548/99569 station 195+85 and then to pole DPL 61568/99563 and then crossing SR26 to pole DPL 61570/99567 where the line continues east on the north side of SR26 to the project limits.
7. Install new lines from pole DPL 59841/99799 at station 17+00 crossing SR26 to pole DPL59837/99803.
8. Install new lines from pole DPL59879/99819 at station 21+25 crossing SR26 to pole DPL 59870/99824.
9. Install new lines from pole DPL59899/99830 at station 23+50 crossing SR26 to pole (NO#).
10. Install new mid-span tap at station 24+50 crossing SR26 to pole (NO#).
11. Install new lines from pole DPL 59966/99864 at station 31+10 crossing SR26 to house.
12. Install new lines from pole DPL 59997/99881 at station 34+80 crossing SR26 to pole DEC 19004.
13. Install new lines from pole BJ15 at station 42+40 crossing SR26 to pole DPL 60064/99895.
14. Install new lines from pole BJ15 at station 42+40 crossing SR26 to pole DPL 60074/99894.
15. Install new lines from pole DST BJ/14/49768 at station 44+10 crossing SR26 to house.

16. Install new lines from pole DST BJ/14/49768 at station 44+10 crossing SR26 to pole DPL 60094/99891.

CONSTRUCTION SEQUENCE SECTION 3

17. Install new lines from pole 60340/99843 at station 70+50 crossing SR26 to pole 60334/99836.
18. Install new lines from pole DPL 60378/99848 at station 74+50 crossing SR26 to pole 60379/99843.
19. Install new lines from pole DST58 at station 82+00 crossing SR26 to pole 60452/99832.
20. Install new lines from pole DST VG/56 at station 85+40 crossing SR26 to pole business.
21. Install new lines from pole DST 52 at station 91+60 crossing SR26 to pole DPL 60529/99789.
22. Install new lines from pole DPL 60559/99767 at station 94+60 crossing SR26 to pole DPL 60561/99772.
23. Install new lines from pole DPL 60569/99762 at station 95+65 crossing SR26 to pole DPL 60571/99768.
24. Install new lines from pole DPL 60589/99758 at station 97+80 crossing SR26 to pole DPL 60591/9963.
25. Install new lines from pole DST 47 at station 98+80 crossing SR26 to pole DPL 60622/99760.
26. Install new lines from pole DST 45 at station 102+00 crossing SR26 to pole DPL 60622/99756.also install new line crossing to pole DST 45N.
27. Install new lines from pole DPL 60653/99741 at station 104+50 crossing SR26 to house.
28. Install two lines from pole DST VG38 at station 112+05 crossing SR26 to pole DPL 60726/99739 and one line to the house.
29. Install new line from pole DST 37 at station 113+80 crossing SR26 to pole DPL 60745/99738.
30. Install new lines from pole DPL 60764/99729 at station 116+05 crossing SR26 to the project limits.

CONSTRUCTION SEQUENCE SECTION 2

31. Install new lines from pole DPL 60801/99714 at station 119+90 crossing SR26 to pole DPL 60802/99720 and then continues west on the north side of SR26 to pole DPL 60783/99728.
32. Install new lines from pole VG31 at station 120+90 crossing SR26 to the DPL 60811/99717.
33. Install new lines from pole VG30 at station 122+40 crossing SR26 to the DPL 60825/99717.
34. Install new lines from pole DST 29 at station 124+10 crossing SR26 to the DPL 60873/99717.

35. Install new lines from pole DST 28 at station 125+50 crossing SR26 to the DPL 60851/99717.
36. Install new lines from pole DPL 60871/99712 at station 126+50 crossing SR26 to the DPL 60570/99717.
37. Install new lines from pole DPL 66837/99712 at station 128+60 crossing SR26 to the DPL 60884/99718.
38. Install new lines from pole VG16 at station 146+60 crossing SR26 to the DPL 61067/99680.
39. Install new lines from pole DPL 61804/99675 at station 148+20 crossing SR26 to the DPL 61085/99675.
40. Install new lines from pole DPL 6111/99665 at station 151+20 crossing SR26 to the DPL 61109/99669.
41. Install new lines from pole 208A at station 153+00 crossing SR26 to the DPL 61133/99663.
42. Install new lines from pole DST 5 at station 161+10 crossing SR26 to the DPL 61213/99647.
43. Install new lines from pole DST 4 at station 163+55 crossing SR26 to the DPL 61235/99642.
44. Install new lines from pole DPL 61626/99630 at station 167+50 crossing SR26 to the DPL 61274/99634.
45. Install new lines from pole DPL 61291/99626 at station 169+70 crossing SR26 to the DPL 61284/99631.
46. Install new lines from pole DPL 61323/99618 at station 173+25 crossing SR26 to pole DPL 61327/99624.

CONSTRUCTION SEQUENCE SECTION 1

47. Install new lines from pole DST 7 at station 178+60 crossing SR26 to pole DPL 61370/99613.
48. Install new lines from pole DST 8 at station 180+00 crossing SR26 to pole DPL 61398/99609.
49. Install new lines from pole DPL 61430/99599 at station 184+00 to the project limits.
50. Install new lines from pole DST AA12 at station 184+50 to the project limits.
51. Install new lines from pole DST 61448/99594 at station 185+60 crossing SR26 to pole DPL 61450/99599.
52. Install a new mid-span tap at station 178+40 crossing SR26 to house.
53. Install a new line from pole DST 15 at station 188+30 crossing SR26 to house.
54. Install new lines from pole DST 16 at station 189+60 crossing SR26 to pole AV6A and then continuing north to the project limits.
55. Install new lines from pole DPL 61548/99569 at station 195+80 crossing SR26 to pole DPL 61551/99572.
56. Install new lines from pole DPL 61548/99569 at station 195+80 crossing SR26 to pole DPL 61551/99572.
57. Install new lines from pole DPL 6158/99565 at station 199+60 crossing SR26 to pole DPL 61586/99858.

58. Install new lines from pole DPL 61609/99565 at station 202+10 crossing SR26 to house.
59. Install new lines from pole DPL 61640/99564 at station 205+50 crossing SR26 to pole DST AA30.

Verizon Delaware Inc. proposed changes to the underground facilities include, but are not limited to:

1. At station 165+20 relocate the existing cable to the new pole (DST 3) location.
2. Maintain the existing facilities as is.
3. Maintain the existing facilities as is.
4. At station 183+30 relocate the existing cable to the new pole (AA/4) location.
5. Maintain the existing facilities as is.
6. At station 189+65 relocate the existing cable to the new pole (DST 16) location.
7. Maintain the existing facilities as is.
8. Maintain the existing facilities as is.
9. Install two new cables from the existing pedestal on the west side of Vines Creek Rd. at station 11+00 crossing SR26 to the existing enclosure.
10. Install new cable from pole BJ DST 28N at station 17+00 to the new pedestal relocate the existing cable to the new pedestal.
11. Install new cable from pole DPL 59879/99819 at station 21+25 crossing SR26 to pedestal.
12. At station 25+25 relocate the existing cable to the new pole (59915 24) location.
13. At station 29+40 relocate the existing cable to the new pole (59966/99855) location.
14. At station 31+40 relocate the existing cable to the new pole (1143BJ21) location.
15. At station 33+85 relocate the existing cable to the new pole (BJ20) location.
16. At station 35+00 install new F/O cable from the new pole (145 19) location to the north side of SR26 and then splice to the existing F/O cable. And then install new cable from the new pole location to the north side of SR26 to the existing pedestal.
17. At station 349+05 install new cable from the existing pedestal crossing SR26 to the west side of Irons Lane to the project limits.
18. At station 39+00 relocate the existing cable to the new pole (147 17) location.
19. At station 43+05 relocate the existing cable to the new pole (DPL 60074/99894) location.
20. At station 45+00 relocate the existing cable to the new pole (DPL 60094/99891) location.
21. At station 47+10 relocate the existing cable to the new pole (DPL 60113/99888) location.
22. Maintain the existing facilities as is.
23. At station 49+35 relocate the existing cable to the new pole (DPL60133/99884) location.
24. At station 52+25 relocate the existing cable to the new pole (VZ 8) location.
25. At station 52+25 replace the existing cable from the new pole (VZ 8) location crossing SR26 to the east.

26. At station 56+30 replace the existing cable from the new pole (DPL 60211/99869) location crossing SR26 to a house.
27. At station 57+80 relocate the existing cable to the new pole (DPL 60224/99862) location.
28. At station 60+15 relocate the existing cable to the new pole (DPL 60241/99844) location.
29. At station 61+25 install new cable from the new pole (DPL 159 60253/99844) to the new pedestal.

CONSTRUCTION SEQUENCE SECTION 3

30. At station 66+25 install new cable from the new pole (CON 60298/99839) to the new pedestal.
31. At station 66+25 relocate the existing cable to the new pedestal location.
32. At station 60+15 install new cable crossing SR26 from pedestal to pedestal.
33. Maintain the existing facilities as is.
34. Maintain the existing facilities as is.
35. At station 74+50 relocate the existing cable to the new pole (60379/99843) location.
36. Replace the existing cable from the new pole (60379/99843) at station 74+50 to the new pedestal at station 76+15.
37. At station 82+00 relocate the existing cable to the new pole (60379/99843) location.
38. At station 85+35 relocate the existing cable to the new pole (DST X6) location.
39. Maintain the existing facilities as is.
40. At station 95+70 relocate the existing cable to the new pole (CON 60571/99768) location.
41. Install a new cable crossing SR26 from the new pole (VG48) location to a new pedestal and relocate the existing cable in to the new pedestal.
42. At station 99+10 relocate the existing cable to the new pole (DPL 60622/99760) location.
43. At station 104+55 relocate the existing cable to the new pole (DPL 60653/99741) location.
44. At station 109+60 relocate the existing cable to the new pole (DPL 60701/99731) location.
45. Install a new cable crossing SR26 from the new pole (VG48) location at station 109+60 to the project limits.
46. At station 112+20 install new cable from the new pole (DST VG 38) location to the house.

