

STATE OF DELAWARE

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DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T201504401.01

FEDERAL AID PROJECT NO. ESTP-N011(31)

CFDA NO. 20.205

ELKTON ROAD, MD LINE TO CASHO MILL ROAD

NEW CASTLE COUNTY

ADVERTISEMENT DATE: October 28, 2019

COMPLETION TIME: 760 Calendar Days

SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
DELAWARE DEPARTMENT OF TRANSPORTATION
AUGUST 2016

Bids will be received in the Bidder's Room at the Delaware Department of Transportation's Administration Building, 800 Bay Road, Dover, Delaware prior to 2:00 P.M. local time November 26, 2019

Contract No. T201504401.01
Federal Aid Project No. ESTP-N011(31)

ELKTON ROAD, MD LINE TO CASHO MILL ROAD
NEW CASTLE COUNTY

GENERAL DESCRIPTION

LOCATION

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

DESCRIPTION

The improvements consist of furnishing all labor and materials for the reconstruction of the concrete pavement and widening to provide a third eastbound through lane between Otts Chapel Road and SR 4. The project will provide for upgraded bicycle and pedestrian facilities, including a 10' wide multi-use path and other incidental construction in accordance with the location, notes and details shown on the plans and as directed by the Engineer.

COMPLETION TIME

All work on this contract must be complete within 760 Calendar Days. The Contract Time includes an allowance for 126 Weather Days. It is the Department's intent to issue a Notice to Proceed such that work starts on or about March 16, 2020.

PROSPECTIVE BIDDERS NOTES:

1. BIDDERS MUST BE REGISTERED with DelDOT and request a cd of the official plans and specifications in order to submit a bid. Contact DelDOT at dot-ask@delaware.gov or (302) 760-2031. Bids will be received in the Bidder's Room at the Delaware Department of Transportation's Administration Building, 800 Bay Road, Dover, Delaware prior to 2:00 P.M. local time October 15, 2019 unless changed via addendum.
2. QUESTIONS regarding this project are to be e-mailed to dot-ask@delaware.gov no less than six business days prior to the bid opening date in order to receive a response. Please include T201504401.01 in the subject line. Responses to inquiries are posted on-line at <http://www.bids.delaware.gov>.
3. PREQUALIFICATION REQUIREMENT - 29 Del.C. §6962 (c)(12)(a) requires DelDOT to include a performance-based rating system for contractors. The Performance Rating for each Contractor shall be used as a prequalification to bid at the time of bid. Refer to Contract 'General Notices' for details. **NEW**
4. **THE BID PROPOSAL software DelDOT uses has changed, we now use Bid Express.** This new software is an updated version of the previous software used and operates similarly. The cd you request from DelDOT contains the Bid Express file and its installation file. Bidders are to use the cd provided to enter their bid amounts into the Bid Express file. The Bid Express bid file must be printed and submitted in paper form along with the electronic bid file and other required documents prior to the Bid due date and time. (DelDOT is not utilizing web based electronic bidding for this project).
5. SURETY BOND - Each proposal must be accompanied by a deposit of either surety bond or security for a sum equal to at least 10% of the bid.
6. DRUG TESTING - Regulation 4104; The state Office of Management and Budget has developed regulations that require Contractors and Subcontractors to implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds pursuant to 29 Del.C. §6908(a)(6). **Refer to the full REVISED requirements at the following link:** http://regulations.delaware.gov/register/december2017/final/21_DE_Reg_503_12-01-17.htm

Note a few of the requirements;

- * At bid submission - Each bidder must submit with the bid a single signed affidavit certifying that the bidder and its subcontractors has in place or will implement during the entire term of the contract a Mandatory Drug Testing Program that complies with the regulation, *the form is attached*;
 - * At least two business days prior to contract execution - The awarded Contractor shall provide to DeIDOT copies of the Employee Drug Testing Program for the Contractor, each participating DBE firm, and all other listed Subcontractors;
 - * Subcontractors - Contractors that employ Subcontractors on the job site may do so only after submitting a copy of the Subcontractor's Employee Drug Testing Program along with the standard required subcontractor information. A Subcontractor shall not commence work until **DeIDOT** has approved the subcontractor in writing.
7. DBE PROGRAM REQUIREMENTS (49CFR §26.53(b)(3)(i)(B)) require submission of DBE participation information from the apparent low bidder no later than five (5) calendar days **after bid opening**.
 8. No RETAINAGE will be withheld on this contract unless through the Prequalification Requirements.
 9. EXTERNAL COMPLAINT PROCEDURE can be viewed on DeIDOT's Website [here](#), or you may request a copy by calling (302) 760-2555.
 10. AUGUST 2016 STANDARD SPECIFICATIONS apply to this contract. The Contractor shall make himself aware of any revisions and corrections (Supplemental Specifications, if any) and apply them to the applicable item(s) of this contract. The 2016 Standard Specifications can be [viewed here](#).
 - 10a. FLATWORK CONCRETE TECHNICIAN CERTIFICATION TRAINING:
Section 501.03, 503.03, 505.03, 610.03, 701.03 and 702.03 of the 2016 Standard Specifications require contractor's to provide an American Concrete Institute (ACI) or National Ready Mix Concrete Association (NRMCA) certified concrete flatwork technician to supervise all finishing of flatwork concrete.
 11. BREAKOUT SHEETS MUST be submitted either with your bid documents; or within seven (7) calendar days following the bid due date by the lowest apparent bidder. Refer to instructions adjacent to the Breakout Sheets in this document.
 12. PROPOSED TRAINEE PLANS - The number of trainees to be trained will be **one (1)**, as listed in the Training Special Provisions within Contract 'General Notices'. The program(s) must be submitted online at <https://deldotojt.com> as soon as possible by the apparent low bidder. Award of the Contract will not take place until acceptable On-the-Job (OJT) program plans are received and approved by the Department's Civil Rights Section.

Failure of the apparent low bidder to submit acceptable OJT Trainee Programs within ten (10) calendar days of bid opening shall create a rebuttable presumption that the bid is not responsive.
 13. CONTRACT LIQUIDATED DAMAGES are contained on the following pages.

CONTRACT LIQUIDATED DAMAGES

The contract drawings and notes provide a sequence of construction for this contract.

FAILURE TO OPEN PROJECT TO UNRESTRICTED HIGHWAY TRAFFIC ON TIME

The total number of calendar days proposed by the bidder shall become the contract time for this project and shall be the basis for the determination of any contract time related adjustments to the contract.

Interim Road User costs (RUC) for delays in opening lanes along Westbound SR 4, Eastbound SR 4, Westbound Otts Chapel Road, Eastbound Otts Chapel Road, Left turn from Elkton to Casho Mill Road will be enforced according to the below charts.

Table 1

Westbound SR 4	
Contractor Penalties for Failure to Reopen Lanes	
Time All Lanes Reopened ("Verizon Time")	Full Closure
5:00 AM to 5:59 AM	\$500
6:00 AM to 6:59 AM	\$1000
7:00 AM to 7:59 AM	\$2000
8:00 AM to 8:59 AM	\$3000
9:00 AM to 9:59 AM	\$3500
If not open by 10:00 AM	\$4000

The above will be assessed for up to a total of \$4,000 per day.

Table 2

Eastbound SR 4	
Contractor Penalties for Failure to Reopen Lanes	
Time All Lanes Reopened ("Verizon Time")	Full Closure
5:00 AM to 5:59 AM	\$500
6:00 AM to 6:59 AM	\$1500
7:00 AM to 7:59 AM	\$3000
8:00 AM to 8:59 AM	\$5000
9:00 AM to 9:59 AM	\$6000
If not open by 10:00 AM	\$7000

The above will be assessed for up to a total of \$7,000 per day.

Table 3

Westbound Otts Chapel Road	
Contractor Penalties for Failure to Reopen Lanes	
Time All Lanes Reopened ("Verizon Time")	Full Closure
5:00 AM to 5:59 AM	\$500
6:00 AM to 6:59 AM	\$1500
7:00 AM to 7:59 AM	\$3000
8:00 AM to 8:59 AM	\$4000
9:00 AM to 9:59 AM	\$5000
If not open by 10:00 AM	\$6000

The above will be assessed for up to a total of \$6,000 per day.

Table 4

Eastbound Otts Chapel Road	
Contractor Penalties for Failure to Reopen Lanes	
Time All Lanes Reopened ("Verizon Time")	Full Closure
5:00 AM to 5:59 AM	\$500
6:00 AM to 6:59 AM	\$1000
7:00 AM to 7:59 AM	\$2000
8:00 AM to 8:59 AM	\$3000
9:00 AM to 9:59 AM	\$3500
If not open by 10:00 AM	\$4000

The above will be assessed for up to a total of \$4000 per day.

Table

Northbound Left Turn from Elkton Road to Casho Mill Road	
Contractor Penalties for Failure to Reopen Lanes	
Time All Lanes Reopened ("Verizon Time")	Full Closure
If not open by 8:00 AM	\$500

The above will be assessed for up to a total of \$500 per day

Example of calculations for assessment of Road User Cost:

- 1) Failure to reopen westbound Otts Chapel Road until 7:05 AM on a Monday, local time:
Per Table 1 a RUC of \$3,000.00 will be assessed.

The Road User Costs will be assessed for each calendar day over the established calendar days proposed in the bid when the contractor's work activities require lane width and shoulder width restrictions. There is no limit on the amount that can be assessed. Assessment of Road User Costs will be made by change order.

The Engineer will be the sole approving authority as to when the project is complete after traffic is returned to the ultimate alignment and when the contractors work activities will permit highway traffic ultimate lane width and shoulder widths.

The Contractor is advised that in order to complete the project on or before the number of calendar days proposed in his bid, it may be necessary to provide multiple crews, work overtime and/or weekends and holidays.

14. The notes listed below are for project work performed in Maryland.

1. Work in Maryland to be constructed in accordance with Maryland Department of Transportation State Highway Administration (MD SHA) 'Standard Specifications for Construction and Materials', dated July 2018, and the Maryland Department of Transportation State Highway Administration 'Book of Standards -For Highway and Incidental Structures', including all revisions up to the date of advertisement.
2. Work to be paid for by DeIDOT Pay Item 801500.
3. Remove existing pavement markings in accordance with Section 558 of the MD SHA Standard Specifications for Construction and Materials, dated July 2018.
4. Maryland State Police must be present when lane shifts are performed.
5. Permanent warning signs placed within the State of Maryland are to be placed on wood posts.
6. A permit from MD SHA is required to perform lane closures. Submit a permit application at least one week in advance of lane closure. Call MD SHA Statewide Operations Center (SOC) on the day of lane closure to activate the lane closure and at the end of the lane closure.
7. Provide an approved Traffic Control Manager per Section 104.18 of the MD SHA Standard Specifications for Construction and Materials, dated July 2018.

Contract No. T201504401.01
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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GENERAL NOTICES

SPECIFICATIONS:

The specifications entitled "Delaware Standard Specifications for Road and Bridge Construction, August, 2016", 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. The Specifications and Supplemental Specifications can be [viewed here](#).

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.

PREQUALIFICATION REQUIREMENT

29 Del.C. §6962 (c)(12)(a) requires a Department of Transportation project, excluding a Community ^{NEW} Transportation Fund or municipal street aid contract, to include a performance-based rating system. At the time of bid, the Performance Rating for each Contractor shall be used as a prequalification to bid.

Bidders with Performance Rating scores equal to or greater than 85% shall be permitted to bid. Bidders with scores of less than 85% who comply with the retainage requirements of 29 Del.C. §6962 shall be permitted to bid provided the *Agreement to Accept Retainage* (located on the Certification Page) is executed and submitted with the bid. Lack of an executed *Agreement to Accept Retainage* will result in the rejection of the bid by the Department. Successful bidders awarded Department contracts who have no performance history within the last five (5) years will be assigned a provisional Performance Rating of 85% at the date of advertisement.

Notification of Performance Rating. The Department shall post publicly the Performance Rating for all Contractors on the Department's [website](#). DelDOT will complete performance-based evaluations on the construction company contracted by the Department to build the project (the "Contractor"). Provisions to appeal Performance Ratings are described in the regulations. The regulations are set forth in Section 2408 of Title 2, Delaware Administrative Code, found [here](#).

EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS:

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

- 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, gender identity or national 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, gender identity 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, sexual orientation, gender identity or national origin.
3. The contractor will ensure employees receive equal pay for equal work, without regard to sex. Employee pay differential is acceptable if pursuant to a seniority system, a merit system, a system which measures earnings by quantity or quality of production, or if the differential is based on any other factor other than sex.

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 on a project designated to include federal funds, shall obtain a Delaware business 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.

SUBCONTRACTOR LICENSE: 29 DEL. C. §6967:

(c) Any contractor that enters a public works contract must provide to the agency to which it is contracting, within 30 days of entering such public works contract, copies of all occupational and business licenses of subcontractors and/or independent contractors that will perform work for such public works contract. However, if a subcontractor or independent contractor is hired or contracted more than 20 days after the contractor entered the public works contract the occupational or business license of such subcontractor or independent contractor shall be provided to the agency within 10 days of being contracted or hired.

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 or 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 forth 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

12.3% (New Castle County)
14.5% (Kent & Sussex Counties)

Goals for Female Participation In
Each Trade

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 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).

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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 **one (1)**. 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, Kiribati, 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 five (5) 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 five (5) 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 DeIDOT. 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 DeIDOT 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.
8. In accordance with 49 CFR 26.53(f)(1), DeIDOT requires that a prime contractor not terminate a DBE subcontractor without prior written consent from the DeIDOT Civil Rights Office. This includes, but is not limited to, instances in which a prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

* * * * *

GUIDANCE FOR GOOD FAITH EFFORT

When the DBE Goals established for a contract by DeIDOT 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 DeIDOT 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 DeIDOT 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 Finance, DelDOT, 800 Bay Road, Dover, Delaware 19901, and Email a copy to dot-ask@state.de.us. 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.

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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.

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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.

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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.

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CARGO PREFERENCE ACT

Requirements in the Federal-aid Highway Program

- (a) Agreement Clauses. "Use of United States-flag vessels:
 - (1) Pursuant to Pub. L. 664 (43 U.S.C. 1241(b)) at least 50 percent of any equipment, materials or commodities procured, contracted for or otherwise obtained with funds granted, guaranteed, loaned, or advanced by the U.S. Government under this agreement, and which may be transported by ocean vessel, shall be transported on privately owned United States-flag commercial vessels, if available.
 - (2) Within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (a)(1) of this section shall be furnished to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.
- (b) Contractor and Subcontractor Clauses. "Use of United States-flag vessels: The contractor agrees—
 - (1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.
 - (2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.
 - (3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

NOTE:

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

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BUY AMERICA

Requirements in the Federal-aid Highway Program

By signing and submitting this proposal, the bidder certifies that:

In accordance with 23 U.S.C, 313 and 23 CFR 635.410, all iron and steel materials permanently incorporated into this project will be produced in the United States and that all manufacturing processes involving these materials will occur in the U.S, except that a minimal amount of foreign steel or iron materials may be used, provided the cost of the foreign materials does not exceed 0.1 percent of the total Contract cost or \$2,500.00, whichever is greater. If such minimal amount of foreign steel is used, the Contractor shall maintain a record

of the costs to ensure that the allowable limit is not exceeded. This documentation shall be presented to the Department upon request.

At the Department's request, I/we will provide manufacturer's/supplier's documentation verifying domestic origin as defined in the Specifications. All Materials accepted on the basis of such Certificate of Compliance may be sampled by the Department and tested at any time. Use of Material on the basis of Certificate of Compliance shall not relieve the Contractor of responsibility for incorporating Material in the Project conforming to the requirements of the Contract. Any Material not conforming to such requirements will be subject to rejection whether in place or not. The Department reserves the right to refuse to permit the use of Material on the basis of Certificate of Compliance.

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APPENDICES TO THE TITLE VI ASSURANCE

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, (Federal Highway Administration (FHWA), or Federal Transit Authority (FTA)), as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts and the Regulations, and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration (FHWA), or Federal Transit Authority (FTA) to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the Federal Highway Administration (FHWA), or Federal Transit Authority (FTA), as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration (FHWA), or Federal Transit Authority (FTA) may determine to be appropriate, including, but not limited to:
 - withholding payments to the contractor under the contract until the contractor complies;
 - and/or cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through five in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts and the Regulations . The contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration (FHWA), or Federal Transit Authority (FTA) may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX E

During the performance of this contract, the contractor or consultant, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following nondiscrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970,(42 U.S.C. § 460 I), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);

Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);

Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;

The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);

Airport and Airway Improvement Act of 1982,(49 USC §471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);

The Civil Rights Restoration Act of 1987,(PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964,The Age Discrimination Act of 1975and Section 504 of the Rehabilitation Act of 1973,by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);

Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 - 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;

The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. S 41123) (prohibits discrimination on the basis of race, color, national origin, and sex);

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs; policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

* * * * *

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 DeDOT'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) 761-8200

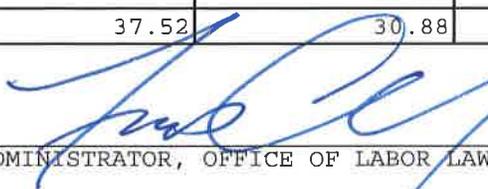
Mailing Address:
4425 North Market Street
3rd Floor
Wilmington, DE 19802

Located at:
4425 North Market Street
3rd Floor
Wilmington, DE 19802

PREVAILING WAGES FOR HIGHWAY CONSTRUCTION EFFECTIVE MARCH 15, 2019

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
BRICKLAYERS	55.89	55.89	55.89
CARPENTERS	55.95	55.63	44.22
CEMENT FINISHERS	35.48	35.70	28.39
ELECTRICAL LINE WORKERS	29.40	47.49	23.24
ELECTRICIANS	70.49	70.49	70.49
IRON WORKERS	65.24	26.10	27.72
LABORERS	45.30	41.69	40.93
MILLWRIGHTS	17.62	17.10	14.76
PAINTERS	71.29	71.29	71.29
PILEDRIVERS	72.65	25.98	29.47
POWER EQUIPMENT OPERATORS	67.07	43.32	39.68
SHEET METAL WORKERS	24.89	22.21	20.12
TRUCK DRIVERS	37.52	30.88	37.62

CERTIFIED: 09/03/2019

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 302-761-8200

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

PROJECT: T201504401.01 Elkton Road MD Line to Casho Mill Rd , New Castle County

Superseded General Decision Number: DE20180004

State: DELAWARE

Construction Type: HIGHWAY

COUNTY: New Castle County in Delaware

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1 (a) (2) - (60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date	
0	01/04/2019	

SUDE2018-002	03/15/2018	
	Rates	Fringes
Bricklayer	53.89	
Carpenter	54.62	
Cement Mason/Concrete Finisher	34.63	
ELECTRICIAN		
Electrician	68.70	
Line Worker	24.02	
Ironworker	63.68	
Laborer	43.30	
Millwright	17.20	
Painter	68.79	
Power Equipment Operator:		
Piledriver	70.92	
Power Equipment Operator	45.46	
Sheet Metal Worker	24.30	
Truck Driver	36.49	

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

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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 a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than “SU” or “UAVG” denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 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. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under an “SU” identifier indicated that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

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 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; <https://www.deldot.gov>
 - under 'BUSINESS', Click; 'Publications'
 - scroll down under 'MANUALS' and Click; "Standard Specifications"
 - be sure and choose the correct Standard Specification year; 2001 or 2016
 - choose the latest revision prior to the date of this advertisement

The full Website Link is;
https://www.deldot.gov/Publications/manuals/standard_specifications/index.shtml

Copies of the Supplemental Specifications can be printed from the Website.

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

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 link for the posting is https://www.deldot.gov/Business/bids/index.shtml?dc=asphalt_cement_english.

The Project Asphalt Cement Base Price will be the Delaware Posted Asphalt Cement Price in effect on the date of advertisement.

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 using the weight of eligible asphalt that is shown on the QA/QC pay sheets as a percentage for the delivered material.

If the mix was not inspected and no QA/QC pay sheet was generated, then the asphalt percentage will be obtained from the job mix formula for that mix ID.

The asphalt percentage eligible for cost adjustment shall only be the virgin asphalt cement added to the mix.

There shall be no separate payment per ton cost of asphalt cement. That cost shall be included in the various unit prices bid per 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 per ton for the project will be the Delaware Posted Asphalt Cement Price in effect on the date of project advertisement.

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 or more of hot-mix bid quantity in case of Sections 401, 402 and 403; and 15,000 gallons or more in case of Sections 304, 404 and 405.

5/05/15

401699 - QUALITY CONTROL/QUALITY ASSURANCE OF BITUMINOUS CONCRETE

.01 Description

This item shall govern the Quality Assurance Testing for supplying bituminous asphalt plant materials and constructing bituminous asphalt pavements and the calculation for incentives and disincentives for materials and construction. The Engineer will evaluate all materials and construction for acceptance. The procedures for acceptance are described in this Section. 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 bituminous asphalt. Payment to the Contractor for the bituminous asphalt item(s) will be based on the Contract price per ton and the pay adjustments described in this specification.

.02 Bituminous Concrete Production – Quality Acceptance

(a) Material Production - Tests and Evaluations.

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 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.

Supply and capture samples, as directed by the Engineer under the purview of the Engineer from delivery trucks before the trucks leave the production plant. Hand samples to the Engineer to be marked accordingly. 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. The Contractor may visually inspect the specified delivery load during sampling and elect to reject the load. If the contractor elects to reject the specified delivery truck, each subsequent load will be inspected until a visually acceptable load is produced for acceptance testing. All visually rejected loads shall not be sent to a Department project.

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. Samples not retrieved in accordance with the Contractor's QC plan will be deemed unacceptable and may be a basis for rejection of material produced. Parallel tests or dispute resolution tests will only be performed on material captured at the same time and location as the acceptance test sample. Parallel test samples or Dispute Resolution samples will be created by splitting a large sample or obtaining multiple samples that equally represent the material. The Engineer will perform all splitting and handling of material after it is obtained by the Contractor.

The Contractor may retain dispute resolution samples or perform parallel tests with the Engineer on any acceptance sample.

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 subplot basis. The size for each subplot shall be 100 to 500 tons and testing for the sub lots will be completed on a daily basis. For each subplot, 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 and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyrotory Compactor
- AASHTO T166, Method C (Rapid Method) - Bulk Specific Gravity of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface Dry Specimens
- AASHTO T308 - Determining the Asphalt Binder Content of Hot Mix Asphalt (HMA) by the Ignition Method
- AASHTO T30 - Mechanical Analysis of Extracted Aggregate
- AASHTO T209 - Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)
- ASTM D7227 - Standard Practice for Rapid Drying of Compacted Asphalt Specimens using Vacuum Drying Apparatus

(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 based on daily production.

Notify the Engineer of any locations within that road segment that may not be suitable to achieve minimum (93%) compaction due to existing conditions prior to paving the road segment. 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 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 **.02 Acceptance Plan (a) Material Production - B 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 1.0 feet from the newly placed longitudinal joint and 50 feet from a new transverse joint.

Cut one six (6) inch diameter core through the full lift depth at the exact location marked by the Engineer. Cores submitted that are not from the location designated by the Engineer will not be tested and will be paid at zero pay.

Notify the Engineer prior to starting paving operations with approximate 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 mark core locations within 24 hours of notification. 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.

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

Commence coring of the pavement after the pavement has cooled to a temperature of 140°F or less. Cut each core with care in order to prevent damaging the core. Damaged cores will not be tested. Label each core with contract number, date of construction, and number XX of XX upon removal from the roadway. Place cores in a 6-inch diameter plastic concrete cylinder mold or approved substitute for protection. Separate cores in the same cylinder mold with paper. Attach a completed QC test record for the represented area with the corresponding cores. The Engineer will also complete a test record for areas tested for the QA report and provide to Materials & Research. Deliver the cores to the Engineer for testing, processing, and report distribution at the end of each production day.

Repair core holes per Appendix A, Repairing Core Holes in Bituminous 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) – Bulk Specific Gravity of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface Dry Specimens
- AASHTO T209 - Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt
- ASTM D7227 - Standard Practice for Rapid Drying of Compacted Asphalt Specimens using Vacuum Drying Apparatus

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.

.03 Payment and Pay Adjustment Factors.

The Engineer will determine pay adjustments for the bituminous asphalt item(s) in accordance with this specification. The Engineer will determine a pay adjustment factor for the material produced and a pay adjustment factor for the pavement construction. Pay adjustments for material and construction will be calculated independently. When the pay adjustment calculation for either material or construction falls to zero payment per tables 4, 5, or 5a, the maximum pay adjustment for the other factor will not exceed 100.

Pay Adjustment factors will only be calculated on in place material. Removed material will not be used in payment adjustment calculations.

Material Production Pay Adjustments will be calculated based upon 70% of the contract unit price and calculated according to section .03(a) of this specification. Pavement construction Pay Adjustments will be calculated based upon 30% of the contract unit price and calculated according to section .03(b) of this specification.

(a) Material Production - Pay Adjustment.

Calculate the material pay adjustment by evaluating the production material based on the following parameters:

Table 2 - Material Parameter Weight Factors		
Material Parameter	Single Test Tolerance (+/-)	Weight Factor
Asphalt Content	0.4	0.30
#8 Sieve (≥ 19.0 mm)	7.0	0.30
#8 Sieve (≤ 12.5 mm)	5.0	0.30
#200 Sieve (0.075mm Sieve)	2.0	0.30
Air Voids (4.0% Target)	2.0	0.10

Using the JMF target value, the single test tolerance (from Table 2), 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):

$$QU = ((\text{JMF target}) + (\text{single test tolerance}) - (\text{mean value})) / (\text{standard deviation}).$$
3. For each parameter, calculate the Lower Quality Index (QL):

$$QL = ((\text{mean value}) - (\text{JMF target}) + (\text{single test tolerance})) / (\text{standard deviation}).$$
4. For each parameter, locate the values for the Upper Payment Limit (PU) and the Lower Payment Limit (PL) from Table 3 - 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 2 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. When all properties of a single test are within the single test tolerance of Table 2, Pay Adjustment factors shall be determined by Column B. When any property of a single test is outside of the Single Test Tolerance parameters defined in Table 2, the Material Pay Adjustment factor shall be determined by Column C
9. For each lot, determine the final material price adjustment:

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

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. When the PWL of any material parameter in Table 2 is below 60, the Engineer may require the removal and replacement of the material at no additional cost to the Department. Test results on removed material shall not be used in calculation of future PWL calculations for Mixture ID.

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 outside of the allowable single test tolerance for any Materials criteria in Table 2, 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. The pay factors for the out of tolerance sample lot will be calculated using column C of table 4.

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. After the Contractor has made appropriate changes, the Contractor will visually inspect each produced load. The first visually acceptable load will be sampled and 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 3 - 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
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
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

Table 3 - 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
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 4 - PWL Pay Adjustment Factors

PWL	Pay Adjustment Factor (%) Column B	Pay Adjustment Factor (%) Column C
100	+5	0
99	+4	-1
98	+3	-2
97	+2	-3
96	+1	-4
95	0	-5
94	-1	-6
93	-2	-7

92	-3	-8
91	-4	-9
PWL<91	PWL - 100	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. .

1. Calculate the core bulk specific gravity values from the subplot tests values, to the nearest 0.001 unit. Obtain the Theoretical maximum Specific Gravity values from the corresponding laboratory subplot tests.
2. Calculate the Degree of Compaction:
Degree of Compaction =
((Core Bulk Specific Gravity) / (Theoretical Maximum Specific Gravity)) x 100% recorded to the nearest 0.1%.
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 and recorded to the nearest 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:
Construction Pay adjustment = (Lot Quantity) x (Bid Price) x (Pay Adjustment Factor) x 30%.

Table 5: Compaction Price Adjustment Highway Locations		
Degree of Compaction (%)	Range	Pay Adjustment Factor (%)
>= 97.0	>= 96.75	-100*
96.5	96.26 – 96.74	-5
96.0	95.75 – 96.25	-3
95.5	95.26 – 95.74	-2
95.0	94.75 – 95.25	0
94.5	94.26 – 94.74	0
94.0	93.75 – 94.25	1
93.5	93.26 – 93.74	3
93.0	92.75 – 93.25	5
92.5	92.26 – 92.74	3
92.0	91.75 – 92.25	0

91.5	91.26 – 91.74	0
91.0	90.75 – 91.25	-5
90.5	90.26 – 90.74	-15
90.0	89.75 – 90.25	-20
89.5	89.26 – 89.74	-25
89.0	88.75 – 89.25	-30
88.5	88.26 – 88.74	-50
≤88.0	≤88.25	-100*

* or remove and replace it at Engineer's discretion

Table 5A: Compaction Price Adjustment Other¹ Locations		
Degree of Compaction	Range	Pay Adjustment Factor (%)
≥ 97.0	≥ 96.75	-100*
96.5	96.26 – 96.74	-5
96.0	95.75 – 96.25	-3
95.5	95.26 – 95.74	-2
95.0	94.75 – 95.25	0
94.5	94.26 – 94.74	0
94.0	93.75 – 94.25	0
93.5	93.26 – 93.74	1
93.0	92.75 – 93.25	3
92.5	92.26 – 92.74	1
92.0	91.75 – 92.25	0
91.5	91.26 – 91.74	0
91.0	90.75 – 91.25	0
90.5	90.26 – 90.74	0
90.0	89.75 – 90.25	0
89.5	89.26 – 89.74	0
89.0	88.75 – 89.25	-1
88.5	88.26 – 88.74	-3
88.0	87.75 – 88.25	-5
87.5	87.26 – 87.74	-10
87.0	86.75 – 87.25	-15
86.5	86.26 – 86.74	-20

86.0	85.75 – 86.25	-25
85.5	85.26 – 85.74	-30
85.0	84.75 – 85.25	-40
84.5	84.26 – 84.74	-50
=< 84.0	=<84.25	-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.

.04 Dispute Resolution.

Disputes or questions about any test result shall be brought to the attention of the Contractor and the Engineer within two operational days of reported test results. 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.

Third party resolution testing can be performed at either 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 properly captured, labeled, and stored, as described in the second paragraph of the section of these specifications titled **.02 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. The Contractor may request up to two dispute resolution samples be tested per calendar year without charge. Any additional Dispute Resolution samples run at the Contractors request where the results substantiate the acceptance test result will be assessed a fee of \$125. Any additional Dispute Resolution samples that substantiate the Contractors test result will not be assessed the 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.

Appendix A - Repairing Core Holes in Bituminous Asphalt Pavement

Description.

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

Materials and Equipment.

The following material shall be available to complete this work:

- Patch Material - 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 - mechanical (electrical, pneumatic, or gasoline driven) tamping device with a flat, circular tamping face smaller than 6 inches in diameter. .

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 and compact with mechanical tamping device. 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 Bituminous 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
			<hr/>
			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
			<hr/>
			2.52

501503 - PRECAST CONCRETE PAVEMENT PANELS

Description:

This work consists of furnishing and installing a full-depth precast concrete pavement system. This includes the survey, design, fabrication, transportation of panels and materials, saw cutting and removal of existing pavement, base adjustments, placement of bedding material, grouting as required, diamond grinding, joint sealing, placement of temporary pavement transitions and all necessary materials and equipment to complete the work as shown on the Contract Plans.

References:

- PCI Design Handbook, 7th Edition, with all Interims and Errata
- AASHTO M111: Standard Specifications for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products
- AASHTO M235: Standard Specifications for Epoxy Resin Adhesive
- ASTM B633: Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
- ASTM C578: Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- ASTM C637: Standard Specification for Aggregates for Radiation-Shielding Concrete
- ASTM C938: Standard Practice for Proportioning Grout Mixtures for Preplaced-Aggregate Concrete
- ASTM C1107: Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
- ASTM C2665: Standard Specification for Poly Vinyl Chloride (PVC) Drain, Waste and Vent Pipe and Fittings
- ASTM D3963: Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars
- ASTM D4101: Standard Specification for Polypropylene Injection and Extrusion Materials
- ASTM C109: Standard Test Method for Compressive Strength of Hydraulic-Cement
- ASTM C157: Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
- ASTM C266: Standard Test Method for Time of Setting of Hydraulic-Cement Paste by Gillmore Needles
- ASTM C666: Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
- ASTM C939: Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
- ASTM C940: Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory
- ASTM C942: Standard Test Method for Compressive Strength of Grouts for Preplaced-Aggregate Concrete in the Laboratory
- ASTM C1038: Standard Test Method for Expansion of Hydraulic Cement Mortar Bars Stored in Water
- ASTM C1090: Standard Test Method for Measuring Changes in Height of Cylindrical Specimens of Hydraulic Cement Grout

Submittals:

(A) Shop Drawings:

-Prepare shop drawings for each unique panel stamped by a Professional Engineer licensed in the State of Delaware.

-Shop Drawings shall include the following:

- A) Length, width and thickness dimensions (including surface planarity) for each unique panel.
- B) Detail and locate reinforcement (bar chart required).
- C) Detail and locate grout channels, ports and vents, block-outs, key-ways, dowel bars, tie bars and embedded hardware.
- D) Detail and locate lifting inserts and devices. Lifting stress calculations shall be submitted with Shop Drawings.
- E) Edge and surface finish details.
-Design calculations shall be submitted with Shop Drawings.

(B) Installation Plans:

-Prepare a detailed installation plan for approval by the Engineer at least 30 days before beginning panel installation.

-Include the following at a minimum in the installation plan:

1. Detailed panel and joint drawings.
2. Details for removal of existing pavement and saw cut plan matching new panel sections.
3. Details for subgrade improvements including procedures and equipment used to achieve required grade and compaction.
4. Details for placement of panel support materials.
5. Details for placement of grout dams around panel perimeters.
 - A) For grade-supported panels include the following:
 - i. Bedding material composition and gradation.
 - ii. Procedures and equipment used to place, compact and grade bedding material.
 - iii. Bedding grout instructions to fill small isolated voids between the panel and bedding.
 - B) For grout supported panels include the following:
 - i. Panel leveling details, using embedded leveling devices.
 - ii. Grout material properties, composition, mix design (if appropriate), and design strength.
 - iii. Procedure and equipment used to prepare and place grout beneath the panels.
6. Detailed procedures for lifting, moving, lowering and adjusting panels into position.
7. Procedure and equipment used to verify that panel surface is at the correct grade and cross slope.
8. Details for placement of dowel bars and longitudinal joint ties.
9. Details for grout encasement of dowel bars, longitudinal joint ties, lifting inserts and grout ports.

(C) Contractor Quality Control (QC) Plan:

-The Contractor must submit a QC plan to the Engineer at least 30 days before beginning panel installation. The QC plan shall include a detailed description of how the Contractor intends to ensure panels are installed in accordance with specifications and special provisions.

-The QC plan shall include the following at a minimum as applicable:

1. The Contractor's installation team including names, titles, responsibilities and authorities of the project manager, job site foreman, team leaders, surveyor or layout person and crew members.

2. All team member certifications, qualifications and training (include Pavement System Developer provided training).
3. Designate by name and title the team member who will be responsible for marking, sawing and removal of existing pavement.
4. Designate by name and title the team member who is responsible for ensuring that the subgrade material and bedding material meet compaction and grade requirements.
5. Designate by name and title the team member who is responsible for delivery of the un-damaged pavement panels to the job site for placement.
6. Designate by name and title the team member who is responsible for placement of pavement panels and ensuring that pavement panels meet grade requirements.
7. Designate by name and title the team members who the Department's inspectors are to interact with in all QC/QA matters.