CONSTRUCTION SEQUENCE SECTION 2

47. At station 122+45 relocate the existing cable to the new pole (DPL 60825/99717) location.

48. At station 125+00 relocate the existing cable to the new pole (DPL 60851/99717) location.
49. At station 126+80 relocate the existing cable to the new pole (60871/99712) location.
50. At station 128+60 install new cable crossing SR26 from the new pole (VG 26) location to the house.
51. At station 130+50 relocate the existing cable to the new pole (no#) location.
52. At station 132+00 new cable from the new pole (DPL60920/99719) to then new pedestal.
53. At station 136+30 install new cable from the new pole (DST21) crossing SR26 and continue north to the project limits.
54. At station 140+60 install new cable from the new pole (DST19) south to project limits.
55. At station 140+60 relocate the existing cable to the new pole (no#) location.
56. At station 143+45 relocate the existing cable to the new pole (DST 16) location.
57. At station 146+70 relocate the existing cable to the new pole (DPL 61067/99680) location.
58. At station 148+53 relocate the existing cable to the new pole (DPL 61085/99675) location.
59. At station 150+90 relocate the existing cable to the new pole (DPL 61109/99669) location.
60. At station 150+90 relocate the existing cable to the new pole (DPL 61109/99669) location.
61. Maintain the existing facilities as is.
62. At station 155+25 install new cable down the new pole (DPL 61152/99659) to the new pedestal; relocate the existing service cable to the new pedestal.
63. At station 156+20 install new cable from the new pole (DPL 61157/99652) crossing SR26 to a business.
64. At station 158+35 relocate the existing cable to the new pole (DPL 61180/99646) location.
65. At station 160+15 relocate the existing cable to the new pole (DST 6) location
66. Maintain the existing facilities as is.
67. At station 161+90 relocate the existing cable to the new pole (DST 5) location
68. At station 163+55 relocate the existing cable to the new pole (DST 4) location
69. At station 163+85 relocate the existing cable to the new pole (DPL 61235/99642) location
70. At station 168+00 relocate the existing cable to the new pole (DPL 61274/99634) location
71. Maintain the existing facilities as is.
72. At station 171+20 relocate the existing cable to the new pole (DST 2) location

CONSTRUCTION SEQUENCE SECTION 1

73. At station 178+60 relocate the existing cable to the new pole (DPL 61379/99613) location

74. At station 180+60 relocate the existing cable to the new pole (DPL 61398/9969) location.
75. At station 83+50 relocate the existing cable to the new pole (no#) location
76. At station 185+60 relocate the existing cable to the new pole (DPL 61450/99599) location.
77. At station 187+10 relocate the existing cable to the new pole (DST 14) location
78. At station 194+60 relocate the existing cable to the new pole (AA20-1) location
79. At station 196+00 install new cable down the new pole (DPL 61551/99572) to the new pedestal; relocate the existing service cable to the new pedestal.
80. At station 202+10 relocate the existing cable to the new pole (DPL 61609/99565) location
81. At station 203+85 install new cable down the new pole (DPL 61627/99564) to the new pedestal; relocate the existing service cable to the new pedestal.
82. At station 205+40 relocate the existing cable to the new pole (DPL 6160/99564) location
83. At station 205+85 relocate the existing cable to the new pole (DST AA30) location
84. At station 211+80 install new cable from pole Conn 61705/9950 heading south crossing SR26 to the project limits.

APPENDIX C – Mediacom Facilities

Mediacom maintains the following aerial communications facilities within the project limits:

1. Line begins on pole DPL 59818/99785/ BJ30 on SR 26 at station 14+40 and heads west crossing Vines Creek Rd. (334) to pole DPL 59793/99793 and heads north to pole DPL 59778/99805/132-33, where it continues north to the project limits.
2. Line begins on pole DPL 59818/99785/BJ30 on SR 26 at station 14+40 and heads west crossing Powell Farm Rd. (S365) to pole DPL 59800/49772/IB2 continuing west crossing Omar Rd. (S54) to pole (no #) where it continues heading west on the north side of S54 to the project limits.
3. Line begins on pole DPL 598 13/99783/BJ31 on SR 26 at station 13+90 and heads south on the east side of S365 to the project limits.
4. Line begins on pole DPL 59818/99785/ BJ30 on SR 26 (SR26) at station 14+40 and heads east on the south side of SR26 to a pole (no#) at station 55+00 where it crosses SR26 to pole DPL 60211/99869/BJ-6.
5. Line continues heading east on the north side of SR26 to pole CONN 61705/9950 at station 212+00 to the project limits.
6. Line begins on pole DPL 59829/90791 at station 15+60 crossing SR26 to house
7. Line begins on pole DPL 59841/99799 at station 17+00 crossing SR26 to pole DPL 59837/99803
8. Line begins on pole DPL 59860/99809 at station 19+00 crossing SR26 to house.
9. Line begins on pole DPL 59879/99819 at station 21+20 crossing SR26 to pole DPL 59870/99824 line also crosses to pole DST BJ26N.
10. Line begins on pole DPL 59915/24 at station 25+20 crossing SR26 to a pole (no#)
11. Line begins on pole DPL 59966/99864 at station 31+10 crossing SR26 to house.
12. Line begins on pole DPL 59986/99876 at station 33+50 crossing SR26 to pole DPL 59985/99875.
13. Line begins on pole DPL 60054/99890 at station 41+00 crossing SR26 to pole BJ15. Line then continues east to pole DPL 60112/99895.
14. Line begins on pole DPL 60133/99884 at station 49+20 crossing SR26 to pole BJDST10.
15. Line begins on pole DPL 60265/99839 at station 63+00 crossing SR26 heading south on the west side of Roxana Rd. (SR17).
16. Line begins on pole DPL 60340/99843 at station 70+50 crossing SR26 to pole DPL 60334/99836.
17. Line begins on pole CON 60360/99845 at station 72+40 crossing SR26 to pole CON 60358/99840.
18. Line begins on pole DPL 60396/99849 at station 76+10 crossing SR26 to pole DST63.
19. Line begins on pole CON 60435/99840 at station 80+00 crossing SR26 to pole DST VG 59.
20. Line begins on pole DPL 60490/9811 at station 86+50 crossing SR26 to pole DST VG 56. Line also crosses to pole DPL 60488/99806.

21. Line begins on pole DPL 60512/99799 at station 89+00 crossing SR26 to pole VG 54.
22. Line begins on pole DPL60529/99789 at station 91+00 crossing SR26 to pole DPL 60519/99788. Line also crosses to pole DST52.
23. Line begins on pole DPL60561/99772 at station 94+60 crossing SR26 to pole DPL 60559/99767.
24. Line begins on pole DPL60591/9963 at station 97+60 crossing SR26 to pole DPL 60589/99758.
25. Line begins on pole DPL60622/99760 at station 99+00 crossing SR26 to pole DST 47.
26. Line begins on pole DPL60622/99756 at station 101+00 crossing SR26 to pole DST 45.
27. Line begins on pole DPL60643/99751 at station 103+40 crossing SR26 to pole DST 44.
28. Line begins on pole DPL60655/99747 at station 104+50 crossing SR26 to pole DPL 60653/99741.
29. Line begins on pole DPL60673/99739 at station 106+50 crossing SR26 to pole DPL 60671/99734.
30. Line begins on pole DPL60692/99735 at station 350+20 crossing Railway Road to pole DPL 60698/99742 and continues north to the project limits
31. Line begins on pole DPL60708/99736 at station 110+20 crossing SR26 to pole DPL 60701/99731.
32. Line begins on pole DPL60708/99736 at station 110+20 crossing SR26 to pole DST 39.
33. Line begins on pole DPL60735/99738 at station 112+90 crossing SR26 to pole CON 60729/99726.
34. Line begins on pole DPL 60767/99734 at station 116+10 heading north on the east side of Clubhouse Rd. to the project limits.
35. Line begins on pole DPL 60802/99720 at station 119+80 crossing SR26 to pole DPL 60801/99714.
36. Line begins on pole DPL 60811/99717 at station 120+90 crossing SR26 to pole VG31.
38. Line begins on pole DPL 60837/99717 at station 123+60 crossing SR26 to pole DST29.
39. Line begins on pole DPL 60570/99717 at station 126+70 crossing SR26 to pole DPL 60871/99712.
40. Line begins on pole DPL 60970/99707 at station 137+00 crossing SR26 to pole DST21.
41. Line begins on pole DPL 61010/99697 at station 141+10 crossing SR26 to pole DST18. Line also crosses to pole DPL 61021/99685.
42. Line begins on pole DPL 61067/99680 at station 146+65 crossing SR26 to pole VG16.
43. Line begins on pole DPL 61109/99669 at station 151+00 crossing SR26 to pole DPL 6111/99665.
44. Line begins on pole DPL 61133/99663 at station 153+40 crossing SR26 to pole 208A.

45. Line begins on pole DPL 61213/99647 at station 161+40 crossing SR26 to pole DST5 then line continues west to pole DPL 61210/99641.
46. Line begins on pole DPL 61235/99642 at station 163+80 crossing SR26 to pole DST4.
47. Line begins on pole DPL 61294/99631 at station 170+00 crossing SR26 to pole DPL 61291/99626.
48. Line begins on pole DPL 61313/99626 at station 171+90 crossing SR26 to pole DST 2.
49. Line begins on pole DPL 61327/99624 at station 173+25 crossing SR26 to pole DPL 61323/99618.
50. Line begins on pole DPL 61346/99619 at station 175+25 crossing SR26 to pole DST AA4. Line also crossing to pole DST 5.
51. Line begins on pole DPL 61398/99609 at station 180+50 crossing SR26 to pole DST 8.
52. Line begins on pole CON 61436/99603 at station 184+00 heading north on the west side of Central Ave. to the project limits.
53. Line begins on pole CON 61436/99603 at station 184+00 heading south on the west side of Central Ave. to the project limits.
54. Line begins on pole DPL 61470/99594 at station 187+50 crossing SR26 to pole DST 14.
55. Line begins on pole DPL 61483/99590 at station 189+00 heading north on the west side of West Ave. to the project limits.
56. Line begins on pole DPL 61483/99590 at station 184+00 heading south on the west side of West Ave. to the project limits.
57. Line begins on pole DPL 61534/99577 at station 194+20 crossing SR26 to pole DPL 61535/99572.
58. Line begins on pole DPL 61551/99572 at station 196+20 crossing SR26 to pole DPL 61548/99569. Line also crossing to pole DST 21
59. Line begins on pole DPL 61570/99567 at station 198+00 crossing SR26 to pole DPL 61568/99563.
60. Line begins on pole DPL 61609/99565 at station 202+10 crossing SR26 to pole DST 26.
61. Line begins on pole DPL 61640/99564 at station 205+50 crossing SR26 to pole DST AA30.

Mediacom also maintains underground communications facilities within the project limits.

1. Line begins on pole BJ DST 28N 59837/99803 at station 17+00 and heads north to a business.
2. Line begins on pole DPL 59870/99824 at station 21+00 and heads north to a house.
3. Two Lines begins on pole DPL 59915/24 at station 25+50 and heads south to a house.

4. Line begins on pole DPL 59985/99875 at station 348+50 and heads north on Irons Lane for 95' then turns crosses Irons La. At station 349+40 then heads east to pole DEC 19004.
5. Line begins on pole DPL 59997/99881 at station 35+00 and heads south to a house.
6. Line begins on pole DPL 60034/99894 at station 39+00 and heads south to a house.
7. Line begins on pole DPL 60074/99894 at station 43+00 and heads south to a house.
8. Line begins on pole DPL 60133/99884 at station 49+35 and heads south to a house.
9. Line begins on pole BJ DST 10 at station 49+35 and heads north to a house.
10. Line begins on pole DPL 60224/99862 at station 57+80 and heads north to a house.
11. Line begins on pole CON 60298/99839 at station 66+20 and heads north to the project limits.
12. Line begins on pole DPL 60334/99836 at station 69+90 and heads south to a house.
13. Line begins on pole DPL 60488/99806 at station 86+50 and heads south on the east side of Warren Road to the project limits.
14. Line begins on pole CONN 60571/99768 at station 95+80 and heads north to a house.
15. Line begins on pole DPL 60591/9963 at station 97+80 and heads north to a business.
16. Line begins on pole DPL 60701/99731 at station 109+60 and heads south to a house.
17. Line begins on pole VG31 at station 120+90 and heads west to Dukes Drive then the line turns south to the project limits.
18. Line begins on pole 60871/99712 at station 126+90 and heads south to a house.
19. Line begins on pole (no #) at station 130+50 and heads south to a business.
20. Line begins on pole DPL 60920/99719 at station 132+00 and heads south crossing SR 26 to pole (no#).
21. Line begins on pole DPL 60920/99719 at station 132+00 and heads north to the project limits.
22. Line begins on pole DST 23 at station 133+60 and heads south to the project limits.
23. Line begins on pole (no #) at station 140+60 and heads south to the project limits
24. Line begins on pole DPL 61010/99697 at station 141+05 and heads north to the project limits
25. Line begins on pole DST 6 at station 146+60 and heads south to a business.
26. Line begins on pole DPL 61109/99669 at station 150+95 and heads north to the project limits
27. Line begins on pole DPL 61109/99669 at station 150+95 and heads north to a house.
28. Line begins on pole 208 A at station 153+00 and heads south to a house.