Materials:

- A. Concrete: Use Portland Cement Concrete (PCC) that is in compliance with the Standard Specifications, except that the minimum 28-day compressive strength shall be 5,000 psi. and the minimum 28-day flexural strength shall be 650 psi. Use 1-inch maximum size aggregate. Submit a PCC mix design using the absolute volume method per ACI Publication 211.1 a minimum of 30 days prior to casting panels.
- B. Reinforcing Steel: Reinforcing steel shall comply with the Standard Specification. Bars shall be epoxy coated on all surfaces and shall be full length, single bars. Do not use lap splices within the panel. Handling of bars shall comply with ASTM D3963.
- C. Dowel Bars and Tie Bars: Dowel bars and tie bars shall comply with the Standard Specifications and all surfaces shall be epoxy coated.
- D. Grout Channels, Ports and Vents: Use Schedule 40 PVC pipe in conformance with ASTM D 2665 or Corrugated Plastic Duct that is sufficiently rigid to withstand loads imposed during placing of concrete while maintaining its shape, remaining in proper alignment and remaining watertight.
- E. Lifting Inserts and Devices: Lifting inserts and devices shall meet the following criteria:
 - Use inserts and devices that can support the required vertical and horizontal forces with the applicable safety factors as specified in Chapter 5 of the PCI Design Handbook, 7th edition
 - Use inserts and devices that have a 3-inch top cover and a minimum 1-inch bottom cover after panel installation. This may require partial removal of the devices after installation.
 - Coil loop lifting inserts shall be electro galvanized in accordance with ASTM B633 all other lifting inserts and devices shall be galvanized after fabrication in accordance with AASHTO M111.
- F. Grout Dams: Shall be foam strips fabricated from rigid high-density extruded polystyrene (XPS) conforming to ASTM C578 Type VII or approved equal. Grout dams shall be sized appropriately to prevent leakage during all under-panel grouting.
- G. Grout: Grout shall meet the following criteria:
 - Grout for grout-supported bedding material may be proportioned under ASTM C938 or use prepackaged grout complying with ASTM C1107. Fine aggregate if used must meet grading two (2) in ASTM C637. Proportion the ingredients of the grout to meet the properties in Table 1.

TABLE 1
Cementitious Bedding Material Properties

Quality Characteristic	Test method	Requirement
Compressive Strength at 1 hour	ASTM C942	500 PSI Min.
Compressive Strength at 7 days	ASTM C942	2,500 PSI Min.
Expansion	ASTM C940	0 to 3.0%
Bleeding at 30 minutes	ASTM C940	0.10% Max.
Eflux Time	ASTM C939	15 to 30 seconds
Shrinkage at 28 days	ASTM C157	<0.04% dry
Flowability	ASTM C939	≤30 seconds - 1/2" flow cone

-Grout for encasement and fill material shall meet the requirements shown in Table 2.

TABLE 2
ENCASEMENT AND GROUT FILL MATERIAL REQUIREMENTS FOR MORTARS

Property	Test Method	Requirement
Compressive Strength, 28-day min.	ASTM C109	5,000 psi min
Compressive Strength, open to traffic	ASTM C109	2,500 psi
Maximum Expansion	ASTM C1090	0.40%
Maximum Shrinkage	ASTM C1090	0.050%
Freeze-Thaw, min.	ASTM C666	95.0% @ 300 cycles
Initial Set Time, min.	ASTM C266	15 min.
Chloride Content, max.	ASTM C1152	0.050%
Sulfate Content, max.	ASTM C1038	0.01%

-Grout will be tested for compressive strength by the Department at intervals determined by the Engineer.

H. Granular Bedding for Grade-Supported Panels: Bedding material for grade-supported panels shall be crushed stone meeting the gradation in Table 3 below. The material shall be free of deleterious material and shall be supplied at the optimum moisture to facilitate compaction and consolidation.

Table 3
Granular Bedding Course Gradation

Sieve Size	Percent Passing
3/8 inch	100%
#4	85-100%
#10	55 – 75%
#40	10 – 40%
#200	0 – 10%

I. Epoxy Resin Adhesive for Securing Drilled Dowels: Use epoxy resin that conforms to the requirements of AASHTO M 235 Type IV. Use grout retention rings, dowel bar caps and best practices to provide a good bond.

J. Joint Sealant: Joint sealant material shall comply with Section 808 of the Standard Specifications.

Quality Control and Assurance:

Precast pavement panels shall be manufactured in a PCI or NPCA certified plant.

Quality Control (QC) is the responsibility of the fabricator. The person in charge of the QC Department must have completed Level II or Level III segments of the PCI Plant Quality Personnel Certification Program and hold a current certification or PQS II – QA/QC of the NPCA Certification Program and hold a current certification, unless otherwise agreed by the Engineer. All technicians at plants manufacturing precast pavement panels shall hold a current ACI Concrete Field Testing Technician Certification Grade 1, or equivalent, or work under the direct supervision of an ACI certified technician who shall be on site for the full duration of testing.

The Department will perform Quality Assurance. The role of the QA Inspector includes but is not limited to:

- Witnessing, documenting, and reporting on the performance of the QC Department.
- Collecting all certifications, calibrations, and reports necessary to assure that the product meets the specified requirements.

- Witness the testing of all fresh concrete.
- Witness the placement of all concrete.
- Witness the testing of process control cylinders for release, stripping, lifting and design strength.
- Determine the acceptability of the finished product.

The fabricator must give two (2) week notice to the Department prior to beginning any of the above operations. The presence of the QA Inspector does not relieve the Contractor of the responsibility of meeting all the requirements of the plans and specifications herein.

The fabricator shall identify each panel by date of cast, identification number and manufacturer identification. Panel identification shall be by etching, printed label or RFID chip. Etch markings in fresh concrete on two sides and bottom. Etching shall not be placed on the wearing surface (top). Affix printed labels to two sides. RFID chips must be placed in accordance with system recommendations. RFID readers must be provided to the Contractor by the fabricator. All panels must be identifiable upon arrival at the job staging area or job site. Panels that are unidentifiable are cause for rejection.

Prevent cracking or damage during handling and storage of precast panels. Panels that sustain damage or surface defects during fabrication, handling, storage, transporting or installation are subject to review and rejection.

Any of the following conditions shall be cause for rejection of precast panels:

- Any cracks with crack widths greater than 0.004 inches (0.1mm).
- Voids or honeycombed areas.

All proposed repair procedures shall be in writing. Approval shall be obtained from the Engineer prior to performing the repairs. Repair work must reestablish the panel's structural integrity, durability and aesthetics to the satisfaction of the Engineer.

Failure to take corrective action to eliminate repetitive damage is cause for rejection of the additional damaged panels whether repaired or not.

Panels shall be fabricated to the following tolerances:

Precast panel dimensional tolerances shall comply with Table 4 – Dimensional Tolerances for Precast Panels.

Table 4
Dimensional Tolerances for Precast Panels

Panel Dimensions: Length & Width	± 1/4"
Panel Dimensions: Nominal Thickness	± 1/8"
Panel Dimensions: Squareness (diagonal difference @ top of panel)	± 3/16"
Horizontal Alignment	± 1/4"
Deviation from straightness of mating edge of panels	
Vertical Alignment – Camber, Horizontal Skew, and Vertical Batter	± 1/8"
Position of lifting anchors (horizontal location)	± 6.0"
Position of non-prestressed reinforcement (horizontal & vertical)	± 1/2"
Position of pre-tensioned strands & Tendon duct at shear key, if used (horizontal & vertical)	± 1/4"
Position of dowel bar inserts (horizontal & vertical)	± 1/4"
Dimensions of block outs & grout pockets	± 1/4"

Construction Methods:

- A. Field Verification: The Contractor shall verify dimensions shown in the Contract Plans by field measurements. All necessary field information required for the fabrication and the installation of the

precast panels shall be obtained prior to any preparation of the shop drawings and the installation plan. Any significant variation from the contract plans shall be reported to the Engineer.

- B. Fabrication: Do not place concrete in the forms until the Engineer has inspected the placement of all materials within the pavement panels.

Panels shall be manufactured to the thickness shown and shall include additional thickness to provide for the required blanket milling post placement required under Subsection 501.03.11.3 Surface Corrections. A minimum clearance of reinforcement and embedded items shall remain 3.0 inches.

Cure the precast panels in accordance with ACI, PCI or the approved plant Quality Control Plan. Begin curing immediately following surface finishing. Curing shall continue until lifting strength is attained. After curing, all form release material, curing material and any form material adhering to concrete surfaces shall be removed by power washing without causing damage to the surface.

Do not strip the form before the precast panels have attained a minimum compressive strength of 3,000 psi.

Top edges of precast panels shall be rounded with a hand stone to prevent chipping during handling and installation. No chamfering of panel top edges will be allowed.

All concrete surfaces which do not create a mechanical bond and are in contact with fill grout shall have an exposed aggregate finish. The roughened surface finish may be created by applying a retarder to the form work followed by power washing the unhydrated paste from the surface immediately after removal of the formwork or by abrasive basting of the surface prior to shipping.

Use lift devices cast into panels when lifting and moving panels at the fabrication plant and at the project site. Panel lifting stress calculations for typical and largest or any unique panels shall be provided in the shop drawing submittal.

Exposed surface finish shall be medium brushed or burlap drag texture.

- C. Placing Pavement Panels: The Contractor shall place the precast panels as shown in the approved installation plan.

Comply with the precast panel placement tolerances in Table 5 unless noted otherwise in the contract documents or accepted Pre-Installation Submittals.

- D. Installing Dowel Bars and Longitudinal Joint Ties: The Contractor shall install dowel bars and longitudinal joint ties as shown in the approved installation plan.

If allowed by the system designer specification and approved by the Engineer, in-place panels may be opened to traffic prior to bedding and encasement grout being placed.

- E. Placement of Bedding Grout and Encasement Grout: The Contractor shall place all grout as shown in the approved installation plan.

The Contractor shall verify that in-place panels that have been subjected to traffic loading are at correct grade and in compliance with the panel placement tolerances in Table 5 prior to grout placement.

Placement of dowel bar grout shall be completed within 48-hours of initial panel placement. If adverse weather delays grouting operations, complete as soon as weather permits. Place bedding grout after dowel bar grout and in the same work shift.

Construction traffic shall be kept off of panels after grouting and prior to opening to traffic.

Table 5
Precast Panel Placement Tolerances

Horizontal Alignment: Longitudinal centerline to surveyed centerline marked on the surface of the base and adjacent panels.	1/2" maximum
Transverse centerline to surveyed marks on adjacent panels	1/2" maximum
Vertical alignment: Top surface of precast panel with respect to top surface adjacent panels at any point	1/4" maximum
Gap width at top surface between adjoining panels Note: Maintaining variable transverse joint width in excess of 1/2 inch will be cause for stoppage of panel installation operations until the Contractor states in writing how he plans to correct this deficiency.	1/2" maximum transverse 1/2" maximum longitudinal

Method of Measurement:

The quantity for "Precast Concrete Pavement" will be measured as the number of square yards installed and accepted. The area will be computed based on the plan dimensions as shown on the contract plans. Removal, repair and reconstruction of base material will be measured for payment separately in accordance with Section 501. Fine Grading or base adjustments up to 2" in depth are considered incidental and shall consist of proposed base materials or in the absence of a proposed base material the material shall meet or exceed Select Borrow in accordance with Section 301.

Basis of Payment:

The work is composed of survey, design, fabrication and materials, transportation of panels and materials, removal of existing pavement including any associated saw cutting, base adjustments, placement of bedding material, grouting as required, diamond grinding of the pavement surface, joint sealing, clean up and placement of temporary pavement transitions as applicable to the contract.

The payment for "Precast Concrete Pavement" will be at the Contract unit price bid per square yard. Price and payment will constitute full compensation for survey, design, fabrication and materials, transportation of panels and materials, removal of existing pavement including any associated saw cutting, base adjustments, placement of bedding material, grouting as required, diamond grinding and for furnishing all equipment, tools, labor, and incidentals required to complete the work.

All temporary marking shall be installed using a State approved solvent based paint. Alternative temporary markings will only be allowed by approval of the Engineer and shall be fully removed prior to diamond grinding of the final surface.

Additional quantities of material used for the determination of material properties or for acceptance testing as described herein will be furnished at no additional cost to the Department.

4/25/18

601505 - DRAINAGE SAFETY END STRUCTURE

Description:

This work consists of furnishing all materials and constructing drainage safety end structures in accordance with the locations, and notes on the Plans, the Standard Construction Details, and/or as directed by the Engineer.

Materials and Construction Methods:

Portland Cement Concrete shall conform to the requirements of Class B, Section 1014; and all remaining materials shall meet the requirements listed in the details shown on the Plans.

Construction methods shall comply with the applicable requirements of Section 602 of the Standard Specifications, and those shown in the details shown on the Plans.

Method of Measurement:

The quantity of drainage safety end structures will be measured as the actual number constructed and accepted.

Basis of Payment:

The quantity of drainage safety structures, will be paid for at the Contract unit price bid per each. Price and payment will constitute full compensation for furnishing all materials including reinforcing bars, grate(s), excavation, backfill and backfilling, disposal of surplus and unsuitable materials, for all labor, tools, equipment and incidentals necessary to complete the item.

2/22/2018

602505 - PERSONAL SAFETY GRATE

Description:

This work consists of furnishing all materials, fabricating, delivering and constructing personnel grates for pipe inlets in accordance with the Standard Details, at locations as shown on the Plans, as directed by the Engineer and as required by these Special Provisions.

Materials:

Materials shall conform to the requirements of Sections 601 and 611 and shall be galvanized in accordance with Subsection 1039.10 including all rebar, hardware and fasteners as shown on the Standard Details.

Working drawings shall be submitted in accordance with Subsection 105.04.

Construction Methods:

Personnel grates for pipe inlets shall be constructed based on the Standard Details and at the size and locations shown on the Plans.

Method of Measurement:

The number of inlet grates to be paid for under this item shall be the actual number of inlet grates installed and accepted.

Basis of Payment:

The quantity of personal grate for pipe inlet will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for furnishing, hauling and installing materials, including bar reinforcement; lock, 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 personnel grate for pipe inlet including the preparation and submittal of working drawings shall be incidental to this item.

8/27/2018

606502 —DRILLED SHAFT IN ROCK, 30”

Description:

Furnish all material, labor, tools, Equipment, services and incidentals necessary to construct the drilled shaft in rock in accordance with the Contract Drawings.

Materials:

Steel Casings	Section 1034
Reinforcing Steel.....	Section 1037
Welding	Section 1039
Portland Cement Concrete, Class B.....	Section 1022
Slurry.....	Section 1035
Access Tubes for Crosshole Sonic Log Testing.....	Section 1033
Grout.....	Section 1047

Construction Methods:

Definitions:

Rock - Suitable rock for the Rock Socket shall meet the following criteria:

- (1) Continuous natural material which cannot be drilled with a conventional earth auger with fresh to slightly worn teeth and requires a rock auger and/or a core barrel with fresh or slightly worn carbide rock teeth or air tools combined with drill rig having a minimum down force and torque of 40,000 lbs and 50,000 ft-lbs, respectively to advance the drilled shaft. The Contractor is advised that this area is subject to the presence of boulders, cobbles, and ledge rock, which are obstructions, and are not considered to be continuous and are not suitable for rock sockets.
- (2) Earth auger refusal is defined as drilling advancement of less than 2-inches per 5 minutes with a drill rig meeting requirement defined above turning at a minimum rate of 30 rpm. The rate of advancement of the augers should be monitored at each drilled shaft location
- (3) The difference between materials classified as Rock and Obstruction is the continuous nature of the Rock.
- (4) Dimensions of the Rock Sockets and Drilled Shafts may vary due to surface and rock elevation differences on site. See the Contract Plans for details.
- (5) The diameter of the Rock Socket and/or Drilled Shaft shall be as indicted in the Contract Plans. Minimum concrete cover for reinforcing steel shall be as shown on the plans.

Obstruction. Obstructions may be anticipated in the drilled shafts for this project. Obstructions are defined in Section 606.03.5.

Rock Socket. Length of caisson shaft that is located in continuous rock as defined above. Pay item 606502 – Drill Shaft in Rock, 30” is defined as rock socket portion of drilled shaft.

Soil. A stratum of geomaterial that is not classified as Rock or Obstruction. Pay item 606001 – Drilled Shaft, 36” is defined as drilled shafts in Soil.

Method of measurement:

The Engineer will measure drilled shaft in rock by the length in linear feet from the top of the rock to bottom of shaft elevation and as shown in contract plans. The engineer will not separately measure excavation, blasting, slurry, reinforcing steel, concrete grout and integrity testing tubes.

Basis of Payment:

The quantity drilled shaft in rock will be paid for at the Contract unit price per linear foot (LF). Price and payment will constitute full compensation for furnishing and placing bar reinforcement, concrete, temporary casing, integrity testing, drilling in rock, all labor, equipment, tools and incidentals necessary to complete the work. Drilled shaft in soil shall be paid under item 606001 - Drilled Shaft, 36”.

8/8/19

615515 - RIDE SHELTER INSTALLATION

Description:

This work consists of removing the existing ride shelter and bench, storing it, constructing a portland cement concrete pad and installing ride shelter in accordance with notes and details on the Plans, these specifications, and as directed by the Engineer.

Materials:

Portland Cement Concrete. Portland cement concrete shall be Class A conforming to the requirements of the Section 1022 of the Standard Specifications.

Base Course. The base course shall conform to the requirements of Section 301 of the Standard Specifications.

Reinforcement. Welded wire fabric shall conform to the requirements of AASHTO M 55/M 55M and Section 1037 of the standard specifications.

Shelter. The existing shelter will be removed by the contractor and will be stored on the site by the contractor.

Hardware. Existing hardware that anchor bus shelter and bench to the concrete will be removed by the contractor. New anchoring hardware includes:

- 3/8 -16 3/4" stainless steel wedge anchor bolt with flat washer, lock washer & nut ground attachment for anchor boot, bench;
- 1/2 -13 1/2" stainless steel wedge anchor bolt with flat washer, lock washer & nut ground attachment for anchor boot, shelter.

Construction Methods:

The exiting ride shelter to be removed by the contractor. Contractor and engineer shall inspect the shelter prior its removal and determine its condition. Contractor shall remove glass before moving shelter. Glass shall be stored upright and with extra care. Contractor shall remove and inspect the hardware. Remove shelter and brace with stakes in the grass area near proposed shelter location. The contractor shall use care while removing and storing the shelter. Re-install shelter and bench immediately after the curing of the concrete pad.

The site shall be excavated and graded in accordance with lines, grades and details shown on the Plans. The subgrade shall be prepared in accordance with Section 202 of the Standard Specifications.

The base course and concrete pad shall be placed in accordance with Section 301 and Section 705 of the Standard Specifications and per detail on the Plans and DeDOT Standard Detail M-9 (2013). The surface of the concrete pad shall have a stiff-broom finish.

The shelter and bench shall be anchored to the concrete pad as per instructions from the DTC (Delaware Transit Corporation).

Method of Measurement:

The quantity of ride shelters installed will be measured as the actual number of each installed and accepted.

Basis of Payment:

The quantity of ride shelters installed will be paid for at the Contract unit price for each ride shelter. Price and payment will constitute full compensation for removing, storing, and placing all materials including hardware to anchor the pad and bench, for excavating and preparing the foundation, and for all labor, equipment, tools and incidentals required to complete the work.

12/26/18

615516- STEEL STRUCTURES (UNPAINTED)PRE-FABRICATED STEEL TRUSS BRIDGE

Description:

This work shall consist of the design, fabrication, delivery, assembly and erection of a pre-engineered, pre-fabricated steel truss bridge, railing and rub railing in accordance with contract drawings. The truss for the pre-engineered, pre-fabricated bridge shall be welded steel construction. The truss system shall be Pratt truss or similar with one (1) diagonal per panel and square end vertical member. A minimum of five years of experience in the design and fabrication of pre-engineered/pre-fabricated bridges is required.

This work shall also consist of the design and construction of reinforced concrete bridge deck in accordance with these requirements, DelDOT Standard Specification Section 610 and as shown on the plans.

Materials:

Materials shall be in accordance with the applicable portions of DelDOT Standard Specification Section 1022, 1037 and 1039 and the following:

1. All bridge structural members, including rail elements, shall be fabricated from high strength, low alloy, atmospheric corrosion resistant ASTM A847 cold-formed welded square and rectangular tubing and/or ASTM A588, or ASTM A242, ASTM A606 plate and structural steel shapes, $F_y = 50,000$ psi. The minimum corrosion index of atmospheric corrosion resistant steel, as determined in accordance with ASTM G 101, shall be 6.0.
2. Field splices shall be fully bolted with ASTM A325 Type 3 high strength bolts in accordance with the "Specifications for Structural Joints Using ASTM A 325 or A 490 Bolts."
3. Welding and weld procedure qualification tests shall conform to the provisions of ANSI/AWS D1.5 "Structural Welding Code", current edition. Filler metal shall be in accordance with the applicable AWS Filler Metal Specification. For exposed, bare, unpainted applications of corrosion resistant steels, the filler metal shall be in accordance with AWS D1.5, Section 3.7.3.
4. Concrete shall be in accordance with DelDOT Standard Specification Section 610. The bridge manufacture shall provide 20 gage (minimum) stay-in-place 3" minimum thick galvanized steel rib decking with steel side and end dams. Concrete decks shall be broomed finish at 90 degrees to the side of the bridge
5. Reinforcing steel shall be in accordance with DelDOT Standard Specification Section 611.

Design Data:

The design of the pre-engineered, pre-fabricated steel truss bridge and reinforced concrete bridge deck shall be performed in accordance with the following:

1. AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges, 2nd edition with 2015 interim revisions.
2. AASHTO LRFD Bridge Design Specifications, 7th Edition, with 2015 and 2016 Interim Revisions.
3. Steel Construction Manual, American Institute of Steel Construction, Fourteenth Edition.
4. DelDOT bridge design manual, 2017.

5. DeIDOT standard specifications for Road and Bridge Construction, 2016.

In addition to normal dead loads, the pre-engineered, pre-fabricated steel truss bridge shall be designed for the following:

1. Uniform Live Load: Bridge shall be designed for an evenly distributed pedestrian live load of 90 lbs/sq ft as required by AASHTO.
2. Vehicle Load: Bridge shall be designed for a live load equivalent to an H10 truck loading in accordance with AASHTO.
3. Wind Load: Bridge shall be designed for a minimum wind load of 120 miles per hour. The wind shall be calculated on the entire vertical surface of the bridge.
4. Seismic Load: The entire structure, including the bearing assemblies, shall be designed for Seismic Zone 1 requirements in accordance with AASHTO A3.10.9.2.
5. Temperature: Bridge shall be designed to accommodate a temperature differential of 120°F. At least 1 in. clearance shall be provided between the concrete expansion abutment and the end of the bridge floor.
6. Deflection: Bridge shall be cambered to offset dead load deflections. Final grade for bridge shall be as shown on the plans. Vertical deflection due to un-factored service pedestrian load shall not exceed $L/360$ of the span.

General Design Features

1. Span. The bridge span shall be as specified in the bid documents.
2. The bridge minimum width shall be as specified in the bid documents. The minimum width shall be measured from the inside face to the inside face of rub rails.
3. The bridge deck and railings elements shall conform to ADA requirements.

Construction Methods:

Fabrication

Fabrication of the pre-engineered, pre-fabricated steel truss bridge shall be in accordance with the applicable portions of DeIDOT Standard Specification Section 615 and the following:

1. Workmanship, fabrication, and shop connections shall be in accordance with AASHTO. Member Components. All members of the vertical trusses (top and bottom chords, verticals, and diagonals) shall be fabricated from square and/or rectangular structural steel tubing without perforation holes (except for the two ends of diagonal floor beams). Other structural members and bracing shall be fabricated from structural steel shapes or square and rectangular structural steel tubing without perforation holes.
2. Submit electronic copies of working drawings according to DeIDOT Standard Specification Section 105.04 and structural design calculations with bridge reactions, signed and sealed by a Professional Engineer registered to practice in the State of Delaware, shall be submitted to the Engineer for review and approval prior to fabrication. Tension members shall require Charpy V-notch testing per zone 2.
3. Bridge shall be fabricated by a fabricator who is currently certified by the American Institute of Steel Construction to have the personnel, organization, experience, capability,

and commitment to produce fabricated structural steel for the category "Simple Steel Bridges" as set forth in the AISC Certification Program. Quality control shall be in accordance with procedures outlined for AISC certification.

4. Welders shall be properly accredited operators, each of whom shall submit certification of satisfactorily passing AWS standard qualification tests for all positions with unlimited thickness of base metal, have a minimum of 6 months experience in welding tubular structures and have demonstrated the ability to make uniform sound welds of the type required.

5. Continuous railing shall be located on the inside of the trusses. The railing shall have a maximum opening of 4 in. All railing shall have a smooth inside surface with no protrusions or depressions. All ends of angles, channels and tubular members shall be closed and ground smooth.

Construction Requirements

Construction of the pre-engineered, pre-fabricated steel truss bridge and the reinforced concrete bridge deck shall be in accordance with the applicable portions of DelDOT Standard Specification Section 610, 611 and 615 and the following:

1. Structural design of the reinforced concrete bridge deck shall be performed by the Contractor. Prior to construction of the bridge deck, electronic copies of detailed working drawings and structural design calculations, signed and sealed by a Professional Engineer registered to practice in the State of Delaware, shall be submitted to the Owner and Engineer for review and approval. Refer to Section 9, Decks and Deck Systems of the AASHTO LRFD Bridge Design Specifications for the design of the deck.

2. The Contractor shall verify with the bridge manufacturer all dimensions, locations, configurations and bearing assemblies required at the bridge substructures for proper installation of bridge. Substructure dimensions and elevations indicated on the Plans and working drawings shall be adjusted in accordance with the bridge manufacturer's requirements with no direct payment for modification of the substructures. All adjustments shall be submitted as working drawings to the Owner and Engineer for review and approval prior to construction of the bridge substructures and prior to fabrication of the prefabricated bridge.

3. Bare applications of enhanced corrosion resistant steels.

All Blast Cleaning shall be done in a dedicated OSHA approved indoor facility owned and operated by the bridge fabricator. Blast operations shall use Best Management Practices and exercise environmentally friendly blast media recovery systems.

To aid in providing a uniformly "weathered" appearance, all exposed surfaces of steel shall be blast cleaned in accordance with Steel Structures Painting Council Surface Preparation Specifications No. 7 Brush-Off Blast Cleaning, SSPC-SP7, latest edition.

Exposed surfaces of steel shall be defined as those surfaces seen from the deck and from outside of the structure. Floor beams, lower brace diagonals and the inside face of the truss below deck and bottom face of bottom chord shall not be blasted.

4. The bridge shall be delivered to the site by truck. Precautions shall be taken during transportation to prevent warping, twisting and damage to the steel members and their finish.

5. The Contractor shall coordinate with the bridge manufacturer regarding the required unloading, erection, splicing, bearing and bolting procedures.

6. All damage to structural members and finishes of bridge during transportation, storage, or installation shall be repaired or replaced at no additional cost as directed by the Engineer.

7. Concrete and reinforcing steel testing requirements shall be in accordance with DelDOT Standard Specification Section 610 and 611, respectively.

8. Bridge bearing devices shall consist of a steel setting or slide plate placed on the abutment/pier masonry pad. The bridge bearing plate which is welded to the bridge structure shall bear on this setting plate. Fixed bearings nuts on the anchor bolts shall be fully tightened and expansion bearings nuts on the anchor bolts will have finger tight only nuts to allow movement under thermal expansion or contraction.

9. Unless specified otherwise, the bridge manufacturer shall determine the number, diameter, minimum grade and finish of all anchor bolts. The anchor bolts shall be designed to resist all horizontal and uplift forces to be transferred by the superstructure to the supporting foundations. The Contractor shall install the anchor bolts in accordance with the manufacturer's anchor bolt spacing dimensions.

10. Horizontal safety rails shall be placed on the structure up to a minimum height of four feet (4'-0") above the deck surface. Safety rails shall be placed to prevent a four-inch (4") sphere from passing through the truss. Safety rails shall have a "v" shape, where the point of the "v" faces to the inside or outside of the structure at the bridge manufacturers option and be welded to the structure. Safety rails placed on the inside of the truss shall have their ends sealed and ground smooth to produce no sharp edges.

The safety rail system shall be designed for an infill loading of two hundred pounds (200 lbs.), applied horizontally at right angles, to a one (1) square foot area at any point in the system.

11. The bridge shall be supplied with a one quarter inch by six-inch (1/4" X 6") steel toe plate mounted to the inside face of both trusses. The toe plate shall be welded to the truss members at a height adequate to provide a two-inch (2") gap between the bottom of the plate and the top of the deck or the top of the bottom chord, whichever is higher. The span of the toe plate (from center to center of supports) shall not exceed five feet eight inches (5'-8").

12. Rubrails and/or Handrails: The bridge will be supplied with a nominal five quarter inch by six inch (5/4" X 6") Recycled Plastic Lumber such as Trex or equal. Rubrails shall be attached flush to the inside face of the bridge truss verticals and fastened with two carriage bolts at each support location. The span of the rubrail from centerline to centerline of support shall not exceed six feet six inches (6'-6"). The top of the rubrail shall be three feet (3'-0") above the top of the deck (measured at the outside edge of the deck).

Warranty

The bridge manufacture shall warrant their steel truss structures to be free of design, material, and workmanship defects for period od fifteen (15) years from the date of delivery.

Method of Measurement:

Pre-engineered/pre-fabricated steel truss bridge and erection will not be measured separately. No measurement will be made for design and construction of reinforced concrete bridge deck.

Basis of Payment:

Bridge, steel truss, pre-engineered will be paid for at the contract unit price per lump sum.

Payment will be made under:

Pay Item	Pay Unit Symbol
615516 - Steel Structures (Unpainted)	Lump Sum (LS)

The cost of design, working drawing preparation, labor, materials, fabrication, delivery, erection and assembly required for the installation of bridge, railing and rub railing shall be included in the cost of the pay item.

The cost of design, working drawing preparation, labor and materials required for construction of the reinforced concrete bridge deck including reinforcing steel, concrete and formwork shall be included in the cost of the pay item.

The cost of drilling holes for anchor bolts, anchor bolts, bridge bearing devices including steel setting or slide plate, fabrication, Charpy V-Notch toughness tests and necessary incidentals shall be included in the cost of the pay item.

8/20/19

617515 - HEADWALL

Description:

This work consists of furnishing and placing a concrete drainage headwall as shown on the Plans.

Materials:

Materials shall conform to the requirements of Section 601, 1022 and 1037 of the Standard Specifications.

Construction Methods:

Concrete headwalls shall be placed in conformance with the details, dimensions, and notes as shown in the details found in the Plans and at the location shown on the Plans.

Method of Measurement and Basis of Payment:

The quantity of headwalls will be measured and paid for at the Contract unit price per each. Price and payment will constitute full compensation for furnishing, hauling, and installing materials, including concrete and bar reinforcement; for excavating, backfilling, and compacting; for cribbing, shoring, and sheeting; and for all labor, equipment, tools, and incidentals required to complete the work.

4/27/2018

621500 - TEMPORARY TIMBER MAT

Description:

The item shall consist of furnishing all materials and constructing a temporary timber mat for access across the wetland area as shown on the Plans and as directed by the Engineer. All equipment shall utilize this temporary timber mat when trying to access the stockpile/staging area and the underside of the bridge.

Materials:

In accordance with Section 621 of the Standard Specifications and the following:

Timber shall have a strength and grade adequate to support the Contractor's anticipated vehicular or equipment loads. Any preservative treatment applied to the matting shall be environmentally safe for wet conditions and be preapproved by the Department.

Hardware shall be in accordance with Section 1041.05 of the Standard Specifications.

Construction Methods:

The Contractor shall submit to the Department for approval shop drawings and design calculations indicating the layout, size of members, arrangement of members and the construction methods at least two weeks prior to initiating construction. This information shall be signed and sealed by a Professional Engineer registered in the State of Delaware. A timber mat system is shown on the plans and shall be used for conceptual purposes only. The actual timber mat system utilized for the construction shall be designed for the anticipated construction loads and shall be compatible with the environment. Placement of stone within the wetland area is not permitted.

The temporary timber matting should be periodically inspected by the Contractor and any damaged or deteriorated components should be replaced. The Contractor assumes full responsibility for the load carrying capability of the system and for its anchorage, as required, to resist high water flows. No additional compensation will be granted for repairing any portion of the system damaged during naturally occurring weather events or contractor usage. The Contractor is responsible for retrieving lost mats and repairing any damage caused by naturally occurring weather events.

Basis of Payment:

The payment for the item shall be made for at the contract unit price bid per Lump Sum for "621500 - Temporary Timber Mat", which price and payment shall constitute full compensation for furnishing and placing all materials, for design, submission of signed and sealed drawings and computations, installation and removal of timber mat materials, and for all labor, equipment, tools and incidentals required to complete the work.

6/30/17

705500 – PEDESTRIAN CONNECTION, MARYLAND

Description:

Furnish all materials to construct and/or remove Pedestrian Connection and associated Islands to Maryland State Highway Administration standards as shown on the details in Plans, at the location(s) shown on the Plans, to the requirements of the Maryland State Highway Administration and/or as directed by the Engineer.

Materials:

Provide materials as specified in:

Graded Aggregate Base Course	Section 1005
Bituminous Pavement	Section 1014
Bituminous Patching	Section 402
Portland Cement Concrete, Class B	Section 1022
Expansion Joint Material	Section 1042
Joint/Crack Sealant Material	Section 1042
Curing Compound	Section 1022
Delineator	Section 824

General: Submit all proposed sources of materials to Materials and Research Section in accordance with Subsection 106.01.

Construction Methods:

Provide an American Concrete Institute (ACI) or National Ready Mix Concrete Association (NRMCA) certified concrete flatwork technician to supervise all finishing. Provide proof of the flatwork certification to the Engineer prior to concrete placement.

Construction of Pedestrian Connection(s):

1. Sawcut existing bituminous concrete pavement or PCC pavement, if applicable;
 - a. For bituminous concrete pavements, sawcut 18" minimum from the proposed face of curb or gutter of the island to allow enough room to achieve compaction for hot-mix patching;
 - b. For PCC pavement, sawcut at the proposed face of curb or gutter.
2. Remove bituminous concrete pavement or PCC pavement and dispose of in accordance with Subsection 106.10 and/or permits, if applicable;
3. Prepare the foundation for the curb in accordance with Subsections 701.03;
4. Place Graded Aggregate Base Course (GABC) for curb installation at the location and depths shown on the plans in accordance with Section 301;
5. Layout and pour PCC Curb in accordance with Section 701 unless otherwise specified on the plans or directed by the Engineer;
 - a. Finish curb in accordance with Subsection 701.03;
 - b. Cure curb in accordance with Subsection 701.03;
 - c. Backfill curb in accordance with Subsection 701.03 after removal of forms, or upon completion of slip-form operation;

6. Prepare the foundation for the sidewalk in accordance with Subsection 705.03;
7. Place concrete for sidewalk at depth(s) shown on plans in accordance with Section 705;
 - a. Install 4" PVC sleeve for signs at locations shown on plans;
8. Construct Pedestrian Connection, if applicable, in accordance with the details shown on the plans, any modifications on the plans and to all the applicable requirements of the Maryland State Highway Administration.
9. Furnish and install Sidewalk Surface Detectable Warning System, if applicable, in accordance with the requirements of the Maryland State Highway Administration and to all the applicable requirements of Section 705.
10. Perform hot-mix patching in accordance with Section 402 and/or PCC patching in accordance with Section 503, if applicable, as shown on plans or otherwise match existing pavement structure;
11. Furnish and install Delineator(s) on the leading ends/corners of the island(s).