29. Line begins on pole DPL 61180/99646 at station 158+30 and heads south to a house.
30. Line begins on pole DPL 61210/99641 at station 161+20 and heads south to a house.
31. Line begins on pole DPL 61212/99649 at station 161+20 and heads north to a house.
32. Line begins on pole DST 4 at station 163+55 and heads south to a business.
33. Line begins on pole DPL 61235/99642 at station 163+80 and heads north to a house.
34. Line begins on pole DPL 61274/99634 at station 168+00 and heads north to a house.
35. Line begins on pole 61291/99626 at station 169+80 and heads south to a business.
36. Line begins on pole DST 2 at station 171+20 and heads south to a business.
37. Line begins on pole DPL 61379/99613 at station 178+60 and heads north to a business.
38. Line begins on pole DPL 61398/9969 at station 180+52 and heads north to a business.
39. Line begins on pole DPL 6???8/9906 at station 182+35 and heads north to a business.
40. Line begins on pole DPL 61450/99599 at station 185+65 and heads north to a business.
41. Line begins on pole AA20-1 at station 194+55 and heads south to a business.
42. Line begins on pole DPL 61551/99572 at station 196+00 and heads east for 110' then turns heading north to a business.
43. Line begins on pole DPL 61586/99858 at station 199+65 and heads south to the project limits.
44. Line begins on pole DPL 61586/99858 at station 199+65 and heads north crossing SR26 to a business.
45. Line begins on pole DPL 61586/99858 at station 199+65 and heads east to a business.
46. Line begins on pole DPL 61609/99565 at station 202+20 and heads north to a business.
47. Line begins on pole DST AA30 at station 205+90 and heads south to a business.
48. Two lines begins on pole DPL 61670/99558 at station 208+55 one line heads west for 80' then turns heading north to the project limits .And one line heads south crossing SR26 to a business.
49. Line begins on pole CON 61705/9950 at station 211+80 crossing SR26 to the project limits.

Mediacom proposed changes to the aerial facilities include, but are not limited to:

CONSTRUCTION SEQUENCE SECTION 4

1. At sta. 14+40 maintain the existing facilities as is.
2. At sta. 14+40 maintain the existing facilities as is.

3. Transfer the existing lines from pole BJ30 to the new pole at station 369+40.
4. Install new lines from pole DPL 59818/99785/ BJ30 on SR 26 (SR26) at station 14+40 and head east on the south side of SR26 to pole NO# at station 55+00 then cross SR26 to pole DPL 60211/99869/BJ-6.
5. Install new lines from pole BJ-6 on the north side of SR26 to pole CONN 61705/9950 at station 212+00.
6. Install new line from pole DPL 59829/90791 at station 15+60 crossing SR26 to house
7. Install new line from pole DPL 59841/99799 at station 17+00 crossing SR26 to pole DPL 59837/99803
8. Install new line from pole DPL 59860/99809 at station 19+00 crossing SR26 to house.
9. Install new lines from pole DPL 59879/99819 at station 21+20 crossing SR26 to pole DPL 59870/99824 also install new line crossing to pole DST BJ26N.
10. Install new lines from pole DPL 59915/24 at station 25+20 crossing SR26 to pole NO#.
11. Install new lines from pole DPL 59966/99864 at station 31+10 crossing SR26 to house.
12. Install new lines from pole DPL 59986/99876 at station 33+50 crossing SR26 to pole DPL 59985/99875.
13. Install new lines from pole DPL 60054/99890 at station 41+00 crossing SR26 to pole BJ15 and continue install new lines to pole DPL 60112/99895.
14. Install new lines from pole DPL 60133/99884 at station 49+20 crossing SR26 to pole BJDST10.

CONSTRUCTION SEQUENCE SECTION 3

15. Install new lines from pole DPL 60265/99839 at station 63+00 crossing SR26 heading south on the west side of Roxana Rd to the project limits.
16. Install new lines from pole DPL 60340/99843 at station 70+50 crossing SR26 to pole DPL 60334/99836.
17. Install new lines from pole CON 60360/99845 at station 72+40 crossing SR26 to pole CON 60358/99840.
18. Install new lines from pole DPL 60396/99849 at station 76+10 crossing SR26 to pole DST63.
19. Install new lines from pole CON 60435/99840 at station 80+00 crossing SR26 to pole DST VG 59.
20. Install new lines from pole DPL 60490/9811 at station 86+50 crossing SR26 to pole DST VG 56 also to pole DPL 60488/99806.
21. Install new lines from pole DPL 60512/99799 at station 89+00 crossing SR26 to pole VG 54.
22. Install new lines from pole DPL60529/99789 at station 91+00 crossing SR26 to pole DPL 60519/99788 also cross SR26 to pole DST52.
23. Install new lines from pole DPL60561/99772 at station 94+60 crossing SR26 to pole DPL 60559/99767.

24. Install new lines from pole DPL60591/9963 at station 97+60 crossing SR26 to pole DPL 60589/99758.
25. Install new lines from pole DPL60622/99760 at station 99+00 crossing SR26 to pole DST 47.
26. Install new lines from pole DPL60622/99756 at station 101+00 crossing SR26 to pole DST 45.
27. Install new lines from pole DPL60643/99751 at station 103+40 crossing SR26 to pole DST 44.
28. Install new lines from pole DPL60655/99747 at station 104+50 crossing SR26 to pole DPL 60653/99741.
29. Install new lines from pole DPL60673/99739 at station 106+50 crossing SR26 to pole DPL 60671/99734.
30. Install new lines from pole DPL60692/99735 at station 350+20 crossing Railway Road to pole DPL 60698/99742 and continues north to the project limits.
31. Install new lines from pole DPL60708/99736 at station 110+20 crossing SR26 to pole DPL 60701/99731.
32. Install new lines from pole DPL60708/99736 at station 110+20 crossing SR26 to pole DST 39.
33. Install new lines from pole DPL60735/99738 at station 112+90 crossing SR26 to pole CON 60729/99726.
34. Install new lines from pole DPL 60767/99734 at station 116+10 heading north on the east side of Clubhouse Rd. to the project limits.

CONSTRUCTION SEQUENCE SECTION 2

35. Install new lines from pole DPL 60802/99720 at station 119+80 crossing SR26 to pole DPL 60801/99714.
36. Install new lines from pole DPL 60811/99717 at station 120+90 crossing SR26 to pole VG31.
37. Install new lines from pole DPL 60825/99717 at station 120+90 crossing SR26 to pole VG30.
38. Install new lines from pole DPL 60837/99717 at station 123+60 crossing SR26 to pole DST29.
39. Install new lines from pole DPL 60570/99717 at station 126+70 crossing SR26 to pole DPL 60871/99712.
40. nstall new lines from pole DPL 60970/99707 at station 137+00 crossing SR26 to pole DST21.
41. Install new lines from pole DPL 61010/99697 at station 141+10 crossing SR26 to pole DST18 also cross SR26 to pole DPL 61021/99685.
42. Install new lines from pole DPL 61067/99680 at station 146+65 crossing SR26 to pole VG16.
43. Install new lines from pole DPL 61109/99669 at station 151+00 crossing SR26 to pole DPL 6111/99665.
44. Install new lines from pole DPL 61133/99663 at station 153+40 crossing SR26 to pole 208A.

45. Install new lines from pole DPL 61213/99647 at station 161+40 crossing SR26 to pole DST5 and continues west to pole DPL 61210/99641.
46. Install new lines from pole DPL 61235/99642 at station 163+80 crossing SR26 to pole DST4.
47. Install new lines from pole DPL 61294/99631 at station 170+00 crossing SR26 to pole DPL 61291/99626.
48. Install new lines from pole DPL 61313/99626 at station 171+90 crossing SR26 to pole DST 2.
49. Install new lines from pole DPL 61327/99624 at station 173+25 crossing SR26 to pole DPL 61323/99618.
50. Install new lines from pole DPL 61346/99619 at station 175+25 crossing SR26 to pole DST AA4 also cross SR26 to pole DST 5.

CONSTRUCTION SEQUENCE SECTION 1

51. Install new lines from pole DPL 61398/99609 at station 180+50 crossing SR26 to pole DST 8.
52. Install new lines from pole CON 61436/99603 at station 184+00 north to project limits.
53. Install new lines from pole CON 61436/99603 at station 184+00 south to project limits.
54. Install new lines from pole DPL 61470/99594 at station 187+50 crossing SR26 to pole DST 14
55. Install new lines from pole DPL 61483/99590 at station 189+00 heading north on the west side of West Ave. to the project limits.
56. Install new lines from pole DPL 61483/99590 at station 184+00 heading south on the west side of West Ave. to the project limits.
57. Install new lines from pole DPL 61534/99577 at station 194+20 crossing SR26 to pole DPL 61535/99572.
58. Install new lines from pole DPL 61551/99572 at station 196+20 crossing SR26 to pole DPL 61548/99569 also cross SR26 to pole DST 21
59. Install new lines from pole DPL 61570/99567 at station 198+00 crossing SR26 to pole DPL 61568/99563.
60. Install new lines from pole DPL 61609/99565 at station 202+10 crossing SR26 to pole DST 26.
61. Install new lines from pole DPL 61640/99564 at station 205+50 crossing SR26 to pole DST AA30.

Mediacom proposed changes to the underground facilities include, but are not limited to:

CONSTRUCTION SEQUENCE SECTION 4

1. At station 17+00 relocate the existing cable to the new pole (BJ DST 28N 59837/99803location.
2. At sta. 21+00 maintain the existing facilities as is.

3. At station 25+50 relocate the existing cable to the new pole (DPL59915/24) location.
4. At station 348+40 install new cable on the west side of Irons Lane from the new pole location (DPL 59985/99875) heading north to station 349+40 then turn east crossing SR26 to pole 19004
5. At station 35+00 relocate the existing cable to the new pole (DPL59997/99881) location.
6. At station 39+00 relocate the existing cable to the new pole (DPL60034/99894) location.
7. At station 43+00 relocate the existing cable to the new pole (DPL60074/99894) location.
8. At station 49+35 relocate the existing cable to the new pole (DPL60133/99884) location.
9. At sta. 49+35 maintain the existing facilities as is.
10. At station 57+80 relocate the existing cable to the new pole (DPL60224/99862) location.