Method of Measurement:

The quantity of Pedestrian Connection, Maryland State Highway Administration will be measured as:

- Triangular Islands: the number of square feet, from face of curb to face of curb for triangular islands.
- Pedestrian Connection, curbed: the number of square feet from face of curb along the edge of road to the back of Pedestrian Connection, tapers and/or landings through the full extent of concrete placement.
- Pedestrian Connection, non-curbed: the number of square feet from edge of road to back of Pedestrian Connection, tapers and/or landing through the full extent of concrete placement.
- Removal of Pedestrian Connection: the number of square feet from edge of sawcut line to back of Pedestrian Connection, taper, and or landing through the full extent of concrete removal.

No measurement for payment will be made on vertical surfaces of curb or sidewalk.

Sidewalk Surface Detectable Warning System will be measured and paid for under Item No. 705007.

Basis of Payment:

The area of Pedestrian Connection shall be paid for at the Contract Unit Price per square foot. Price and payment constitutes full compensation for excavation within the template of this Item, grading and compacting, including the curb and pavement areas within the limits of the ramp, furnishing and placing all Materials including graded aggregate base course, curb, concrete, bituminous or concrete for patching along the curb line, expansion material, saw cutting, removal and disposal of the existing curb, gutter, sidewalk and pavement, and for all equipment, labor, tools, and incidentals necessary to complete the Work.

No additional payment will be made under other contract items for work necessary to construct the island except Item No. 705007 - Sidewalk Surface Detectable Warning System.

Note: The curb and sidewalk components are not to be placed monolithically unless otherwise directed by the Plans or the Engineer.

1/23/2019

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.

8/9/19

707500 - 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 707500 - 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	70-100 ¹	0-20 ²	
3/4-inch	30-95		
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.

710504 - WATER SERVICES

Description:

This work consists of furnishing, transporting, installing, and testing the water main, line, laterals, and accessories in accordance with the locations, details and notes on the Contract Documents, and as directed by the Engineer. The work shall be performed in accordance with these Special Provisions, Delaware Standard Specifications, the requirements of the Standards and Specifications of Suez Water Delaware, and the requirements of the Standards and Specifications of the City of Newark Public Works and Water Resources. There are two Owners of the water utilities depicted on the plans, Suez Water Delaware and the City of Newark Public Works and Water Resources. For purposes of these specifications, the water utility owner is referred herein as the Utility Owner. Please refer to contract drawings for determining the proper Utility Owner that will take ownership of the proposed the water assets. In case of conflict between these Special Provisions, Delaware Standard Specifications, and the Standards and Specifications of the Utility Owner, the Standards and Specifications and all other requirements of the Utility Owner shall prevail.

Materials:

Provide Materials as specified in the following:

Portland Cement Concrete, Class B	Section 1022
Backfill, Borrow Type C	Section 1001
Stone, Delaware No. 8	Section 1004

All the materials including pipe, fittings, and all other accessories as listed under this Special Provisions, shall conform to the material and quality requirements of the Standards and Specifications of the Utility Owner. The Utility Owner shall have right to inspect and reject the materials, if his/her specifications requirements are not met. It is recommended that the Contractor should contact the Utility Owner and get himself/herself familiarized with the applicable requirements of the materials required under this Contract before submitting his/her bid.

The Contractor shall be responsible for providing materials including pipe, fittings, and all other appurtenances necessary to make permanent connections to existing utility facilities of whatever material type encountered.

The Contractor shall transport, handle, and store pipe and fittings as recommended by manufacturer. New pipe and fittings that are damaged before or during installation shall be repaired or replaced, as recommended by the manufacturer or required by the Utility Owner. The costs of such repair or replacement shall be borne by the Contractor and be accomplished prior to proceeding with the project.

The Contractor shall deliver, store and handle other materials as required to prevent damage. Materials that are damaged or lost shall be repaired or replaced by the Contractor at no additional expense to the Utility Owner or Department.

A. WATER LINE MATERIALS

All watermain pipes, hydrants, valves, fittings and all appurtenances shall be new materials and shall be of the type, size, strength, and quality as shown on the plans and as specified herein and/or as indicated in the Special Provisions. The contractor may be required to secure and deliver to the Engineer a written statement from the manufacturer assuring the quality and compliance to the applicable specification of all materials furnished and installed under this improvement project. This shall in no way relieve the Contractor of any responsibility as to the quality of materials furnished and installed.

The Contractor shall install pipe made of virgin materials. The new pipe shall be homogenous throughout and shall be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.

All standards and specifications referenced shall be the latest edition and version thereof. This includes AWWA, ASTM, ANSI, NSF and Federal specifications and standards. All construction work related to the installation of potable water pipe shall be performed by a licensed and bonded Contractor. Permits and licenses must be obtained prior to construction.

Warranty and Acceptance: Materials and workmanship shall have a one-year warranty to be free from

defects in workmanship and materials. The warranty will be from the date of completion of construction. If work has been done to the requirements of this specification, a letter of acceptance shall be provided to the contractor upon final inspection. If deficiencies are discovered during the warranty period, the Contractor shall be required to correct these deficiencies without additional charge to the Owner or his agent. The Project Engineer shall determine the need for warranty repair work to be performed by the Contractor. The Project Engineers determination of a deficiency will bind the Contractor to make a repair in accordance with this Contract.

1. PIPE BEDDING MATERIAL – Pipe bedding material shall be in accordance with DelDOT Standard details.
2. DUCTILE IRON PIPE (DIP) – Ductile iron water mains shall be push on, Class 52, unless otherwise specified. DIP shall be centrifugally cast in lengths not less than 12 feet and no more than 20 feet, conforming to ANSI/AWWA C151/A21.51-81. DIP shall be cement lined in accordance with the requirements of ANSI/AWWA C104/121.4-80. A bituminous seal coating shall be applied to the interior and exterior as soon as the cement lining has sufficiently dried.
 - a. Suez Water Delaware: provide a minimum cover of 36 inches.
 - b. City of Newark Public Works and Water Resources: provide a minimum cover of 42 inches.
3. POLYETHYLENE PIPE (PE) – PE water mains shall be Class 200 unless otherwise specified. 1.5 or 2-inch PE shall conform to ASTM D3035, AWWA C901. Provide a minimum cover of 36 inches.
4. GATE VALVES
 - a. Suez Water Delaware: Main gate valves shall be Mueller A-2361, open left, or approved equal
 - b. City of Newark Public Works and Water Resources: Main gate valves shall be Mueller A-2362, open left, or approved equal
5. INSERTION VALVE
 - a. Suez Water Delaware: Main insertion valve shall be TEAM Insert Valve with Resilient Seat Gate or approved equal.
 - b. City of Newark Public Works and Water Resources: Advanced Valve Technologies EZ Valve. 90-degree actuators will be required where burial depths will not accommodate a standard valve configuration. Insertion valves may be located in a manhole where existing burial depths are less than 42". A minimum of 6" must be maintained between the bottom of the manhole lid and the valves operating nut.
6. VALVE BOXES – Valve boxes shall be installed with lids reading "WATER"
 - a. Suez Water Delaware: Valve boxes shall be Mueller H-10350, or approved equal.
 - b. City of Newark Public Works and Water Resources: H-10360, or approved equal.
7. DIP FITTINGS – DIP Fittings shall be ductile iron casting and have mechanical joints, Class 350 conforming to AWWA specification C153, covering compact fittings. Mechanical joints shall conform to AWWA Specification C111, latest revision, with gaskets made from vulcanized crude rubber compound. Fittings shall be cement lined and bituminous coated. Mastic spray is to be used where any uncoated pipe or fitting is exposed such as welds, Megalugs, scraped coating, etc.
8. BOLTS, NUTS & RODDING – All underground installed bolts, T-bolts, nuts and any rodding required shall be stainless steel, ASTM F 593 Type 316 for all watermain fittings including mechanical joints, hydrants, valves, tees, bends, taps, etc. No other type of bolts, nuts or rodding will be allowed unless approved in writing by the City Engineer.
9. HYDRANTS – Hydrant laterals shall be retraining tee, 6 inch resilient wedge gate valve and box with 6 inch ductile iron pipe. Valve opening shall be 5 ¼ inch, open left. The nozzle arrangement shall be two 2 ½ inch hose connections and one 4 ½ inch pump connections, National Standard

Thread. Lateral connection shall be 6 inch mechanical joint. Operating nut shall be 1 ½ inch pentagon.

- a. Suez Water Delaware: Hydrants shall be Waterous Pacer WB-67-250.
 - b. City of Newark Public Works and Water Resources: Super Centurion 250/HS Mueller, A-423, buttressed and rodded.
10. TAPPING SLEEVES AND VALVES – Tapping sleeves shall be Mueller H-615, Mueller Stainless H-304. Tapping sleeves shall be a minimum of 6 feet from pipe joints or other fittings.
- a. Suez Water Delaware: Tapping valve shall be Mueller T-2362, open left.
 - b. City of Newark Public Works and Water Resources: Mueller T-2360-19, open left
11. BUILDING SERVICES AND SERVICE SADDLES – Contractor shall be responsible for locating all water services; determining is active or abandoned; and confirming size and material. Locating and determining active status shall be incidental to the service connection item.
- a. CURB STOPS
 - i. Suez Water Delaware: Curb stops shall be Ford Ball Valve with Pack Joint inlet and outlet, or approved equal.
 - ii. City of Newark Public Works and Water Resources: Curb stops shall be Mueller H-15209N or P-25209N.
 - b. CURB BOXES - Curb boxes Mueller-H10350, or approved equal.
 - c. CORPORATION STOPS –
 - i. Suez Water Delaware: Corporation Stops shall be Ford Ballcorp with AWWA inlet threads and Pack Joint outlet, or approved equal.
 - ii. City of Newark Public Works and Water Resources: ¾ inch Mueller H-15008N or B-25008N, tapped on upper 1/3 (45 degree).
12. POLYETHYLENE ENCASEMENT MATERIAL –
- a. Suez Water Delaware: Polyethylene encasement material shall conform to the requirements of AWWA C-105 for tube type installation and 8 mil nominal film thicknesses.
 - b. City of Newark Public Works and Water Resources: V-Bio Enhanced Polyethylene Encasement manufactured by McWane Ductile or approved equal.
13. BENDS – All bends shall be concrete buttressed or utilize locking gaskets. Refer to construction details in the drawings.
14. RESTRAINED JOINTS – Restrained joints shall be provided at all transition connections. Restrained joints shall be MEGA-LUG series 1100 or approved equal. At locations were bends are required pre-cast thrust blocks. For connection between HDPE and DIP pipe, Contractor shall use a MJ Adapter for connection. Contractor is responsible for restraining DIP joints and fittings at alignment changes; at valve locations where a future tie-in may occur; at valve locations where existing pipe will be removed and replaced during future operations; and as shown on the drawings or required based on requirements of the construction details.
15. STIFFENERS INSERTS. Stainless steel stiffener inserts, ASTM 240, shall be used for all fittings and connections to HDPE pipe.
16. Backflow Preventer and Basket Strainer for Temporary Water Main and Hydrostatic Testing: Reduced pressure principal type, flanged and supplied complete with integral valves, following the American Society of Safety Engineers Standard No. 1013 and AWWA C510.
- a. Materials: Bronze, or liquid epoxy coated cast iron body with bronze and stainless steel working parts.

- b. Pressure Requirements: Suitable for supply pressure as high as 175 psi and hydrostatic test pressure of 350 psi.
- c. Manufacturers: Conbraco, Febco, Zurn Industries, Watts Regulator or approved equal.
- d. Basket Strainers.
 - i. Installation: Inlet side of backflow preventer following Drawings.
 - ii. Strainers: Flanged ends, unless otherwise noted.
 - (1) Strainer bodies: Ductile iron, gray iron, or bronze and designed to withstand maximum working pressure of 175 psi with tapped opening for flushing strained debris.
 - iii. Screens: Unless otherwise noted, stainless steel or brass sheet metal with ¼ inch perforations.
 - (1) Open area of screen: At least 4 times inside cross-sectional area of pipe.
 - iv. Manufacturers: Hersey Products, Inc., Mueller Co., or approved equal.

A. JACK AND BORE

Casing Pipe shall be welded steel pipe, minimum 3/8-inch wall thickness, meeting the requirements of ASTM A 139, Grade B of the nominal diameter and length depicted on the Drawings. Casing pipe shall include a bituminous asphaltic coating on the exterior of the casing pipe applied at the manufacturing facility and re-applied as needed in the field if damaged during delivery or installation. Steel casing sections shall be connected by seam welding a butt joint. Field welding shall be performed in accordance with AWWA C206, Field Welding of Steel Water Pipe.

Casing Spacer shall be in accordance with the following requirements:

- 1. Spacers shall be as shown on Contract Documents.
- 2. Spacers shall be stainless steel.
- 3. Spacers shall be bolt on style with a two-piece shell made from T-304 Stainless Steel of a minimum 14-gauge thickness.
- 4. Shell shall be lined with a ribbed PVC sheet of a 0.090-inch thickness that overlaps the edges.
- 5. Runners made from UHMW polymer, shall be attached to risers at appropriate positions to properly locate the carrier within the casing and to ease installation.
- 6. Risers to be made from T-304 Stainless Steel of a minimum 14-gauge thickness and shall be attached to the shell by MIG welding.
- 7. All welds shall be fully passivated.
- 8. All fasteners shall be made from T-304 Stainless Steel.
- 9. Model CCS as manufactured by Cascade Waterworks Manufacturing Company, Yorkville, IL. Or approved Equal.

Casing End Seals shall be in accordance with the following requirements:

- 1. Casing end seals shall be installed to create a barrier from water and debris.
- 2. The minimum thickness of seals shall be 1/8" of ethylene propylene diene monomer (M-Class) (EPDM) rubber, which conforms to ASTM Standard D-1418.
- 3. The tensile strength shall be no less than 1,000 PSI.
- 4. Bands shall be T-304 Stainless Steel.
- 5. Acceptable manufacturers:
 - a. Advance Products and Systems
 - b. Pipeline Seal and Insulator, Inc.
 - c. Approved Equal

Grout shall be in accordance with the following requirements:

- 1. Cement: ASTM C150, Type I or Type II.
- 2. Sand: ASTM C404, Size No. 1.
- 3. Voids between Casing and Existing Ground: Minimum compressive strength of 100 psi, attained within 24 hours, and sufficiently fluid to inject through lining and fill voids, with prompt setting to control grout flow.

Patches for all appurtenances adjusted after the paving operations will require a perimeter reservoir and will be sealed in accordance with Section 504.

Special Requirements:

Coordinate all water service construction activities with the Owner including, but not limited to, requests for system shut downs and inspections. Provide the Owner with reasonable time to respond to requests for information and coordination. Submit (3 weeks prior to beginning the Work), for approval, a plan describing the logical sequence for water service shut-downs and tie-ins.

If necessary, furnish, install, and remove bypass and temporary services pipes to maintain water service to customers during the Work. Furnishing, installing services and other branches, maintaining, providing safety precautions and removal of temporary services is the responsibility of the Contractor and shall be included as part of the bid item as incidental to the cost of installing pipe. Use only the highest quality service pipe, connections and branches that are able to withstand 150 pounds per square inch pressures and all conditions of use. Ensure that all pipes and fittings are watertight, and that care is exercised throughout the installation to avoid pollution of mains, hose services or temporary service pipe.

Place temporary service pipe in the gutters where possible. Provide pipe crossings at driveways with cold patch cover or other methods approved by the Engineer. At street crossings, place temporary pipe in shallow trenches covered with temporary surfacing or other methods approved by the Engineer. Use sanitary precautions that are satisfactory to both the Engineer and the Owner. Chlorinate the interior of temporary service pipe in accordance with the latest AWWA Manual C601-81 "AWWA Standard for Disinfecting Water Mains". Chlorine and bacteria testing will be performed by the Owner's inspector.

The Owner and the Engineer retain the sole right of determining the times that the Work can occur and the sequence of the Work. Do not begin Work until both the Owner and the Engineer grant permission to proceed. Notify the Owner a minimum of forty-eight (48) hours before beginning Work to allow the Owner to arrange inspection. Immediately notify both the Engineer and the Owner of all delays to the scheduled Work.

It is of prime importance that the Contractor, in the performance of the Work, does not disrupt the operation of the existing water facilities in any manner or at any time, without the expressed prior approval of the Owner. Construct, disinfect, maintain and remove, following construction, such temporary water bypasses as may be required during construction to maintain water mains in service. No separate payment will be made for such temporary water bypasses.

The Contractor will be permitted to close down specific water mains and services for a period of time not exceeding four (4) hours after obtaining approval from the Owner in order to make connections as shown in the Contract Documents. The schedule for making connections will be so arranged that the water users will be out-of-service for a minimum period of time. The Contractor will receive no additional compensation for working during off-peak hours.

Before any shutdown, as specified above, the Contractor must give the utility owner and local 911 Center and Fire Department forty-eight (48) hour's notice; and the Contractor must also furnish written notice to all water users in the area, a minimum of forty-eight (48) hours in advance of the closing of any water valves which may interrupt customer water service.

Shutdowns are not permitted if tapping sleeves and valves are specified for making the connections. Any and all emergency repairs required are the responsibility of the Contractor. Upon notification via telecommunication from the Owner, attend to any repairs immediately. In the event the Owner is unable to contact the Contractor, or the Contractor fails to make the emergency repairs in a length of time determined by the Owner, the Owner reserves the right to attend to any or all emergency repair work. In such a case, the Contractor is responsible for reimbursements due to the Owner for the costs of the repairs.

Remove and replace or repair all Materials and Work, or parts thereof, which are deemed unsatisfactory as to any or all requirements of the Owner or the Engineer or as specified herein, at no expense to the State or the Owner.

Guarantee all workmanship, Materials and Work performed is in strict accordance with the Contract Documents, for a period of two years from and after the date of Completion and Acceptance of the Work. Repair, correct or replace as required, promptly and without charge, all Work, Equipment and Material, or parts thereof, which fail to meet the above guarantee, or which in any way fail to comply with or fail to be in strict accordance with the terms, provisions and requirements of the Contract during such two-year period.

Only designated Utility Owner personnel shall have the authority to operate any hydrants or valves that make up the Artesian Water Company water distribution system. Contractors shall not operate existing gate valves or hydrants. It is the Contractors responsibility to make arrangements for receiving water from public or private sources, secure necessary permits and pay regular charges. Under no circumstances shall existing hydrants be used to supply water other than to Utility Customers. The Contractor under the direction of the Utility Owner personnel shall do the initial filling of new water mains for service installations and testing. Disposal of any wastewater or any test water into New Castle County's sanitary sewer system is subject to New Castle County's charge. Prior written approval must be obtained from New Castle County.

Construction Methods:

Patches for all appurtenances adjusted after the paving operations will require a perimeter reservoir and will be sealed in accordance with Section 504.

The construction of the water main shall be a combination of open cut excavation and jack and bore.

A. WATER PIPE INSTALLATION

1. **WORKING HOURS** – The Utility Owner shall be notified at least 48 hours prior to commencing any work. Contractors are subject to being shut down and or having work rejected if proper notification is not given to the Utility Owner. A schedule of work shall be submitted to the Engineer and Utility Owner prior to construction defining which portions of the contract will occur at night or during the day. Changes to this schedule should be made throughout the construction and reported immediately to the Utility Owner and Engineer. The definition of “Work” also includes the starting of equipment and the delivery of materials to the job site.
2. **INSTALLATION OF PIPE AND FITTINGS** – Watermain and water services shall be placed with a minimum of 36 inches of finished ground cover from the top of pipe to finished grade. The laying and jointing of water pipe shall be in accordance with the Contract Documents and the requirements of the Utility Owner's Specifications and as stated herein. All pipe and fittings shall be thoroughly cleaned before laying, in accordance with AWWA Standard C601-81 or the now current standard, and shall be kept clean until acceptance of the Work. No Work may be performed except under the supervision of the Utility Owner's inspector.

At the close of the work each day, the end of the pipe shall be tightly closed to prevent dirt, foreign substances, or small animals from entering the line until Work is resumed.

Pipe and fittings shall be carefully handled and lowered into the trench. Special care shall be taken to make sure all pipes are well bedded on solid foundation. Any defects due to settlement shall be repaired by the Contractor at his/her expense.

Where the manufacturer's recommended pipe joint deflection is exceeded, mechanical joint bends shall be required and installed to the satisfaction of the Owner and the Engineer at the Contractor's expense.

Thrust blocks are to be made of Portland Cement Concrete, Class B with a Concrete minimum strength 3,000 psi. Thrust blocks of adequate size and weight shall be used on all pressure piping for all fittings and all bends equal to and greater than of 11 - 1/4 degrees to resist the force of water pressure and water hammer. Thrust blocks (buttresses) shall conform to the details shown on the Plans and/or the Owner's Standard Specifications. Thrust blocks must be used unless the Owner's specifications or the Contract Documents permit a different method to secure the fittings. All methods used to secure fittings, including, but not limited to, thrust blocks, couplings and service saddles are incidental to the fittings and no separate payment will be made for this Work.

No pipe shall be laid upon a foundation into which frost has penetrated, nor at any time when the Owner or

the Engineer shall deem that there is danger of frost penetration at the bottom of the excavation. Keep all excavations free from water or other liquids during the progress of the Work. Excavate and backfill trenches per the applicable requirements of Section 207. Remove all excess Material in accordance with Section 106.08.

3. The Contractor shall keep all excavation free from water or other liquids during the progress of the work; and backfilling of trenches shall meet the applicable requirements of Section 207 of the DelDOT Standard Specifications.
 - a. Installation of Polyethylene Pipe (HDPE) and their appurtenances shall conform to the requirements of AWWA C906. The installation shall be to the bedding and backfill conditions specified by the Manufacturer, Plans, Specifications, or Special Provisions.
 - b. Installation of ductile iron water mains (DIP) and their appurtenances shall conform to the requirements of AWWA C-600 Specifications, the Plans, Specifications and Special Provisions.
4. PIPE LAYING OPERATIONS – Trench excavation and bedding preparations shall proceed ahead of pipe placement so as to permit proper placement and joining of the pipe and fittings at the prescribed grade and alignment without unnecessary hindrance. All foreign matter or dirt shall be removed from the inside of the pipe and fittings before they are lowered into position in the trench, and they shall be kept clean by approved means during and after laying. The water main materials shall be carefully lowered into laying position by the use of suitable restraining devices. Under no circumstances shall the pipe be dropped or dumped into the trench. At the time of pipe placement, the bedding conditions shall be such as to provide uniform and continuous support for the pipe between bell holes. Bell holes shall be excavated as necessary to make the joint connections, but they shall be no larger than would be adequate to support the pipe throughout its length. No pipe material shall be laid in water or when the trench or bedding conditions are otherwise unsuitable or improper. When placement or handling precautions prove inadequate, in the Engineer's opinion, the Contractor shall provide and install suitable plugs or caps effectively closing the open ends of each pipe section before it is lowered into laying position, and they shall remain so covered until removal is necessary for connection of an adjoining unit. As each length of bell and spigot pipe is placed in laying position, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material, which shall be thoroughly compacted by tamping around the pipe to a height of at least 12 inches above its top.

Mechanically compact trenches in accordance with DelDOT standards. At all times when pipe laying is not in progress, including noon hour and overnight periods, all open ends of the pipe line shall be closed by watertight plugs or other means approved by the Engineer. If water is present in the trench, the seals shall remain in place until the trench is pumped completely dry. When connecting to existing stubs, the Contractor shall take every precaution necessary to prevent dirt or debris from entering the existing lines. All necessary work to make the connection shall be done at no additional compensation, except where noted otherwise.

5. POLYETHYLENE ENCASEMENT OF PIPELINE – For DIP water main, the pipeline, including valves, fittings, hydrant barrels, and appurtenances, shall be fully encased in polyethylene film meeting the requirements of these Specifications. The film shall be furnished in tube form for installation on pipe and all pipe-shaped appurtenances such as bends, reducers, off-sets, etc. Sheet film shall be provided and used for encasing all odd-shaped appurtenances such as valves, tees, crosses, etc. The polyethylene tubing shall be installed on the pipe prior to being lowered into the trench. Tubing length shall be sufficient to provide a minimum overlap at all joints of one foot or more. Overlap may be accomplished with a separate sleeve tube placed over one end of the pipe prior to connecting another section of pipe, or by bunching extra overlap material at the pipe ends in accordion fashion. After completing the pipe jointing and positioning the overlap material, the overlap shall be secured in place with plastic adhesive tape wrapped circumferentially around the pipe not less than three turns. After encasement, the circumferential slack in the tubing film shall be folded over at the top of the pipe to provide a snug fit along the barrel of the pipe. The fold shall be held in place with plastic adhesive tape applied at intervals of approximately three feet along the pipe length. Also, any rips, punctures, or other damage to the tubing shall be repaired as they are detected. These repairs shall be made with adhesive tape and overlapping patches cut from sheet or tubing material.

At odd-shaped appurtenances such as gate valves, the tubing shall overlap the joint and be secured with tape, after which the appurtenant piece shall be wrapped with a flat film sheet or split length of tubing by passing the sheet under the appurtenance and bringing it up around the body. Seams shall be made by bringing the edges together, folding over twice, and taping down. Wherever encasement is terminated, it shall extend for at least two feet beyond the joint area. Openings in the tubing for branches, service taps, air valves and similar appurtenances shall be made by cutting an X-shaped slit and temporarily folding back the film. After installing the appurtenance, the cut tabs shall be secured with tape and the encasement shall be completed as necessary for an odd-shaped appurtenance.

6. REACTION BACKING – Reaction backing shall be provided at all watermain fittings and at the hydrant in accordance with the typical backing detail shown on the standard details. In any instance where the Engineer determines that solid backing against undisturbed earth is not obtainable for fittings or hydrants, the Contractor shall use stainless steel tie rods, ASTM F 593 Type 316 or mechanical joint retainer glands as directed by the Engineer. Valves on branch lines or in hydrant leads shall in all cases be tied to an adjacent tee or cross fitting or back one full length of pipe.
7. EXCAVATION AND TRENCHING - Excavation shall be performed in accordance with Section 207 of the DelDOT Standard Specifications and Excavation and Backfill for Pipe Trenches herein. The bottom of the trench shall be cut true and even, so that the barrel of the pipe will have a bearing for the full length. The trenches for water mains shall be excavated to such depth as will provide pipe elevations as indicated on the Water Main Relocation Profiles. The trenches for water service connections shall be excavated to the minimum standard depth or to such depth as required to connect to existing mains or service pipes. For pipe under 24-inch, internal diameter, the excavation (excluding rock), backfill and backfilling shall be included in the price for installation of the water main(s). Furnishing and borrowing shall be performed in accordance with section 210 of the Standard Specifications.

The Engineer and the Owner shall have the right to limit the amount of trench opened in advance of pipe laid, and the amount of pipe laid in advance of backfilling. They shall be empowered at any time to require the refilling of open trenches over completed pipelines, if in their judgment, such action is necessary and the Contractor shall therefore have no claims for extra compensation, even though to accomplish such refilling, he/she is compelled to temporarily stop excavation or other work at any place.

If work is stopped on any trench or excavation for any reason and the excavation is left open for an unreasonable length of time (in the opinion of the Engineer) in advance of construction, the Contractor shall, if so directed, refill such trench or excavation at his/her own expense and shall not again open said trench until the Engineer determines that the Contractor is ready and able to progress the work.

Patches for all appurtenances adjusted after the paving operations will require a perimeter reservoir and will be sealed in accordance with Section 504.

Where rock is encountered and blasting is required for trenching, all rock excavation work shall be performed in accordance with Section 206.03.06 of the DelDOT Standard Specifications except as modified herein; and the trench shall be excavated an additional six inches below grade. After the excavation is completed, a bed six inches in depth of Borrow Type C shall be placed in the bottom of the trench, leveled off and thoroughly tamped. If blasting is required to remove the rock, perform blasting operations in accordance with Section 107.08 of the DelDOT Standard Specifications.

8. EMERGENCY REPAIRS TO DAMAGED UTILITIES
 - a. Known or Field Located Utilities - In the event that the Contractor or his Subcontractor during the execution of the work breaks any known or field located pressure or gravity main causing the disruption of service and/or an eminent hazard, it shall be the responsibility of the Contractor/Subcontractor to immediately notify the Utility Owner at the designated emergency telephone number and immediately undertake measure to repair the damaged utility. To that effect the Contractor/Subcontractor shall ascertain prior to initiating the work that the necessary repair parts, tools, equipment, and labor are on ready and available onsite to complete the repair work without delays. The Utility Owner personnel and Engineer shall witness the repair work.
 - b. If the Contractor/Subcontractor estimates or determines that he is not going to be able to restore service within a less than two-hour period, the Contractor shall immediately contact the Utility

- Owner's manager to initiate repair.
- c. The Utility Owner will undertake the repair work and will back charge the Contractor. The Utility Owner will submit an itemized bill within 30 calendar days from the occurrence of the event.
 - d. Unknown or Inaccurately Located Utilities - If the utility was not field located or it was inaccurately located in accordance with the prescribed procedures under the Sunshine State One-Call guidelines and the Contractor/Subcontractor cause a line break during the execution of the work, the same notification procedure as above must be followed. The Utility PCU Operations will undertake the repair work at no cost to the Contractor.
9. CONNECTIONS TO EXISTING MAINS: Only District personnel shall make connection to the existing water mains when and as directed by the District Inspector at the contractor's expense. In no case shall the Contractor shut off the water or operate the fire hydrants or gate valves of the existing distribution system without the expressed permission of the District Inspector. In case it becomes necessary to delay the cut-off, such instructions shall be given and obeyed without recourse. In making connections to the old distribution system, valves shall be set as shown on the plan, or at such designated place as the Engineer may direct. If due to unforeseen conditions, these locations have to be changed or additional valves or fittings added, the Contractor shall install the valves or fittings at the new locations.
10. CONCRETE BLOCKING: All turns, fittings, fire hydrant connections, etc., that induce pressure which would cause separation of pipe, breakage, etc., shall be blocked with 3,000 lb. concrete. Blocking shall be formed and placed in such a manner that the pressure to be exerted at the point of blocking shall be transferred to firm, undisturbed earth at a maximum load of 2,000 lbs, per square foot. The Contractor shall insure that blocking at all tees, bends, plugs, etc., shall be sufficient to contain all pressure exerted by the pipe up to a pressure of 200 lbs. per square inch hydraulic pressure within the pipe, i.e. pressure at plug = 200 x (area of pipe in inches). The Contractor shall also be responsible for any damage or repairs caused by blowouts of any insufficiently blocked pipe. The contractor shall wrap all fittings, fire hydrant connections, etc. with District approved plastic wrap before any and all concrete pouring is started.
11. WATERMAIN TESTING - In order to assure quality materials and workmanship, the following tests shall be required unless waived by the Engineer. The Engineer or designee shall be present for all tests and shall be notified at least 48 hours in advance of the specific test. Testing shall be completed after all the utility pipes have been installed in the area to be tested and prior to commencement of the street construction. All tests shall be in accordance with CEAM standards or what is stated within this specification. Individuals qualified to perform and evaluate such tests shall do all testing. The Contractor shall pay for all tests required in these guidelines. Copies of the results shall be submitted to the Utility Owner. If inspection or test shows defects, including visible leaks, such defective work or material shall be replaced at the expense of the Contractor, and inspection and tests shall be repeated. All repairs shall be made with new material; failure to meet the tests specified above will be sufficient cause to reject the work until the defects are satisfactorily repaired. All expenses and costs incurred in carrying out the specified tests shall be borne by the Contractor at no extra cost to the Utility Owner or to the State and shall be included in the Contract unit price per linear foot bid for the various sizes of installing water main.
- a. PRESSURE TESTING OF WATERMAIN - Hydrostatic pressure testing shall conform with AWWA C-605, latest revision as well as to the specifications of the Owner. Pressure testing shall be performed on all pipe, valves, hydrants, and fittings. The test shall be conducted on line segments from shut valve to shut valve in segments not exceeding 1,500 linear feet. The Contractor shall provide a suitable pump for applying pressure and an accurate gauge for measuring the pressure. The pipe shall be tested by applying one hundred fifty (150) pounds per square inch hydrostatic pressure for a period of two (2) hours with the Utility Owner's inspector present and to the full satisfaction of the Engineer. The maximum allowable leakage is in accordance with AWWA C605. Install any taps required at high points on the line to expel trapped air prior to testing. Following the tests, tightly plug all taps with

suitable threaded brass plugs. Repair all visible leaks regardless of total leakage shown by test.

- b. CONDUCTIVITY TESTING OF WATERMAIN - Conductivity testing of DIP watermain, copper straps or copper tipped gaskets shall be required to run at 350 amps for 5 minutes. PVC/HDPE watermain tracer lines shall be tested using standard underground utility locator, demonstrating that the lines can be located with standard equipment.
 - c. STERILIZATION OF WATERMAIN - The method to be used for sterilization shall comply with AWWA C 601-81, C 651, and Owner requirements, with the plugs used in the pressure test still installed in the pipe prior to placement into service. Extreme care is to be exercised in order to prevent the entrance of any contaminants into the main. All expenses and cost incurred in carrying out the specified sterilization work shall be borne by the Contractor at no extra cost to the Utility Owner or the State and shall be included in the contract unit price per linear foot bid for the Water Main Installation.
 - d. BACTERIA TESTING OF WATERMAIN - Provide an adequate blowoff for use in flushing of the main. Before the water is turned on for use by the consumer from the relocated mains, the Owner will conduct bacteriological tests on water samples taken from the blowoff. All expenses incurred in the performance of these tests by the Owner are borne by the Contractor. Upon final sanitary approval by the Owner, return water service for use by the consumer. Before the final connection is made, thoroughly clean all surfaces of the relocated line, including all gaskets and glands, and the existing water main that are to become part of the closing joint with a 5 percent solution of Sodium Hypochlorite. Exercise extreme care in order to prevent the entrance of any contaminants into the main. All expenses and cost incurred in carrying out the specified sterilization work is borne by the Contractor at no extra cost to the Owner or the State and is included in the Contract Unit Price per linear foot bid for the Item for the various sizes. Plug adjacent pipe openings as required in accordance with the Section 202.03.2.
5. AS-BUILT/FINAL LOCATION DRAWINGS - Within thirty (30) days after completion of required work, the Contractor shall submit an accurate print or prints showing the horizontal and vertical location of mains, bends and other appurtenances to the Engineer and the Utility Owner. Services, fittings, fire hydrants and all other reconnections to the replaced pipes shall be identified and marked in the construction drawings by the Contractor. The Contractor shall be responsible for marking the construction drawings in reference to at least two fixed and easily found points.