CONSTRUCTION SEQUENCE SECTION 3

11. At station 66+20 relocate the existing cable to the new pole (CON 60298/99839) location.
12. At sta. 69+90 maintain the existing facilities as is.
13. At station 86+50 relocate the existing cable to the new pole (DPL 60488/99806) location.
14. At station 95+80 relocate the existing cable to the new pole (CON 60571/99768) location.
15. At station 97+80 relocate the existing cable to the new pole (DPL 60591/9963) location.
16. At station 109+60 relocate the existing cable to the new pole (DPL 60701/99731) location.

CONSTRUCTION SEQUENCE SECTION 2

17. At station 120+90 install new cable from pole VG 31 to the east side of Dukes Drive then turn south to the project limits.
18. At station 126+90 relocate the existing cable to the new pole (60871/99712) location.
19. At station 130+50 relocate the existing cable to the new pole (no#) location
20. At station 132+00 install new cable from the new pole (DPL 60920/99719) location crossing SR26 to the new pole on the south side of SR26.
21. At station 132+00 install new cable from the new pole (DPL 60920/99719) location to the project limits.
22. At sta. 133+60 maintain the existing facilities as is.
23. At station 140+60 relocate the existing cable to the new pole (no#) location
24 At sta. 141+05 maintain the existing facilities as is.
25. At station 146+60 relocate the existing cable to the new pole (no#) location

26. At station 150+95 relocate the existing cable to the new pole (DPL 61109/99669) location
27. At station 150+95 relocate the existing cable to the new pole (DPL 61109/99669) location
28. At sta. 153+00 maintain the existing facilities as is.
29. At sta. 158+30 maintain the existing facilities as is.
30. At sta. 161+20 maintain the existing facilities as is.
31. At sta. 161+20 maintain the existing facilities as is.
32. At station 163+55 relocate the existing cable to the new pole (DST 4) location

33. At station 163+80 relocate the existing cable to the new pole (DPL 61235/99642) location
34. At station 168+00 splice to the existing cable and relocate the existing cable to the new pole (DPL 61274/99634) location
35. Maintain the existing facilities as is.
36. At station 171+20 relocate the existing cable to the new pole (DST 2) location

CONSTRUCTION SEQUENCE SECTION 1

37. At station 178+60 relocate the existing cable to the new pole (DPL 61379/99613) location
38. At station 180+52 relocate the existing cable to the new pole (DPL 61398/9969) location
39. At station 182+35 relocate the existing cable to the new pole (DPL 6???8/9906) location
40. At station 185+65 relocate the existing cable to the new pole (DPL 61450/99599) location
41. At station 194+55 relocate the existing cable to the new pole (AA20-1) location
42. At station 196+00 install new cable from the new pole (DPL 61551/99572) location 110' east then splice to the existing cable.
43. Maintain the existing facilities as is.
44. At station 199+65 install new cable from pole DPL 61586/99858 heading north crossing SR26 to a business.
45. Maintain the existing facilities as is.
46. At station 202+20 relocate the existing cable to the new pole (DPL 61609/99565) location.
47. At station 205+90 relocate the existing cable to the new pole (DST AA 30) location.
48. At station 208+55 relocate the existing cable to the north to the new pole (DPL 61670/99558) location and install new cable to the south crossing SR26 to the project limits.
49. At station 211+80 install new cable crossing SR26 from pole CON 61705/9950 to the project limits.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
PO BOX 778
DOVER, DELAWARE 19903

CERTIFICATE OF RIGHT-OF-WAY STATUS

STATE PROJECT NO. T200411210

F.A.P. No. ESTP-S026(26)

SR 26 ATLANTIC AVENUE FROM CLARKSVILLE TO ASSAWOMAN CANAL

SUSSEX COUNTY

Certificate of Right-of-Way Status – 100%

As required by 23CFR Part 635, all necessary real property interests have been acquired in accordance with current State/Federal rules and regulations covering the acquisition of real property.

This is to certify that all project rights of way is currently available in accordance with the project right-of-way plans.

It is further certified that there were seven individual owners displaced by this project. Therefore, the provisions of 49 CFR Part 24 is applicable to the project. Three of the displaced owners have moved to Decent Safe and Sanitary replacement dwellings, three of the other four dwellings were not principal residences and personal property move only (which has been completed), and the last was an uninhabitable investment property. All dwellings have been demolished except for Parcel 23-L which will be demolished as part of the construction project.

REAL ESTATE SECTION

Robert Cunningham
Assistant Director Transportation Solutions
Right of Way

August 5, 2013

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

SHAILEN P. BHATT
SECRETARY

June 4, 2013

ENVIRONMENTAL REQUIREMENTS

FOR
State Contract No. T200411210
Federal Aid No.: ESTP-S026(6)

Contract Title: SR 26, Atlantic Avenue from Clarksville to Assawoman Canal

In accordance with the procedural provisions for implementing the National Environmental Policy Act of 1969, as amended, the referenced project has been processed through the Department's Environmental Review Procedures and has been classified as a Level C/ Class III Action. As such, an Environmental Assessment has been prepared to evaluate potential adverse impacts to result from construction of the proposed action (per 23 CFR 771.119) and the following special provisions have been developed to mitigate and/or minimize these impacts.

PERMIT REQUIREMENTS:

The construction work that will occur along SR 26, Atlantic Avenue from Clarksville to Assawoman Canal (i.e. intersection improvements, addition of continuous center left turn lane, shoulders, sidewalks, and drainage improvements) in Sussex County, Delaware, requires permit approval from those agencies listed below. It is the responsibility of the contracting agency, the Delaware Department of Transportation, Division of Transportation Solutions to obtain the necessary permits to ensure that the contractor complies with the requirements and conditions established by the regulatory agencies.

REQUIRED PERMITS AND APPROVAL STATUS:

- U.S. Army Corps of Engineers (COE) - Nationwide Permit (NWP) # 14 – CENAP-OP-R-2013-496-23 – **approved date 5/20/13**; e**xpires – 3/16/17**

- Delaware Department of Natural Resources and Environmental Control (DNREC) – Subaqueous Lands and Wetlands Permit (SP-276/12 and WE-269/12) – **approved 4/4/13, expires 4/4/18**

SPECIFIC REQUIREMENTS:

Compliance with all requirements of the permits is the responsibility of the contractor. The contractor will follow all special conditions or requirements as stated within those permits or as indicated below. The contractor will be subject to penalties, fines, and the risk of shut down as mandated by law if conditions of the permits or other additional requirements are violated or ignored. Therefore, all special conditions, general requirements, and/or other required provisions specified within the permits must be followed. Those obligations are indicated or listed within the permit package, which can be obtained from the DelDOT Contract Administration Office.

Additional requirements by DelDOT not specified within the permits, but listed below, or on the Environmental Compliance Sheets are also the responsibility of the contractor and are subject to risk of shut down at the contractor's expense.

1. The contractor shall employ measures during construction to prevent spills of fuels, or lubricants, if a spill should occur, efforts shall be undertaken to prevent its entry into wetlands, aquatic, or drainage areas. Any spills entering wetlands, aquatic, or drainage areas shall be removed immediately. The Division of Water Resources (DNREC), Wetlands & Aquatic Protection Branch, 302-739-4691, shall be notified of any spill(s) within six (6) hours of their occurrence. That office will determine the effectiveness of spill and contamination removal and specify remediation efforts as necessary.

2. All construction debris, excavated material, brush, rocks, and refuse incidental to such work shall be placed either on shore above the influence of flood waters or on some suitable disposal site approved by the department.

3. The disposal of trees, brush, and other debris in any stream corridor, wetland surface water or any drainage ditch is prohibited.

4. There shall be no stockpiling of construction materials, excavated materials, construction debris, storage of equipment, temporary fills, or construction of any ancillary facilities, such as asphalt or concrete pads, in wetlands, water bodies, subaqueous lands, or forested areas unless otherwise specified on project plans and approved by permitting agencies that govern them. All materials and aggregates shall be contained and stabilized to avoid impacts to wetlands and waters.

5. The effort shall be made to keep construction debris from entering adjacent waterways, wetlands, ground cover, or drainage areas. Any debris that enters these areas shall be removed immediately. Netting, mats, or establishing confined work areas in stages may be necessary to address these issues.

6. If routine maintenance of worker equipment and heavy machinery is necessary during the construction period, refuse material is prohibited from being disposed or deposited onto or into the ground. All used oils and filters must be recycled or disposed of properly.

7. Harmful chemical wash water applied to clean equipment or machinery shall be discouraged. If undertaken, the residue water and/or material must be collected or contained such that it will be disposed of properly. By no means, shall it be deposited or disposed of in waterways, streams, wetlands, or drainage areas.

8. The contractor shall follow all requirements as indicated in the Environmental Compliance Sheet. It will be the contractor's responsibility, expense, & effort to ensure that workers also follow this requirement. As part of the restrictions, please note the timetables reflected in the contract for the in-stream/water work for endangered species protection.

9. That the fill material shall be free of oil and grease, debris, wood, general refuse, plaster and other pollutants, and shall contain no broken asphalt.

ENVIRONMENTAL COMPLIANCE SHEET:

The contractor shall pay special attention to specific construction requirements as indicated in the Environmental Compliance Sheet.

1. Specifically, please note the environmental requirements as indicated in Note #2C for Protection of Trees and Wetlands.

2. Specifically, please note the environmental requirements as indicated in Note #2D for Channel Restoration.

3. Specifically, please note the environmental requirements as indicated in Note #3 for Cultural Resource Issues.

4. Specifically, please note the environmental requirements as indicated in Note #4 for Wetlands Creation.

5. DelDOT Environmental Studies Section (302) 760-2264 must be notified if there are any changes to the project methods, footprint, materials, or designs, to allow the Department to coordinate with the appropriate resource agencies (COE, DNREC, and SHPO), for approval.

PROJECT SPECIFIC SPECIAL CONDTIONS FROM ENVIRONMENTAL PERMITS:

1. As per the U.S. Army Corps of Engineers (USACOE) Permit Special Condition #3, any deviation in construction methodology or project design from that shown on the noted drawings must be approved in writing, prior to performance of the work. All modifications to the noted project plans shall be approved, in writing, by the USACOE office. No work shall be performed prior to written approval of their office. Coordinate all changes through the Environmental Studies Office @ 302-760-2264.

2. As per the USACOE Permit Special Condition #11, this permit authorizes temporary impacts to waters of the United States associated with the project. Upon completion of the authorized work, all temporary fills in waters of the U.S. shall be removed in their entirety and the temporarily disturbed waters shall be returned to their preconstruction grades and elevations.

3. As per the USACOE Permit Special Condition #12 and DNREC Special Condition #2, if construction is to occur from 15 April to 1 August of any year, the bridges shall be checked for the presence of nests of migratory birds regulated by the Federal Migratory Treaty Bird Act. The species of concern are the barn swallow (*Hirundo rustica*) and/or the eastern phoebe (*Sayornis phoebe*) which may be nesting under the bridges. If the survey detects a substantial number of active nests, impacts should be avoided by performing construction activities from 1 August to 15 April. If construction cannot be conducted in this time period, prior to birds establishing nests at the bridges, a deterrent such as mesh netting shall be used to block access to nesting sites on the undersides of the bridges. The mesh material shall be in place no later than 15 April. The undersides of the bridges shall be fully encapsulated and the mesh left in place until construction begins.