E. Jack and Bore

The pipe, whether casing or carrier, installed by means of Tunneling shall be installed to the line and grade specified on the Contract Drawings. Initial control information will be established prior to the initiation of work. As Tunneling proceeds, line and grade will be furnished on a scaled drawing at intervals not exceeding twenty (20) feet by the Contractor. The Contractor shall use this information to project the alignment ahead until subsequent references can be set.

If a pilot hole is to be tunneled, the pilot hole shall not deviate greater than 5% of depth over the length of the tunnel unless previously agreed to by the Engineer. In the event that the pilot hole does deviate greater than required, the Engineer may require the Contractor to pull back and re-tunnel from the location along the path prior to deviation.

Bore so as not to interfere with, interrupt, or endanger surface and activity thereon. Minimize subsidence of surface, structures, and utilities above and in vicinity of bore. Support ground continuously to prevent loss of ground and keep perimeters stable. Be responsible for settlement resulting from operations. Repair and restore damaged property to its original condition before being disturbed at no cost to the OWNER.

The approach and receiving trenches shall be excavated, and the pipe placed at the elevation and grades specified, in accordance with the Drawings and Contract Documents. Boring shall be performed in the downstream direction.

Boring shall be installed to grade and line indicated on the contract documents. Jack and bore operation shall be monitored via censoring devices to ensure correct grade and line installation. There shall be a 1-

inch tolerance for grade elevations of the casing and carrier pipes.

The casing pipe shall be pushed in to the ground with a boring auger rotating within the pipe to remove the spoil. The cutting head shall not be advanced ahead of the casing pipe except for that distance necessary to permit the cutting teeth to cut clearance the pipe.

The overcut of cutting head shall not exceed more than ½ inch. If unstable soil is encountered during the boring procedure, the cutting head shall be retracted into the casing to maintain a balance between the pushing pressure and the ratio of pipe advancement to quality of soil. The Contractor shall use a steering system to ensure grade is met, on a single pass. Pilot tube guided boring is not acceptable.

If voids should develop greater than the outside diameter of the pipe by approximately one (1) inch, the Contractor shall fill the voids with approved pressurized grout material.

When augers and cutting heads or similar devices are used for advancing the casing pipe, the front of the pipe shall be provided with mechanical arrangements or devices that will prevent the auger and cutting head from leading the pipe (so that there will be no unsupported excavation ahead of the pipe). The auger and cutting head arrangement shall be removable from the pipe in the event an obstruction is encountered. The operation shall be continuous until the casing is installed.

Direction of jack and bore shall be monitored via sensing devices to ensure correct grade and line installation. A thrust wall shall be constructed normal to the proposed line thrust. The thrust load shall be imparted to the pipe through a suitable thrust ring that is sufficiently rigid to ensure distribution of the thrust load on the pipe. The thrust wall and jacking system shall be designed to carry the thrust of the jacks to the soil without excessive soil deflection and in such a manner as to avoid any disturbance of adjacent structures or utilities.

Dewatering shall be performed by the Contractor in compliance with all applicable local, State and Federal rules, regulations and ordinances. Surface drainage shall be diverted away from the execution through the use of dikes, ditches, pipes, sumps, or other means. When water is encountered, develop and maintain dewatering system of sufficient capacity to remove water continuously, keeping excavations free of water until backfill operation is in progress.

Keep removal of soil to a minimum. Dewater in accordance to Contract Documents. Observe settlement or displacement of surface facilities due to dewatering. Should settlement or displacement be detected, notify Engineer immediately and act to maintain safe conditions and prevent damage.

Carrier pipe shall be installed in the casing pipe with restrained joints, and as illustrated on the Contract Drawings. The carrier shall be supported within the casing so that no external loads are transmitted to the carrier pipe. The ends of the casing pipe shall be sealed to provide a barrier against debris and seepage.

After carrier pipe and spacers are installed, the annular space shall be filled with grout.

Method of Measurement and Basis of Payment:

Price and payment for water service Items includes furnishing, transporting and installing the Materials; adjusting, relocating or repairing the services, testing of the water main system; for repairing leaks and defects, including defects to settlement, connecting to existing water main systems and services; maintaining service as required; excavating; jack and bore installation; disposing of excess excavated Material; backfilling; furnishing Material for backfilling; furnishing and installing concrete thrust blocks, joint restraints, pipe bedding, sheeting and shoring, temporary support of existing Utilities, dewatering; abandoning existing pipes, cutting and capping new or existing lines and for all labor, Equipment, tools and necessary incidentals to achieve and accept an operational water main system.

No separate payment shall be made for salvaging or abandoning or removing and disposing of existing water mains and cost for such required work shall be incidental to the respective sizes for installing water main.

A breakout sheet attached to the Proposal lists the different elements of work or materials involved in completing this item. The Contractor shall fill in a unit price for each item and the cost (unit price times the proposed quantity). The Lump Sum cost for Item 710504, shall be derived from the total sum of the cost of all items listed. The breakout sheet shall be attached to the Bid Proposal. Failure to submit the breakout sheet with the Bid Proposal will result in the bid being declared non-responsive and rejected.

The Department reserves the right to delete from the Contract one or more items listed and the right to add or subtract from the quantity of each item. The total price to be paid will be adjusted in accordance with the Contractor's unit prices as required above. There will be no extra compensation or increase in unit prices in the breakout sheet if such additions and/or deletions are made to the quantities.

All lump sum pay items will be prorated for each pay estimate. A percentage of the lump sum item will be paid, on a monthly basis, based upon the amount of work completed and accepted by the Engineer.

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
710504	WATER SERVICES	LS

8/9/19

711500 – ADJUST AND REPAIR EXISTING SANITARY SEWER MANHOLE

Description:

The item shall consist of the adjustment and repair of existing City of Newark sanitary sewer manholes.

Materials and Construction Methods:

The materials and construction methods shall meet the requirements of the most recent version of City of Newark's specifications and standard details.

Method of Measurement:

The quantity of sanitary sewer manholes adjusted or repaired will be measured as the actual number of each, adjusted or repaired.

Basis of Payment:

The quantity of sanitary manholes adjusted or repaired will be paid for at the contract unit price for sanitary sewer manholes repaired from the top of cover to a depth of 3' below. Sanitary sewer manholes repaired below a depth of 3', but not more than 4½' (1.4 m), will be paid for at one and one-half times the unit price. Sanitary manholes repaired below a depth of 4½' (1.4 m) will be paid for at two times the unit price. Price and payment will constitute full compensation for excavating, backfilling, compacting, and disposing of materials; for removing and resetting frames and covers and portions of structures; installation of concrete adjustment collars; removal and installation of steps; for furnishing and placing all materials, including the replacement of the concrete curb portion of drainage inlets and all mortar repair; and for all labor, equipment, tools and incidentals required to complete the work.

08/29/2018

711501 - SANITARY SEWER SYSTEM

Description:

Furnish, transport, provide bypass pumping, install, backfill using type C borrow, and test a sanitary sewer system in accordance with the Contract Documents, these Special Provisions, DeDOT Standard Specifications, and requirements of the Standard Specifications of the Utility Owner (City of Newark). This work includes but is not limited to construction via open trench of gravity sewer, installation of forcemain and thrust restraints, backfill using type C borrow, installation and adjustment of manholes, bypass pumping, pumping and hauling, gravity laterals, lateral cleanouts, and sewer plugs.

In case of any conflict between the notes and details on the Plans; Special Provisions; Standards and Specifications of the Utility Owner; the Standards and Specifications of the Utility Owner shall prevail.

The Contractor shall obtain the Standards and Specifications of the Utility Owner and study for materials cost before submitting the bids. The Utility Owner of the sanitary sewer is the City of Newark.

General Requirements:

All work shall be subject to inspection and subsequent approval/disapproval of the engineer and the representative of the Utility Owner; and the contractor shall be required to correct the discrepancies at his/her expense.

Included in this work are the connections of all existing commercial, industrial, and residential sanitary sewer services to the new sanitary sewer system. All modifications to such services, as required by the present Standards and Specifications of the Utility Owner and all relocations of such services necessary to avoid conflicts with utilities and highway drainage facilities are included in the work. Since the exact locations of the conflicts cannot be determined prior to trench excavation operations, the Contractor must coordinate and schedule any required relocation efforts of each sanitary sewer connection on an individual basis with the Utility Owner and the property owner. The Contractor shall be responsible for locating all services and determining whether each service is active or abandoned. Locations shown on drawings were provided by the utility owner and may or may not reflect actual field conditions. All costs associated with determining locations and active/abandon status of the service laterals will be incidental to the contract.

Coordinate all sanitary sewer construction activities with the Owner including, but not limited to, requests for system shut downs and inspections. Provide the Owner with reasonable time to respond to requests for information and coordination. Submit (3 weeks prior to beginning any Work) for approval of a plan describing the logical sequence for sanitary sewer shut-downs and tie-ins.

It is of prime importance that the Contractor, in the performance of his/her work, does not disrupt the operation of the existing sanitary sewer facilities in any manner or at any time, without the expressed prior approval of the Utility Owner. The Contractor shall construct, maintain, and remove following construction temporary bypasses as may be required during construction to maintain sanitary sewer facilities in service. In addition, Contractor shall pump and haul sewage as required to maintain sanitary sewer service. No separate payment will be made for such temporary bypasses or pumping and hauling.

The Contractor shall provide at least two (2) telephone numbers where his designated personnel can be reached 24 hours a day in case of an emergency. The Contractor shall provide temporary lighting for maintenance and repairs at night. The Contractor shall provide adequate standby equipment installed and ready for immediate

operation and use in the event of an emergency or breakdown.

One standby bypass pump system for each pump system utilized shall be installed at the bypass location ready for use in the event of primary pump system failure. Each stand-by pump system shall have an automatic start/stop control. The bypass pumping system shall be capable of bypassing the flow around the work area for satisfactory performance of work.

All lateral connections will be treated in the same manner as mainline sewers. Each will have a temporary sump, pump and stand-by pump to transfer flows to a mainline manhole. It is essential to the operation of the existing sanitary sewer system that there be no interruption in the flow of sanitary sewer throughout the duration of the project. To this end, the Contractor shall provide, maintain and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the sewage flow before it reaches the point where it would interfere with his work, carry it past his work and return it to the existing sewer downstream of his work. Sewage shall be pumped from existing upstream manholes to downstream manholes.

The design, installation and operation of the bypass pumping system shall be the Contractor's responsibility. The bypass pumping system shall meet the requirements of all codes and regulatory agencies having jurisdiction. The Contractor shall provide all necessary means to safely convey the sewage around the work area. The Contractor will not be permitted to stop or impede the main flows under any circumstances. The Contractor shall maintain sanitary sewer flow around the work area in a manner that will not cause surcharging or damage of the existing sewer system and that will protect public and private property from damage and flooding.

Any and all emergency repairs required during the period of this Contract shall be the responsibility of the Contractor. In the event the Utility Owner 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 24 hours, the Utility Owner 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.

The installation requirements for the sanitary sewer system include both open-cut for both gravity sewer and force main sewer.

The contractor shall furnish all labor, supervision, material, tools, equipment, supplies, and services; and shall perform all Work necessary for the installation of a casing pipe by bore and jack methods. The casing pipe shall be constructed in accordance with the Contract Documents and the applicable laws, rules, ordinances, standards of the City of Newark, the State of Delaware, Federal Government, OSHA 29CFR 1926, building codes, applicable criteria of ANSI A10.16-1995(r2001) (Safety Requirements for Tunnels, Shafts, and Caissons), and regulatory agencies, and specifications of the Owner.

Materials:

The requirements for the materials as applicable to the Contract are as noted below, unless otherwise stated on the Plans and/or required by the Utility Owner of the sewer system. The Contractor shall verify the compatibility of these materials specifications with the Utility Owner before placing order for the Contract. The Owner will have right to inspect Materials and reject any Materials that do not meet the applicable standards and specifications.

Provide all Materials to complete the Work including pipe, fittings, manholes, cleanouts, fill, plugs, and all other

appurtenances necessary to make permanent connections to existing utility facilities of whatever material type encountered.

Gravity Piping

The Polyvinyl Chloride Pipe (PVC pipe) suitable for non pressure drainage of sewage and fittings shall be of SDR 26 of the nominal size required by the Plans or as required/approved by the Utility Owner.

All PVC pipe and fittings shall be manufactured in accordance with the latest version of the following ASTM Specifications:

1. ASTM D3034, "Standard Specification for Type PSM PVC Sewer Pipe and Fittings."
2. ASTM F1336, "Standard Specification for PVC Gasketed Sewer Fittings."
3. ASTM D3212, "Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals."

All PVC pipe joints shall be gasketed, bell-and-spigot, push-on type. Gaskets shall be part of a complete pipe section and furnished as such. Gaskets may be factory installed or field installed as recommended by the pipe manufacturer. Lubricant shall be as recommended by the pipe manufacturer. Provide elastomeric gasket joints in accordance with ASTM F477.

All PVC non-pressure sewer pipe shall have a maximum standard dimension ratio (SDR) of 26. All PVC non-pressure sewer pipe shall have a pipe stiffness that equals or exceeds 115 lbs/in² (PSI).

Each pipe shall be marked at intervals of five (5) feet or less to designate compliance with applicable ASTM or AWWA specification. The pipe shall be as uniform as commercially practicable in color, capacity, density and other physical properties and provided by a single Contractor.

Lateral connection fittings shall be made using a manufactured "wye" connection, constructed of the same class and material as the gravity main to which they are connected.

Unless shown otherwise on the Plans or required by the owner, all commercial, industrial, and residential connections shall be constructed of the same class of material as the sewer mains to which they are connected. Minimum grade and size of the lateral pipes shall be as required by the Owner's Standards and Specifications.

Force Main Piping

All Ductile Iron Pipe (DIP) and High Density Polyethylene (HDPE) pipe, fittings and appurtenances shall be provided as depicted on the Contract Drawings.

Sanitary Sewer Force Main shall be DIP Class 52, Protecto 401 ceramic epoxy lined with outside surface bituminous coated unless otherwise stated in contract documents, where the non-metallic force main shall be HDPE DR-11. HDPE Joints shall be butt-fused.

All DIP and HDPE pipe and fittings intended for pressure sewer shall be manufactured in accordance with the latest version of the following AWWA Specifications:

1. HDPE Pipe: AWWA C901 or C906, ASTM D3261, or ASTM F2206/ASTM F3183 as required.
2. PVC Fittings: AWWA C907, for gasketed joints and using ASTM F 477 elastomeric seals.

3. DIP: AWWA C150 and C151 ductile or gray iron.
4. Compact Ductile Iron Fittings: AWWA C153/A21.53.

Pipe Appurtenances

All pipe and lateral repair couplings suitable for non-pressure sewer repairs shall be manufactured in accordance with the following requirements:

All fittings shall be 350 psi rated, ANSI/AWWA - C153/A21.53 ductile or gray iron, Protecto 401 ceramic epoxy lined. Pipe to Pipe Joint restraints shall be Megalugs, TR FLEX, or approved equal and be able to be deflected as required per approved plans.

Gaskets shall be accordance with the following requirements:

1. ASTM C 1173 - Standard Specification for Flexible Transition Couplings for Underground Piping Systems
2. Hardness, Shore "A," Inst. \pm 5.....65
3. Tensile Strength, Min. psi1000
4. Elongation at Rupture, Min. %.....250
5. Tear Strength, Min.....150 lb/in.
6. Brittleness Temperature..... -40°F

Clamps shall be in accordance with the following requirements:

1. Manufactured to the requirements of CSA B602
2. Clamp Housing- 301 Stainless Steel
3. Clamp Band - 301 Stainless Steel
4. Clamp Screw - 305 Stainless Steel
5. Installation torque - 60 inch-pounds

Shear Rings shall be in accordance with the following requirements:

1. 0.012" Thick, 300 Series Stainless Steel
2. Width manufactured according to coupling width (1.50 inches, 2.13 inches, or 4.0 inches)
3. Length manufactured according to coupling diameter
4. Clamps spot welded in place

Coupling shall be in accordance with the following requirements:

1. ASTM C 1173 - standard specification for flexible transition couplings for underground piping systems
2. Maximum test pressure: 4.3 PSI
3. Maximum operating temperature: 140° F non-consistent

Sewer Plugs shall be in accordance with the following requirements:

1. Maximum test pressure: 4.3 PSI
2. Maximum operating temperature: 140° F non-consistent

Backfill and Trenching

All trenching and backfill materials, including those not listed herein shall be included under this item.

Trench material shall match those shown on Contract Drawings and City of Newark Standard Details.

Use Borrow, Type C for backfilling conforming to the Contract Drawings and City of Newark's Standard Details. For sewer bedding, aggregate material shall be in accordance with AASHTO M43 and shall be used where specified on the Drawings or as required by the Engineer. Aggregate material shall be furnished from a specific source or sources approved by the Engineer.

Warning tape for sanitary sewer shall be printed polyethylene plastic tape with a metallic core, manufactured specifically for warning and identification of buried utility lines. The tape shall be of a roll type, 6" (50 mm) minimum width, and color-coded for sewer (green), with warning and identification imprinted in bold black letters continuously and repeatedly over entire length of tape. The code and letter color shall be permanent and unaffected by moisture and other substances contained in trench backfill materials. Imprinted on the tape shall be "Caution, Buried Sewer Line Below", or a similar message as approved by the Engineer.

Force Main Pipe Appurtenances

HDPE to Ductile Iron Transition assembly shall conform to the Detail found within the Project Drawings.

Pressure-Type Pipe Couplings shall be in accordance with the following requirements:

Metal, bolted, sleeve-type, reducing or transition coupling, for joining underground pressure piping. Include 150-psig minimum pressure rating and ends of same sizes as piping to be joined.