4. As per DNREC Special Condition #4, the box culvert shall be recessed one foot below the channel bed and backfilled with native stream sediment, or like material, to the pre-existing streambed elevation.

5. As per DNREC Special Condition #5, the riprap at the inlet and outlet shall be recessed one foot below the streambed. Clean fill material shall be placed in the voids between the stones. The riprap shall then be backfilled with native stream sediment, or like material, to the pre-existing elevation of the stream bed.

6. As per DNREC Special Condition #6, in order to minimize negative impacts from the culverts and to maintain habitat connectivity a) No concrete aprons shall be constructed at the culvert inlet or outlet. b) The culvert shall not be placed at a slope that exceeds the slope of the streambed. c) The culvert shall maintain water depths similar to those found in the adjacent stream and shall allow for fish passage in portions of the stream that are capable of providing fish habitat. d) The channel widths, banks and side-slopes shall not be widened or re-contoured to accommodate construction or access, except as identified in the approved plans to conduct stream restoration or modification.

7. As per DNREC Special Condition #10, the contractor shall ensure that, after construction, the stream will not be “lost” or infiltrate beneath the channel or culvert. If flow is lost from the stream, corrective action shall be taken to restore flow to the stream.

BID PROPOSAL FORMS

CONTRACT T200411210.01

FEDERAL AID PROJECT ESTP-S026(6)

CANNOT BE USED FOR BIDDING

CANNOT BE
USED FOR
BIDDING

CONTRACT ID: T200411210.01 PROJECT(S): ESTP-S026(6)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 SPECIALTY ITEMS					
0010	614508 WATERMAIN AND ACCESSORIES	LUMP	LUMP			
0020	753516 SANITARY SEWER SYSTEM	LUMP	LUMP			
0030	753558 RELCOATE FORCE MAIN	LUMP	LUMP			
	SECTION 0001 TOTAL					
	SECTION 0002 TYPICAL CONSTRUCTION ITEMS					
0040	201000 CLEARING AND GRUBBING	LUMP	LUMP			
0050	202000 EXCAVATION AND EMBANKMENT	54284.000 CY				
0060	202528 PIEZOMETER	9.000 LF				
0070	207000 EXCAVATION AND BACKFILL FOR STRUCTURES	3050.000 CY				
0080	207501 SHEETING AND SHORING	LUMP	LUMP			

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0090	208000 EXCAVATION AND BACKFILLING FOR PIPE TRENCHES	5495.000 CY				
0100	208001 FLOWABLE FILL	61.000 CY				
0110	209001 BORROW, TYPE A	3455.000 CY				
0120	209002 BORROW, TYPE B	2805.000 CY				
0130	209006 BORROW, TYPE F	500.000 CY				
0140	210000 FURNISHING BORROW TYPE "C" FOR PIPE, UTILITY TRENCH, AND STRUCTURE BACKFILL	2865.000 CY				
0150	211000 REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LUMP	LUMP			
0160	211503 DEMOLITION OF BUILDINGS	LUMP	LUMP			
0170	212000 UNDERCUT EXCAVATION	2715.000 CY				
0180	250000 SEDIMENT REMOVAL	2249.000 CY				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0190	251000 SILT FENCE	40835.000 LF				
0200	251001 REINFORCED SILT FENCE	3625.000 LF				
0210	252001 INLET SEDIMENT CONTROL, CURB INLET	238.000 EACH				
0220	252002 INLET SEDIMENT CONTROL, AT GRADE INLET	129.000 EACH				
0230	254000 STONE CHECK DAM	146.000 TON				
0240	255000 SEDIMENT TRAP	589.000 CY				
0250	256001 RISER PIPE ASSEMBLY FOR SEDIMENT TRAP, 15"	2.000 EACH				
0260	263000 SUMP PIT, TYPE 1	3.000 EACH				
0270	265500 STREAM DIVERSION	LUMP	LUMP			
0280	266000 SANDBAG DIKES	20.000 CY				

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0290	268000 STABILIZED CONSTRUCTION ENTRANCE	400.000 TON				
0300	271000 STORMWATER MANAGEMENT POND	14330.000 CY				
0310	272000 POND OUTLET STRUCTURE, CONCRETE, #1	1.000 EACH				
0320	272001 POND OUTLET STRUCTURE, CONCRETE, #2	1.000 EACH				
0330	272002 POND OUTLET STRUCTURE, CONCRETE, #3	1.000 EACH				
0340	272500 SKIMMER DEWATERING DEVICE	3.000 EACH				
0350	272502 ENERGY DISSIPATOR	2.000 EACH				
0360	302005 GRADED AGGREGATE BASE COURSE, TYPE B	53955.000 TON				
0370	302011 DELAWARE NO. 3 STONE	550.000 TON				
0380	302012 DELAWARE NO. 57 STONE	64.000 TON				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0390	401813 WMA, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 70-22	35520.000 TON				
0400	401821 WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	56.000 TON				
0410	401822 WMA, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 64-22, PATCHING	167.000 TON				
0420	401824 WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, WEDGE	1087.000 TON				
0430	401825 WMA, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 64-22, WEDGE	197.000 TON				
0440	401830 WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 70-22 (NON- CARBONATE STONE)	20660.000 TON				
0450	402000 HOT-MIX BITUMINOUS CONCRETE AND/OR COLD-LAID BITUMINOUS CONCRETE (TRM)	204.000 TON				
0460	602004 PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT FOOTING, CLASS B	22.000 CY				
0470	602005 PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT ABOVE FOOTING, CLASS B	12.000 CY				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0480	602011 PORTLAND CEMENT CONCRETE MASONRY, SUBSTRUCTURE, CLASS A	5.000 CY				
0490	602015 PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT ABOVE FOOTING, CLASS A	12.000 CY				
0500	602017 PORTLAND CEMENT CONCRETE MASONRY, PARAPET, CLASS A	23.000 CY				
0510	602506 PRECAST CONCRETE CULVERT	LUMP	LUMP			
0520	602537 RETAINING WALL	165.000 SF				
0530	602615 MODULAR BLOCK RETAINING WALL	1240.000 SF				
0540	602646 SILICONE ACRYLIC CONCRETE SEALER	2500.000 SF				
0550	604000 BAR REINFORCEMENT, EPOXY COATED	6050.000 LB				
0560	606002 METAL BRIDGE RAILING, ALUMINUM	110.000 LF				
0570	606504 ALUMINUM HANDRAIL	240.000 LF				

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0580	608000 COARSE AGGREGATE FOR FOUNDATION STABILIZATION AND SUBFOUNDATION BACKFILL	194.000 TON				
0590	612021 REINFORCED CONCRETE PIPE, 15", CLASS IV	2575.000 LF				
0600	612022 REINFORCED CONCRETE PIPE, 18", CLASS IV	1239.000 LF				
0610	612023 REINFORCED CONCRETE PIPE, 24", CLASS IV	40.000 LF				
0620	612026 REINFORCED CONCRETE PIPE, 30", CLASS V	40.000 LF				
0630	612027 REINFORCED CONCRETE PIPE, 42", CLASS IV	215.000 LF				
0640	612028 REINFORCED CONCRETE PIPE, 48", CLASS IV	405.000 LF				
0650	612030 REINFORCED CONCRETE PIPE, 18", CLASS V	2926.000 LF				
0660	612031 REINFORCED CONCRETE PIPE, 24", CLASS V	800.000 LF				
0670	612032 REINFORCED CONCRETE PIPE, 15", CLASS V	13540.000 LF				

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0680	612033 REINFORCED CONCRETE PIPE, 21", CLASS IV	200.000 LF				
0690	612036 REINFORCED CONCRETE PIPE, 48", CLASS V	115.000 LF				
0700	612043 REINFORCED CONCRETE PIPE, 42", CLASS V	35.000 LF				
0710	612046 REINFORCED CONCRETE PIPE, 21", CLASS V	1475.000 LF				
0720	612047 REINFORCED CONCRETE PIPE, 27", CLASS V	1090.000 LF				
0730	612048 REINFORCED CONCRETE PIPE, 33", CLASS IV	65.000 LF				
0740	612205 REINFORCED CONCRETE ELLIPTICAL PIPE, 19"X30", CLASS IV	908.000 LF				
0750	612210 REINFORCED CONCRETE ELLIPTICAL PIPE, 22"X34", CLASS IV	255.000 LF				
0760	612213 REINFORCED CONCRETE ELLIPTICAL PIPE, 27"X42", CLASS IV	995.000 LF				
0770	612216 REINFORCED CONCRETE ELLIPTICAL PIPE, 14"X23", CLASS IV	150.000 LF				

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0780	612219 REINFORCED CONCRETE ELLIPTICAL PIPE, 24"X38", CLASS IV	175.000 LF				
0790	612220 REINFORCED CONCRETE ELLIPTICAL PIPE, 29"X45", CLASS IV	10.000 LF				
0800	612223 REINFORCED CONCRETE ELLIPTICAL PIPE, 19"X30", CLASS V	635.000 LF				
0810	612224 REINFORCED CONCRETE ELLIPTICAL PIPE, 27"X42", CLASS V	75.000 LF				
0820	612225 REINFORCED CONCRETE ELLIPTICAL PIPE, 14"X23", CLASS V	970.000 LF				
0830	612226 REINFORCED CONCRETE ELLIPTICAL PIPE, 24"X38", CLASS V	385.000 LF				
0840	617002 REINFORCED CONCRETE FLARED END SECTION, 15"	24.000 EACH				
0850	617003 REINFORCED CONCRETE FLARED END SECTION, 18"	3.000 EACH				
0860	617004 REINFORCED CONCRETE FLARED END SECTION, 21"	1.000 EACH				
0870	617005 REINFORCED CONCRETE FLARED END SECTION, 24"	1.000 EACH				

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0880	617006 REINFORCED CONCRETE FLARED END SECTION, 27"	2.000 EACH				
0890	617007 REINFORCED CONCRETE FLARED END SECTION, 30"	1.000 EACH				
0900	617008 REINFORCED CONCRETE FLARED END SECTION, 33"	1.000 EACH				
0910	617011 REINFORCED CONCRETE FLARED END SECTION, 48"	2.000 EACH				
0920	617164 REINFORCED CONCRETE FLARED END SECTION, 19" X 30"	4.000 EACH				
0930	617165 REINFORCED CONCRETE FLARED END SECTION, 14" X 23"	1.000 EACH				
0940	617168 REINFORCED CONCRETE FLARED END SECTION, 27" X 42"	1.000 EACH				
0950	617171 REINFORCED CONCRETE FLARED END SECTION, 29" X 45"	1.000 EACH				
0960	617174 REINFORCED CONCRETE FLARED END SECTION, 24" X 38"	1.000 EACH				
0970	617176 REINFORCED CONCRETE FLARED END SECTION, 22" X 34"	1.000 EACH				

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0980	622008 STEEL SHEET PILES, PZ 27	2150.000 SF				
0990	701010 PORTLAND CEMENT CONCRETE CURB, TYPE 1-8	140.000 LF				
1000	701011 PORTLAND CEMENT CONCRETE CURB, TYPE 2	1002.000 LF				
1010	701022 INTEGRAL PORTLAND CEMENT CONCRETE CURB & GUTTER, TYPE 3-8	36149.000 LF				
1020	705001 P.C.C. SIDEWALK, 4"	89172.000 SF				
1030	705002 P.C.C. SIDEWALK, 6"	12767.000 SF				
1040	705007 SIDEWALK SURFACE DETECTABLE WARNING SYSTEM	2194.000 SF				
1050	705528 TEMPORARY CURB RAMP	32.000 EACH				
1060	708051 DRAINAGE INLET, 34" X 24"	97.000 EACH				
1070	708052 DRAINAGE INLET, 48" X 30"	66.000 EACH				

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1080	708053 DRAINAGE INLET, 48" X 48"	48.000 EACH				
1090	708054 DRAINAGE INLET, 66" X 30"	2.000 EACH				
1100	708056 DRAINAGE INLET, 66" X 66"	9.000 EACH				
1110	708060 REPLACE DRAINAGE INLET GRATE(S)	17.000 EACH				
1120	708061 REPLACE DRAINAGE INLET FRAME(S)	17.000 EACH				
1130	708062 FURNISH DRAINAGE INLET FRAME(S)	17.000 EACH				
1140	708107 MANHOLE, ROUND	1.000 EACH				
1150	708112 MANHOLE, 48" X 48"	14.000 EACH				
1160	708115 MANHOLE, 66" X 66"	3.000 EACH				
1170	708512 DRAINAGE INLET, SPECIAL I	1.000 EACH				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS		UNIT PRICE DOLLARS	CTS	BID AMOUNT DOLLARS	CTS
1180	708513 DRAINAGE INLET, SPECIAL II	1.000	EACH				
1190	708514 DRAINAGE INLET, SPECIAL III	5.000	EACH				
1200	708515 DRAINAGE INLET, SPECIAL IV	8.000	EACH				
1210	708516 DRAINAGE INLET, SPECIAL V	7.000	EACH				
1220	708517 DRAINAGE INLET, SPECIAL VI	4.000	EACH				
1230	708518 DRAINAGE INLET, SPECIAL VII	1.000	EACH				
1240	708563 PERSONAL GRATE FOR PIPE INLET	LUMP	LUMP				
1250	708582 MANHOLE,SPECIAL I	1.000	EACH				
1260	708585 JUNCTION BOX, 48" X 30"	1.000	EACH				
1270	708589 JUNCTION BOX, 66" X 66"	2.000	EACH				

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1280	708653 DRAINAGE INLET, SPECIAL VIII	1.000	EACH				
1290	708654 DRAINAGE INLET, SPECIAL IX	1.000	EACH				
1300	708655 DRAINAGE INLET, SPECIAL X	2.000	EACH				
1310	708656 DRAINAGE INLET, SPECIAL XI	3.000	EACH				
1320	709518 SANITARY CLEANOUT	30.000	EACH				
1330	710001 ADJUSTING AND REPAIRING EXISTING DRAINAGE INLET	10.000	EACH				
1340	710501 CONVERTING EXISTING CATCH BASIN TO MANHOLE	2.000	EACH				
1350	710506 ADJUST AND REPAIR EXISTING SANITARY MANHOLE	32.000	EACH				
1360	710507 ADJUST AND REPAIR EXISTING SANITARY CLEANOUTS	77.000	EACH				
1370	712005 RIPRAP, R-4	657.000	SY				
1380	712006 RIPRAP, R-5	287.000	SY				

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1390	712020 RIPRAP, R-4	117.000 TON				
1400	712506 GABIONS	65.000 CY				
1410	712531 CHANNEL BED FILL	61.000 CY				
1420	713002 GEOTEXTILES, SEPARATION	87565.000 SY				
1430	713003 GEOTEXTILES, RIPRAP	1183.000 SY				
1440	715510 TEMPORARY DRAINAGE PIPE, 12"	80.000 LF				
1450	716000 CONVERTING EXISTING DRAINAGE INLET TO JUNCTION BOX	2.000 EACH				
1460	727014 CONSTRUCTION SAFETY FENCE	500.000 LF				
1470	727015 MONUMENTS	89.000 EACH				
1480	727510 WOOD RAIL FENCE	230.000 LF				
1490	727527 CHAIN FENCE	565.000 LF				

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1500	727555 RIGHT-OF-WAY MARKER, CAPPED REBAR	37.000 EACH				
1510	732002 TOPSOIL, 6" DEPTH	71708.000 SY				
1520	733002 TOPSOILING, 6" DEPTH	18169.000 SY				
1530	734013 PERMANENT GRASS SEEDING, DRY GROUND	92201.000 SY				
1540	734015 PERMANENT GRASS SEEDING, WET GROUND	3950.000 SY				
1550	734017 TEMPORARY GRASS SEEDING, DRY GROUND	21604.000 SY				
1560	734018 TEMPORARY GRASS SEEDING, WET GROUND	3900.000 SY				
1570	734520 MEADOW SEEDING	7150.000 SY				
1580	734531 STREAMBANK SEED MIX	160.000 SY				
1590	735501 HERBICIDE APPLICATION, NOXIOUS WEEDS	1.000 ACRE				

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1600	735536 SOIL RETENTION BLANKET MULCH, TYPE 6	525.000 SY				
1610	737523 PLANTINGS	LUMP	LUMP			
1620	743000 MAINTENANCE OF TRAFFIC	LUMP	LUMP			
1630	743003 ARROWPANELS, TYPE C	62.000 EADY				
1640	743004 FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	1030.000 EADY				
1650	743005 FURNISH AND MAINTAIN PORTABLE LIGHT ASSEMBLY	5948.000 EADY				
1660	743006 PLASTIC DRUMS	240012.000 EADY				
1670	743007 TRAFFIC OFFICERS	3320.000 HOUR	75.00000		249000.00	
1680	743008 REFLECTOR PANELS	26.000 EACH				
1690	743009 FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE I	50.000 EADY				

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1700	743010 FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	1660.000 EADY				
1710	743015 FURNISH AND MAINTAIN PORTABLE PCC SAFETY BARRIER	1200.000 LF				
1720	743016 RELOCATION PORATBLE SAFETY BARRIER	3600.000 LF				
1730	743023 TEMPORARY BARRICADES, TYPE III	37960.000 LFDY				
1740	743024 TEMPORARY WARNING SIGNS AND PLAQUES	266543.000 EADY				
1750	743025 INSTALL TEMPORARY IMPACT ATTENUATOR	12.000 EACH				
1760	743029 FURNISH TEMPORARY IMPACT ATTENUATOR - NON-GATING, REDIRECTIVE, TEST LEVEL 3	5.000 EACH				
1770	743030 RELOCATE TEMPORARY IMPACT ATTENUATOR	12.000 EACH				
1780	743031 ATSSA CERTIFIED TRAFFIC CONTROL SUPERVISOR	8400.000 HOUR				
1790	743052 FLAGGER, SUSSEX COUNTY, STATE	41520.000 HOUR	46.94000		1948948.80	

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1800	743064 FLAGGER, SUSSEX COUNTY, STATE, OVERTIME	9000.000 HOUR	68.06000		612540.00	
1810	743550 TUBULAR MARKER	12.000 EACH				
1820	743551 FURNISH AND MAINTAIN REMOTE COMMUNICATION PORTABLE CHANGEABLE MESSAGE SIGN	9440.000 EADY				
1830	744506 CONDUIT JUNCTION WELL, TYPE 7, PRECAST POLYMER CONCRETE	20.000 EACH				
1840	744525 REMOVAL OF EXISTING JUNCTION WELL	33.000 EACH				
1850	744530 CONCUIT JUNCTION WELL, TYPE 11, PRECAST CONCRETE/ POLYMER LID-FRAME	54.000 EACH				
1860	744531 CONDUIT JUNCTION WELL, TYPE 14, PRECAST CONCRETE/ POLYMER LID-FRAME	46.000 EACH				
1870	745521 SUPPLY OF 4" SDR-13.5 HDPE CONDUIT	5210.000 LF				
1880	745522 SUPPLY OF 3" SCHEDULE 80 PVC CONDUIT	320.000 LF				

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1890	745524 SUPPLY OF 4" SCHEDULE 80 PVC CONDUIT	19780.000 LF				
1900	745527 SUPPLY OF 2 1/2" GALVANIZED STEEL CONDUIT	90.000 LF				
1910	745530 SUPPLY OF 1" GALVANIZED STEEL CONDUIT	220.000 LF				
1920	745542 INSTALLATION OF CONDUIT UNDER EXISTING PAVEMENT-DIRECTIONAL BORE	5110.000 LF				
1930	745544 INSTALLATION OF CONDUIT IN UNPAVED TRENCH	21780.000 LF				
1940	745545 INSTALLATION OF CONDUIT ON WOOD POLE	130.000 LF				
1950	745547 INSTALLATION OF ADDITIONAL CONDUITS IN TRENCH OR OPEN CUT PAVEMENT	110.000 LF				
1960	745548 INSTALLATION OF ADDITIONAL CONDUITSIN DIRECTIONAL BORE	70.000 LF				
1970	745551 REMOVAL OF CONDUIT FROM WOOD POLE	30.000 LF				
1980	745579 SUPPLY OF 2 1/2" SCHEDULE 80 PVC CONDUIT	270.000 LF				

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1990	745581 SUPPLY OF 2" SCHEDULE 80 PVC CONDUIT	680.000 LF				
2000	746653 ELECTRICAL TESTING	LUMP	LUMP			
2010	746830 REMOVAL OF CONCRETE POLE BASES AND CABINET FOUNDATIONS	8.000 CY				
2020	746847 POLE BASE, TYPE 3	18.000 EACH				
2030	746850 POLE BASE, TYPE 4	16.000 EACH				
2040	746923 FURNISH & INSTALL 1" FLEXIBLE NON-METALLIC LIQUIDTIGHT CONDUIT DETECTOR SLEEVE WITH LOOP WIRE	100.000 LF				
2050	746924 FURNISH & INSTALL LOOP WIRE 1-CONDUCTOR #14 AWG ENCASED IN 1/4" FLEXIBLE TUBING IN A LOOP SAWCUT	5360.000 LF				
2060	747514 CABINET BASE, TYPE F	1.000 EACH				
2070	747516 CABINET BASE, TYPE P	4.000 EACH				

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BIDDING

CONTRACT ID: T200411210.01 PROJECT(S): ESTP-S026(6)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2080	748015 PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND ALKYD-THERMOPLAST IC	12989.000 SF				
2090	748019 TEMPORARY MARKINGS, PAINT, 4"	255729.000 LF				
2100	748020 TEMPORARY MARKINGS, PAINT, 6"	440.000 LF				
2110	748026 TEMPORARY MARKINGS, PAINT SYMBOL/LEGEND	2340.000 SF				
2120	748027 PERMANENT PAVEMENT STRIPING, ALKYD-THERMOPLASTIC, 12"	159.000 LF				
2130	748502 RAISED/RECESSED PAVEMENT MARKER	927.000 EACH				
2140	748506 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, 4"	1324.000 LF				
2150	748525 TEMPORARY MARKINGS, TAPE, 4"	440.000 LF				
2160	748526 TEMPORARY MARKINGS, TAPE, 6"	12166.000 LF				
2170	748530 REMOVAL OF PAVEMENT STRIPING	28160.000 SF				

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CONTRACT ID: T200411210.01 PROJECT(S): ESTP-S026(6)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2180	748548 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	146777.000 LF				
2190	748553 PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, BIKE SYMBOL	118.000 EACH				
2200	748555 PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, HANDICAP SYMBOL	3.000 EACH				
2210	749687 INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON SINGLE SIGN POST	921.000 EACH				
2220	749688 INSTALLATION OF 4" DIAMETER HOLE, LESS THAN OR EQUAL TO 6" DEPTH	5.000 EACH				
2230	749689 INSTALLATION OF 4" DIAMETER HOLE, GREATER THAN 6" DEPTH	5.000 EACH				
2240	749690 INSTALLATION OR REMOVAL OF TRAFFIC SIGNS ON MULTIPLE SIGN POSTS	414.000 SF				
2250	750000 ADJUST WATER VALVE BOXES	39.000 EACH				
2260	753000 ADJUST SANITARY SEWER LATERALS	105.000 EACH				

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CONTRACT ID: T200411210.01 PROJECT(S): ESTP-S026(6)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2270	754000 ADJUST WATER SERVICES	20.000 EACH				
2280	758000 REMOVAL OF EXISTING PORTLAND CEMENTCONCRETE PAVEMENT, CURB, SIDEWALK, ETC.	11255.000 SY				
2290	759502 FIELD OFFICE, SPECIAL I	30.000 EAMO				
2300	760000 PAVEMENT - MILLING, HOT-MIX	56800.000 SYIN				
2310	760507 PROFILE MILLING, HOT-MIX	190700.000 SYIN				
2320	762001 SAW CUTTING, HOT MIX	161980.000 LF				
2330	762002 SAW CUTTING, CONCRETE, FULL DEPTH	1355.000 LF				
2340	763000 INITIAL EXPENSE	LUMP	LUMP			
2350	763501 CONSTRUCTION ENGINEERING	LUMP	LUMP			
2360	763503 TRAINEE	2080.000 HOUR	0.80000		1664.00	

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BIDDING

CONTRACT ID: T200411210.01 PROJECT(S): ESTP-S026(6)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2370	763508 PROJECT CONTROL SYSTEM DEVELOPMENT PLAN	LUMP	LUMP			
2380	763509 CPM SCHEDULE UPDATES AND/OR REVISED UPDATES	30.000 EAMO				
2390	763597 UTILITY CONSTRUCTION ENGINEERING	1040.000 HOUR				
2400	763695 SNOW REMOVAL BY CONTRACTOR	LUMP	LUMP			
	SECTION 0002 TOTAL					
	TOTAL BID					

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BIDDING

Contract No. T200411210.01

Diesel Fuel Cost Price Adjustment Option

The Bidder is required to submit this form with his/her Bid Proposal at the time of bid opening. When this form is not provided by the Bidder at the time of Bid, the Option-OUT will be automatically selected and no further option is available to the Contractor and no Diesel Fuel Cost Adjustments will be made.

OPTION-IN

☐ Checking here selects the option to participate in the 763626 - Diesel Fuel Cost Price Adjustment.

OPTION-OUT

☐ Checking here declines the option to participate in the 763626 - Diesel Fuel Cost Price Adjustment.

The undersigned hereby certifies that he/she is authorized to make this Option on behalf of the bidder in compliance with the special provision 763626 - Diesel Fuel Cost Price Adjustment.

Sealed and dated this _____ day of _____ in the year of our Lord two thousand and _____ (20__).

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Name of Bidder (Organization)

Corporate Seal

By:

Authorized Signature

Attest

Title

SWORN TO AND SUBSCRIBED BEFORE ME this ____ day of _____, 20___.

Notary Seal

Notary

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BREAKOUT SHEETS

THE FOLLOWING SHEETS MUST BE COMPLETED AND RETURNED WITH THE PROPOSAL AT THE TIME OF BID. BREAKOUT SHEETS MUST BE COMPLETED REGARDLESS OF WHETHER BIDDING BY ELECTRONIC MEANS OR TYPEWRITTEN HARD COPY.

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SECTION 1 **BREAKOUT SHEET - 1** **CONTRACT NO. T200411210**

ITEM 207501 - SHEETING AND SHORING

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
A	1	LS	Supply and Installation of Sheeting and Shoring Completed at Bridge 427	$	$
B	1	LS	Supply and Installation of Sheeting and Shoring Completed at Bridge 428	$	$

TOTAL ITEM 207501 Sheeting and Shoring $_____

(LUMP SUM BID PRICE FOR ITEM 207501)

CANNOT BE USED FOR BIDDING

SECTION 1 **BREAKOUT SHEET - 2** **CONTRACT NO. T200411210**

ITEM 265500 - STREAM DIVERSION

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
A	1	LS	Supply and Installation of Stream Diversion Completed at Bridge 427	$	$
B	1	LS	Supply and Installation of Stream Diversion Completed at Bridge 428	$	$

TOTAL ITEM 265500 - Stream Diversion $_____

(LUMP SUM BID PRICE FOR ITEM 265500)

CANNOT BE USED FOR BIDDING

SECTION 1 **BREAKOUT SHEET - 3** **CONTRACT NO. T200411210**

ITEM 602506 - PRECAST CONCRETE CULVERT

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
A	1	LS	Supply and Installation of a precast culvert completed at Bridge 427	$	$
B	1	LS	Supply and Installation of a precast culvert completed at Bridge 428	$	$

TOTAL ITEM 602506 - Precast Concrete Culvert $_____

(LUMP SUM BID PRICE FOR ITEM 602506)

CANNOT BE USED FOR BIDDING

SECTION 1			BREAKOUT SHEET - 4 ITEM 614508 - Water Main and Accessories		CONTRACT NO. T200411210
ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
1	1	LS	Furnish and Install (1) 12"x6" Hydrant Tee and 6" Valve @ SR 26 Connection point near Lord Baltimore School (Sta 164+00 +/-)	$	$
2	1	LS	Relocate Hydrant and hydrant valve box near Ocean View / Tidewater connection point (Sta 164+00 +/-)	$	$
3	1	LS	Furnish and Install new C-909, CL 150 PVC water main at connection point (Sta 164+00 +/-) and/or connect with Tidewater system using appropriate fittings	$	$
4	6	EA	Relocate hydrants at Sta 168+67, 174+50, 180+50, 184+75, 200+38 and 207+57, include any new lateral piping, bends, fittings and adjust valve box lids to future grade	$	$
5	1	LS	Furnish and Install wet tap on existing 10" DIP water main at West Ave. Sta 361+38; include 10" valve, 10" to 12" increaser, and other necessary fittings or appurtenances	$	$
6	30	LF	Furnish and Install new 12" Ductile Iron (DIP) water main, a 12"x6" DIP Hydrant Tee, a 6" Hydrant Valve, and any necessary fittings	$	$
7	1	LS	Relocate hydrant & valve box on new main at Sta 189+78	$	$

CANNOT BE USED FOR BIDDING

continued next page

SECTION 1 **BREAKOUT SHEET - 4** **CONTRACT NO. T200411210**

ITEM 614508 - Water Main and Accessories

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
8	275	LF	Furnish and Install 12" C-909 CL150 PVC water main, tie in with existing PVC main; include any necessary fittings and appurenances	$	$
9	1	LS	Furnish and Install 2" blow off on end of new main	$	$
10	1	LS	Abandon existing 12" water main by cut and cap all ends between Sta 189+50 - 192+50	$	$
11	1	EA	Perform a main deflection per detail sheet A-9	$	$
12	1	EA	Perform a water service lateral and meter box adjustment	$	$
13	1	EA	Wet-tap a new hydrant tee with valve and new valve box, include new lateral piping (C909 PVC), and any new fittings to connect relocated hydrant	$	$
14	1	EA	Paint Fire Hydrant	$	$

TOTAL ITEM 614508 - Water Main and Accessories $_____

(LUMP SUM BID PRICE FOR ITEM 614508)

CANNOT BE USED FOR BIDDING

SECTION 1 **BREAKOUT SHEET - 5** **CONTRACT NO. T200411210**

ITEM 708563 - PERSONNEL GRATE FOR PIPE INLET

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
A	16	EACH	Supply and Installation of Personnel Grate for pipe inlet for 15" RCP	$	$
B	1	EACH	Supply and Installation of Personnel Grate for pipe inlet for 18" RCP	$	$
C	1	EACH	Supply and Installation of Personnel Grate for pipe inlet for 19"x30" RCEP	$	$
D	1	EACH	Supply and Installation of Personnel Grate for pipe inlet for 27"x42" RCEP	$	$

TOTAL ITEM 708563 Personnel Grate for Pipe Inlet $_____

(LUMP SUM BID PRICE FOR ITEM 708563)

CANNOT BE USED FOR BIDDING

SECTION 1			BREAKOUT SHEET - 6 ITEM 737523 - PLANTING		CONTRACT NO. T200411210
ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
Planting located at Station 28+00 left					
1	25	EA	Chamaecyparie Thyoides 6'-8', B&B	$	$
2	25	EA	Pinus Virginian 6'-8', B&B	$	$
Planting located on the East and West side of Windmill Road					
1	38	EA	Juniperus Virginiana 6'-8', B&B	$	$
2	18	EA	Ilex Opaca 6'-8', B&B	$	$
3	4	EA	Amelanchier Arborea 1.5"-2" Caliper, B&B	$	$
4	8	EA	Carpinus Caroliniana 1.5"-2" Caliper, B&B	$	$
5	7	EA	Cornus Canadensis 1.5"-2" Caliper, B&B		
6	7	EA	Cornus Florida 1.5"-2" Caliper, B&B	$	$
7	3	EA	Quercus Phellos 1.5"-2" Caliper, B&B	$	$
				TOTAL ITEM 737523 - Planting $_____ (LUMP SUM BID PRICE FOR ITEM 737523)	

CANNOT BE USED FOR BIDDING

SECTION 1			BREAKOUT SHEET - 6 ITEM 737523 - PLANTING		CONTRACT NO. T200411210
ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
8	3	EA	Acer Rubrum 1.5" - 2" Caliper, B&B	$	$
9	9	EA	Taxpdium Distichum 1.5" - 2" Caliper, B&B	$	$
10	5	EA	Lagerstroemia Indica 1.5" - 2" Caliper, B&B	$	$
11	41	EA	Myrica Pensylvanica, 24" Container	$	$
12	11	EA	Llex Verticellata, 24" Container	$	$
13	163	EA	Panicum Virgatum, Plug	$	$
Planting Located to the East of Woodland Avenue					
1	14	EA	Betula Nigra 'Cully' 1.5" - 2" Caliper, B&B	$	$
2	11	EA	Cercis Canadensis 1.5" - 2" Caliper, B&B	$	$
3	9	EA	Cornus Florida 1.5" - 2" Caliper, B&B	$	$

CANNOT BE USED FOR BIDDING

SECTION 1			BREAKOUT SHEET - 6 ITEM 737523 - PLANTING		CONTRACT NO. T200411210
ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
4	11	EA	Quercus Phellos 1.5"-2" Caliper, B&B	$	$
Watering					
1	1	EA	Watering, U/M; M/GAL, Quantity sufficient to allow for watering over three full growing seasons, based on the following schedule per watering event; Major trees, 15 gals each; Minor trees, 10 gals each, Shrubs, 5 gals each, Herbaceous perennials, 10 gals/100 sf of bed area	$	$
				TOTAL ITEM 737523 - Planting $_____ (LUMP SUM BID PRICE FOR ITEM 737523)	

CANNOT BE USED FOR BIDDING

SECTION 1			BREAKOUT SHEET - 7 ITEM 753516 - SANITARY SEWER SYSTEM		CONTRACT NO. T200411210
ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
1	270	VF	Furnish and Install 48" Precast Manhole	$	$
2	11	VF	Furnish and Install 60" Precast Manhole	$	$
3	16	EA	Furnish and Install 8" Terminal Cleanouts	$	$
4	34	EA	Furnish and Install Manhole Frames and Covers	$	$
5	670	LF	Furnish and Install 6" PVC House Lateral	$	$
6	980	LF	Furnish and Install 8" PVC House Lateral	$	$
7	25	EA	Furnish and Install 6" PVC House Lateral Cleanouts	$	$
8	23	EA	Furnish and Install 8" PVC House Lateral Cleanouts	$	$
9	350	LF	Furnish and Install 8" PVC Gravity Sewer	$	$
10	4000	LF	Furnish and Install 10" PVC Gravity Sewer	$	$

CANNOT BE USED FOR BIDDING

SECTION 1 **BREAKOUT SHEET - 7** **CONTRACT NO. T200411210**

ITEM 753516 - SANITARY SEWER SYSTEM

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
11	2360	LF	Furnish and Install 12" PVC Gravity Sewer	$	$
12	600	LF	Furnish and Install 15" PVC Gravity Sewer	$	$
13	80	LF	Furnish and Install 18" PVC Gravity Sewer	$	$
14	660	LF	Furnish and Install 8" PVC Force Main	$	$
15	3540	LF	Furnish and Install 14" PVC Force Main	$	$
16	1	EA	Furnish and Install 8" Isolation Gate Valve	$	$
17	1	EA	Furnish and Install 14" Isolation Gate Valve	$	$
18	3	EA	Furnish and Install 48" Combination Air Release/Vacuum Valve and Manhole	$	$
19	100%	LS	Jack and Bore 20" Casing Pipe	$	$
20	12	EA	Furnish and Install 8"x6" PVC Wye Brance	$	$

CANNOT BE USED FOR BIDDING

SECTION 1 **BREAKOUT SHEET - 7** **CONTRACT NO. T200411210**

ITEM 753516 - SANITARY SEWER SYSTEM

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
21	5	EA	Furnish and Install 10" x 6" PVC Wye Branch	$	$
22	15	EA	Furnish and Install 10" x 8" PVC Wye Branch	$	$
23	11	EA	Furnish and Install 12" x 6" PVC Wye Branch	$	$
24	6	EA	Furnish and Install 12" x 8" PVC Wye Branch	$	$
25	3	EA	Furnish and Install 15" x 6" PVC Wye Branch	$	$
26	100%	LS	Furnish and Install 10' Diameter Pump Station Wetwell	$	$
27	20	CY	Furnish and Install Concrete Encasement	$	$
28	2	EA	Furnish and Install 15" x 8" PVC Wye Branch	$	$

TOTAL ITEM 753516 - Sanitary Sewer System $_____

(LUMP SUM BID PRICE FOR ITEM 753516)

CANNOT BE USED FOR BIDDING

SECTION 1 **BREAKOUT SHEET - 8** **CONTRACT NO. T200411210**

ITEM 753558 - RELOCATE FORCE MAIN

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
1	351	LF	Furnish and Install 10" PVC Force Main	$	$
2	1272	LF	Furnish and Install 24" PVC Force Main	$	$
3	1	EA	Bypass System, Location 1	$	$
4	1	EA	Bypass System, Location 2	$	$
5	1	EA	Bypass System, Location 3	$	$
6	1	EA	Bypass System, Location 4	$	$
7	1	EA	Bypass System, Location 6	$	$
8	1	EA	Bypass System, Location 7	$	$
9	1	EA	Bypass System, Location 8	$	$
10	7	EA	Furnish and Install 60" Combination Air Release/Vacuum Valve and Manhole	$	$
11	20	CY	Furnish and Install Concrete Encasement	$	$

TOTAL ITEM 753558 - Relocate Force Main $_____

(LUMP SUM BID PRICE FOR ITEM 753558)

CANNOT BE USED FOR BIDDING

SECTION 1 **BREAKOUT SHEET - 9** **CONTRACT NO. T200411210**

ITEM 763695 - SNOW REMOVAL BY CONTRACTOR

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
1	360	Hours	Grader and Operator	$	$
2	360	Hours	Front-end Loader and Operator	$	$
3	360	Hours	10-Wheel Dump Truck Equipped with Snow Plow and Driver	$	$

TOTAL ITEM 763695 - Snow Removal by Contractor $_____

(LUMP SUM BID PRICE FOR ITEM 763695)

CANNOT BE USED FOR BIDDING

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"ATTENTION"

TO BIDDERS

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This Bid Proposal includes breakout sheets. The breakout sheets **MUST ACCOMPANY** the bid proposal at the time of bid.

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CERTIFICATION

Contract No. T200411201.01
Federal Aid Project No. ESTP-S026(6)

The undersigned bidder, _____ whose address is _____
_____ and telephone number is _____ hereby certifies the following:

I/We have carefully examined the location of the proposed work, the proposed plans and specifications, and will be bound, upon award of this contract by the Department of Transportation, to execute in accordance with such award, a contract with necessary surety bond, of which contract this proposal and said plans and specifications shall be a part, to provide all necessary machinery, tools, labor and other means of construction, and to do all the work and to furnish all the materials necessary to perform and complete the said contract within the time and as required in accordance with the requirements of the Department of Transportation, and at the unit prices for the various items as listed on the preceding pages.

Bidder's Certification Statement [US DOT Suspension and Debarment Regulation (49 CFR 29)]:

NOTICE: All contractors who hold prime contracts (Federal Aid) with DelDOT are advised that the prime contractor and subcontractors are required to submit to DelDOT a signed and notary attested copy of the Bidder Certification Statement for each and every subcontract that will be utilized by the prime contractor. This Certification **must** be filed with DelDOT prior to written approval being granted for each and every subcontractor. Copies of the Certification Form are available from the appropriate District Construction Office.

Under penalty of perjury under the laws of the United States, that I/We, or any person associated therewith in the capacity of (owner, partner, director, officer, principal, investigator, project director, manager, auditor, or any position involving the administration federal funds):

a. am/are not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency;
b. have not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past 3 years;
c. do not have a proposed debarment pending; and,
d. have not been indicted, convicted, or had a civil judgement rendered against (it) by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted, indicate below to whom it applies, initiating agency, and dates of action. Providing false information may result in criminal prosection or administrative sanctions.

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_____

_____

_____
(Insert Exceptions)

DBE Program Assurance:

NOTICE: In accordance with 49 CFR Part 26 the undersigned, a legally authorized representative of the bidder listed below, must complete this assurance.

By its signature affixed hereto, assures the Department that it will attain DBE participation as indicated:

Disadvantaged Business Enterprise _____ percent (blank to be filled in by bidder)

The foregoing quantities are considered to be approximate only and are given as the basis for comparison of bids. The Department of Transportation may increase or decrease the amount of any item or portion of the work as may be deemed necessary or expedient. Any such increase or decrease in the quantity for any item will not be regarded as a sufficient ground for an increase or decrease in the unit prices, nor in the time allowed for the completion of the work, except as provided in the contract.

Accompanying this proposal is a surety bond or a security of the bidder assigned to the Department of Transportation, for at least ten (10) percentum of total amount of the proposal, which deposit is to be forfeited as liquidated damages in case this proposal is accepted, and the undersigned shall fail to execute a contract with necessary bond, when required, for the performance of said contract with the Department of Transportation, under the conditions of this proposal, within twenty (20) days after date of official notice of the award of the contract as provided in the requirement and specifications hereto attached; otherwise said deposit is to be returned to the undersigned.

I/We are licensed, or have initiated the license application as required by Section 2502, Chapter 25, Title 30, of the Delaware Code.

By submission of this proposal, each person signing on behalf of the bidder, certifies as to its own organization, under penalty of perjury, that to the best of each signer's knowledge and belief:

1. The prices in this proposal have been arrived at independently without collusion, consultation, communication, or Agreement with any other bidder or with any competitor for the purpose of restricting competition.
2. Unless required by law, the prices which have been quoted in this proposal have not been knowingly disclosed and will not knowingly be disclosed by the bidder, directly or indirectly, to any other bidder or competitor prior to the opening of proposals.
3. No attempt has been made or will be made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a proposal for the purpose of restricting competition.

==========

CANNOT BE USED FOR BIDDING

I/We acknowledge receipt and incorporation of addenda to this proposal as follows:

No.	Date	No.	Date	No.	Date	No.	Date	No.	Date
_____		_____		_____		_____		_____	

BIDDERS MUST ACKNOWLEDGE RECEIPT OF ALL ADDENDA AND FINAL QUESTIONS AND ANSWERS.

MUST INSERT DATE OF FINAL QUESTIONS AND ANSWERS ON WEBSITE: _____

==========

Sealed and dated this _____ day of _____ in the year of our Lord two thousand _____ (20__).

_____
Name of Bidder (Organization)

Corporate Seal

By: _____
Authorized Signature

Attest _____

_____
Title

SWORN TO AND SUBSCRIBED BEFORE ME this ____ day of _____, 20____.

Notary Seal

_____
Notary

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That:_____

of_____ in the County of _____and State of _____ as **Principal**, and _____ of _____ in the County of _____and State of _____ as **Surety**, legally authorized to do business in the State of Delaware ("**State**"), are held and firmly unto the **State** in the sum of _____ _____Dollars ($_____), or _____ percent not to exceed _____ _____ Dollars ($_____) of amount of bid on Contract No. T200411210.01, to be paid to the **State** for the use and benefit of its Department of Transportation ("**DelDOT**") for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden **Principal** who has submitted to the **DelDOT** a certain proposal to enter into this contract for the furnishing of certain materiel and/or services within the **State**, shall be awarded this Contract, and if said **Principal** shall well and truly enter into and execute this Contract as may be required by the terms of this Contract and approved by the **DelDOT**, this Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with _____ seal and dated this _____ day of _____ in the year of our Lord two thousand and _____(20___).

CANNOT BE USED FOR BIDDING

SEALED, AND DELIVERED IN THE presence of

_____
Name of Bidder (Organization)

Corporate Seal

By: _____
Authorized Signature

Attest _____

_____
Title

_____
Name of **Surety**

Witness:_____

By: _____

_____
Title