1. AWWA C219,
2. Center-Sleeve Material: Manufacturer's standard.
3. Gasket Material: Natural or synthetic rubber.
4. Metal Component Finish: Corrosion-resistant coating or material
5. Hardware: Type 304 Stainless Steel

Joint Restraints shall be in accordance with the following requirements:

1. AWWA C111
2. Minimum ASTM A536, 60-42-12 ductile iron.
3. Restraint devices shall be coated with a corrosion resistant epoxy
4. Pressure rating that meets or exceeds the pressure rating of the pipe and the design shall incorporate a 2 to 1 safety factor.

Mechanical Joint Restraints shall be incorporated into the design of the follower gland. AWWA C110

Flanged Joint Restraints shall be stainless steel hardware and ANSI B16/5 Class 150/125 Drilling Pattern.

Pipe joints shall be restrained if they connect pipe with fittings, valves or tank structures or if they lie within 25 feet of such a connection and as shown on the Contract Drawings.

Full port swing check valves shall have cast iron body with flanged ends drilled to ANSI 125 pattern. Valves shall be fitted with an external lever, weights and/or spring. The bronze or stainless steel body ring shall be pinned into the valve port. The valve clapper shall be cast iron, replaceable resilient face, and shall swing completely clear of the waterway when the valve is fully open. The hinge pin shall be of 18-8 stainless steel construction and shall be utilized with bronze bushings and packing or O-ring seals. Valves shall be equipped with removable cover plate to permit entry for cleaning of the valve without removing the valve from the line. Valve rating shall be 175 psi water working pressure, 350 psi hydrostatic test pressure. Check valves shall be Golden-Anderson, APCO Valve & Primer, Nibco or approved equal.

Polyethylene Sheeting shall be ASTM D 4397, with at least 8-mil thickness

Detectable Pipeline Wire: Pipeline detectable wire shall be installed continuously along pipe. Wire shall be HDPE insulated (green), solid copper or copper clad steel, #12 AWG, 600 volt, of not less than 98% conductivity, and rated for direct burial.

Splicing shall be done with water and corrosion proof wire connectors rated for direct burial. Wire to be brought up to the surface at the beginning and termination of the pipe, all tracer stations and at any in-line valves (interior of the valve box).

Sanitary Sewer Manholes

Pre-cast manholes shall be provided as specified herein and as depicted on the Contract Drawings. References of specific product manufacturers may be used to depict a material style and quality expected for this project.

The quality of all materials, the process of manufacture, and the finished precast manhole or structure is subject to inspection by the Engineer. The Owner or Engineer may make such inspection at the place of manufacture, on the work after delivery or at both places. The Owner or Engineer may reject any precast manholes or structures at any time on account of failure to meet any of the specifications' requirements even though sample manhole sections may have been accepted as satisfactory at the place of manufacture.

The Owner reserves the right to core manholes either at the job site or point of delivery to validate strength of concrete and placement of steel. If cores fail to demonstrate the required strength and/or indicate incorrect placement of reinforcing steel, the Owner reserves the right to reject all sections not previously tested until conformance to these requirements is substantiated. Additional core testing will not result in an increase to the Contract Amount.

Locations, sizes, penetrations, depths and all other attributes of each manhole shall be confirmed by the Contractor prior to ordering. Provide manholes of 4,000 psi concrete, cementitious materials, aggregates and steel reinforcement conforming to ASTM C 478 for sewer manholes.

Manhole benches of new manholes shall be made at the manufacturing site using concrete conforming to the requirements for precast sections. At the discretion of the Engineer, manhole benches may be constructed in the field using concrete conforming to the requirements for precast sections or sewer brick and mortar. The manhole bench shall be smooth and sloped toward the channel at one inch per foot. The bench shall be coated with a cementitious crystalline waterproofing sealant.

Manhole channels of new manholes shall be precast, with a smooth, semicircular bottom that extends upward to the height of the pipe crown. At the discretion of the Engineer, manhole channels may be constructed in the field using sewer brick and mortar.

Manhole riser and/or base sections shall include properly located penetrations for making connections to sewer pipes. Unless otherwise depicted or permitted by the Engineer, provide 6 inches minimum distance between a joint in a manhole section and the nearest edge of an opening for a connecting sewer. The diameter of such openings shall not be more than 4 inches larger than the outside diameter of the pipe to be connected.

Force Main Manholes

Force Main Clean out and Air Release Manholes shall conform to the Details found within the Project Drawings.

Air release valves shall be installed at high points on the force main, and/or in the station, as directed by City of

Newark. Air release valves shall be of full body design, unless otherwise approved by City of Newark. The body and cover shall be of cast iron conforming to ASTM A126 class B. All internal parts of the air release valve shall be of stainless steel. The air release valve shall be float operated and shall employ a compound lever mechanism to enable the valve to automatically release accumulated air and gases from the pipe while the system is pressurized and operating. The linkage/lever mechanism shall be able to be removed from the valve without disassembly of the mechanism. The air release valve shall close drip tight, incorporating an adjustable orifice button. Valve shall be specified with manufacturer's backflushing kit for backwashing with clear water. City of Newark may also require air/vacuum release valves as needed by the force main design. Air (or air/vacuum) release valves shall be as manufactured by GA Industries, APCO, ARI or City of Newark approved equal.

Manhole Appurtenances

Manhole O-ring Gaskets and Sealing Compound shall be in accordance with the following requirements:

1. Joints between manhole sections shall be sealed with a flexible, watertight gasket that meets or exceeds ASTM C443.
2. Joints shall also include a joint sealing compound that meets or exceeds ASTM C990 and AASHTO M-198.
3. Provide trowelable grade butyl-rubber base backplaster material to seal exterior manhole joints and adjusting rings that meets or exceeds ASTM C990.

Pipe to Manhole Connectors shall be in accordance with the following requirements:

1. The design of the connector shall provide a flexible, watertight seal between the pipe and concrete structure and shall be integrally cast into the manhole unless otherwise specified.
2. The connector shall be made from materials that conform to Section 4, "Materials and Manufacture" of ASTM C-923 and F-2510 "Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures and Laterals", and the overall design will meet or exceed Section 7, "Test Methods and Requirements" of ASTM C-923.
3. The connector shall be sized specifically for the type of pipe being used and shall be installed in accordance with the recommendations of the manufacturer.
4. Any metal elements of the connector shall be non-magnetic Series 300 stainless steel.
5. "Boot-type" connectors shall not be used unless specified or reviewed by the Engineer.

Grade Adjustment Rings shall be in accordance with the following requirements:

1. Grade adjustment rings used in the public road right of way must be approved by DELDOT.
2. Precast concrete adjusting rings shall meet or exceed ASTM C478.
3. Rubber composite adjustment rings shall meet or exceed the following:
 - a) Density - 64 lbs/ft³, ASTM D3574-05 Test A
 - b) Durometer Hardness - 77 A ± 5, ASTM D2240-05
 - c) Tensile Strength - Not less than 145 psi, ASTM D412-06
 - d) Heat Ages Properties - 70 hours @ 158 °F, 3 hours @ 300 °F, ASTM D573-04
4. Expanded polypropylene adjustment rings shall meet or exceed ASTM D3575.
5. High density polyethylene (HDPE) adjustment rings shall meet or exceed ASTM D4976 and ASTM D1248.

Manhole Frames and Covers

Provide City of Newark standard manhole frames and covers conforming to ASTM A 48, Class 35B.

Manhole Steps and Ladders

Provide manhole steps or ladders as depicted on the Contract Drawings as conforming to ASTM C478. Unless otherwise specified, provide polypropylene steps with a reinforced 3/8- inch minimum diameter reinforcing steel, grade 60. Do not use cast iron steps.

Bypass Pumping

A dual pump system shall be used with each pump provided capable of handling the full flow required. The bypass pumping system shall have sufficient capacity to pump the peak flow provided by the City. This flow number is based on best available information at the time. Contractor should perform independent evaluation prior to beginning work. The Contractor shall provide all pipeline plugs, pumps of adequate size to pump peak flow, and temporary discharge piping to ensure that the total flow of the sanitary sewer can be safely diverted around the work.

Bypass pumping systems will be required to operate 24 hours per day. During overnight operation, an auto-dialer and automatic alarm activation shall be provided. All pumps shall be fully automatic, self-priming or submersible units that do not require foot-valves or vacuum pumps in the priming system. The pumps may be electric motor driven or diesel powered. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of sanitary sewer flow

The Contractor shall provide the necessary stop/start controls for each pump. The controls shall include automatic start up on a high level and stop on a low level. The Contractor shall include one stand-by pump system of equal capacity for each temporary bypass pump system to be maintained on site.

Each stand-by pump shall have a separate backup discharge pipe, for a total of two (2) discharge pipes. These discharge pipes shall be protected from flooding. In order to prevent the accidental spillage of flows all discharge systems shall be constructed of steel pipe utilizing quick-disconnect joints, or fused, high- density polyethylene pipe. Under no circumstances will aluminum "irrigation" type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the City or their representative. The piping will provide an easily moved system to facilitate the work progress of the Contractor's schedule.

The Contractor shall provide equipment with residential mufflers and sound baffles for overnight operation near residences. Sound levels five (5) feet from operating pumps shall be no greater than 70 dBA.

Construction Methods:

Open Trench

The excavation and backfill for the pipe shall be performed in accordance with the applicable requirements including backfill requirements of Section 612 of the Delaware Standard Specifications, unless otherwise modified on the Plans, or in conflict with the requirements of the Utility Owner. If there is a conflict between the Delaware Standard Specifications (including these Special Provisions) and the Specifications of the Utility Owner, the latter will prevail. The Contractor is advised to obtain and be fully acquainted with the applicable specifications of the Utility Owner. 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 sewer main the Contractor shall install the specified warning tape at a depth of 8" (200 mm) to 12" (300 mm) below finished grade or as directed and approved by the Engineer/Owner.

Lengths of pipes shown in the Contract Documents are estimated only. The Contractor is responsible to layout the tie-in areas in the field and fabricate the bends and pipe lengths required to properly tie-in to other pipes, fittings and/or manholes as required and approved by the Engineer. Thoroughly clean all pipes and connecting Materials before placement. Keep all pipes and connecting Materials clean until the completed Work is accepted.

No pipe shall be laid upon a foundation into which frost has penetrated nor at any time when the Engineer shall deem that there is danger of the formation of ice or the penetration of frost at the bottom of the excavation, unless the minimum length of open trench and promptness of refilling are observed.

The Contractor shall build all future service connections to the existing houses, businesses, and others, complete to the property line, right-of-way lines or other designated points. The ends of all such service connections shall be closed with plugs as directed and approved by the Engineer/Owner.

Sheeting and bracing required for trenches shall be removed to the elevation of the conduit, but no sheeting will be allowed to be pulled, removed, or disturbed below the conduit. Sheeting and bracing shall meet OSHA requirements.

Before lowering into the trench, the pipe shall be inspected for defects. All cracked, chipped, or broken pipe shall be discarded. The ends and interior of the pipe shall be clean. Belled ends shall be laid upgrade. Handling of the pipe shall be accomplished in a manner that will not damage the pipe. The joint shall be made in the manner recommended by the manufacturer. Care shall be taken not to buckle or disturb previously laid pipe.

Pipe jointing shall be as specified herein, and per manufacturer's recommendation for the pipe material used for this project. Bell and spigot and/or push-on joints and gaskets shall be thoroughly cleaned and lubricated in accordance with manufacturer's recommendations. The Contractor shall ensure that the pipe is sufficiently joined as to create a water tight seal. Whenever a pipe requires cutting to fit into the line or to bring it to the required location, the work shall be done in a satisfactory manner so as to leave a smooth end without extra compensation.

Each joint shall be inspected to ensure that it is properly made before backfilling is done. Care shall be taken to prevent any dirt or foreign matter from entering the open end of the pipe. Where it is necessary to cut pipe, such cuts shall be neatly made in an approved manner. The laid pipe shall be true to line and grade and, when completed, the sewer shall have a smooth and uniform invert. No section of gravity sewer, including service connections shall have an adverse grade which would pond water in the invert or any other portion of the sewer.

The Contractor shall lay pipeline starting at the lower elevation of a run and proceed upgrade unless otherwise specified or directed by the Engineer. Lay all pipe with bells (if present) pointing upstream. Lay all pipelines in trench excavations on bedding as specified, concrete cradle or other foundations as shown on the Contract Drawings or directed by the Engineer.

Carefully place each pipe and check for alignment and grade. Make adjustments to bring pipe to line and grade by scraping away or filling in bedding material under the barrel of the pipe. Support by wedging or blocking the pipe barrel is not permitted. Bring the faces of the spigot ends and the bells of pipes into fair contact and firmly and completely push the pipe together. Shape bell holes in the bedding material for each joint as required allowing the joint to be properly made and allow the barrel of the pipe to have full bearing throughout its length.

As the work progresses, clean the interior of pipelines of all dirt and superfluous materials. Properly secure the pipe against movement and make the pipe joints in the excavation as required. Carefully grade and compact pipe

bedding by hand around the pipe, ensuring pipe haunches are properly supported.

Provide temporary bulkheads at the ends of sections where adjoining pipelines have not been completed and are not ready to connect.

Pipe shall be laid accurately to the staked line and grade. All service connections shall be installed as indicated on the Drawings right-of-way. Where existing service sewers are to be connected, suitable fittings and adapters shall be provided by the Contractor.

Pipe shall be cleaned of all foreign matter, and water shall be kept out of trenches until joints have been completed. When work is not in progress, open ends of pipe and fittings shall be securely closed to keep foreign matter and animals from entering.

Connections to existing pipe shall be made with Fernco Strongback Coupling or approved equal. Connectors must be approved by the Engineer prior to installation.

The Contractor shall determine the location of existing sewer services prior to installation of the mainline pipe in such a way that the service wyes can be installed in the proper location as the mainline pipe is being installed. The Contractor shall be responsible to verify the locations of the lateral in the field and determine if the lines are active or abandoned. Inactive lines or abandoned lines will not be replaced as approved by the Utility Owner. No service saddles will be permitted, unless approved by the Engineer.

Connections to existing sewer mains, service connections, and manholes shall be made in such a manner so as to not damage the existing facility. Such connections shall be made so that no projections or rough surfaces occur within the pipe.

Prior to constructing the tie-ins, coordinate with the Owner and, if required by the Owner, be prepared with tanker trucks and pumps to handle any excess flow during the transition. The Owner must be satisfied with the Equipment and tanker trucks provided on site before allowing the actual tie-in. Pump all excess flow into the tankers and properly dispose of the excess flow at an approved location.

Locations of the sewer laterals are approximate and may be changed by the Engineer. Relocating of the sewer lateral will not add extra cost to the Utility Owner or State, unless either of the following conditions result:

1. The relocation results in an increase in the length of the lateral; or,
2. A change in construction methods is required from the change in lateral location

If the Contractor believes that the work at the new location(s) will result in a substantive change, the Contractor shall notify the Engineer prior to beginning the changed work. The Engineer will evaluate the request and if the relocation is warranted, the change in work shall be authorized. Lateral connections shall be laid such that flow from the lateral shall be in the same direction as the gravity main.

The Contractor shall reconnect all active service connections as approved by the Utility Owner. Service connections shall be reconnected to the pipe by using connectors approved by the pipe manufacturer and in conformance with the specified installation procedure.

Connections to the existing service pipe shall be made using flexible couplings. All flexible couplings shall conform to ASTM C425. Joint deflection limits and lateral connections shall meet the maximums indicated in ASTM C12 and C425.

The slope of the existing lateral toward the newly installed sewer main shall be maintained at the existing percent. For reconstructed laterals, a minimum slope of two percent (2%) or as specified by the Utility Owner is required.

Lateral connections to existing sewer mains shall not obstruct flow.

Maintain a minimum of 18 inches of vertical clearance where the water main or storm sewer crosses over the sanitary sewer or lateral; otherwise, a minimum of ten (10) foot long concrete encasement (centered at the crossing point) shall be provided around the sanitary sewer or lateral as per the standard detail. 6 inches of 3,500 psi concrete shall be provided all around the pipe.

Force Main Installation

Deliver materials to the Site to ensure uninterrupted progress of the work. Inspect delivered pipe for cracked, gouged, chipped, dented or other damaged material. If the pipe exhibits any of these characteristics immediately remove from site.

Handle all pipe, fittings, appurtenances and accessories carefully with approved handling devices. Do not drop or roll material off trucks. Do not otherwise drop, roll or slide piping. Unload pipe, fittings and specials as close to the place where they are to be installed as is practical to avoid unnecessary handling. Keep pipe interiors completely free from dirt and foreign matter. Store pipes and fittings on heavy wood blocking or platforms so they are not in contact with the ground.

When distributing the pipe along the pipeline alignment, the pipe should be blocked to prevent any possibility of rolling. Pipe with bells and spigots should be supported along the barrel of the pipe to prevent deformation of the joining ends, to prevent dirt accumulating on the sealing surfaces and inside the pipe.

Perform trench excavation and backfill in accordance with the City of Newark Standard Detail. No section of sewer pipe shall be laid before the subgrade or bedding has been reviewed by the Engineer. If an existing pipeline is to be removed and replaced by a new pipeline, the Contractor shall ensure temporary bypass pumping and all appurtenances required to maintain service is in place and ready for operation.

All concrete required to support and reinforce wye branches, tee wyes, bends, and fittings shall be placed as directed by the details on the Contract Drawings. Concrete Buttresses shall be placed at all wye branches, tee wyes, tees, bends, and fittings

Pipe jointing shall be as specified herein, and per manufacturer's recommendation for the pipe material used for this project. Bell and spigot and/or push-on joints and gaskets shall be thoroughly cleaned and lubricated in accordance with manufacturer's recommendations. The Contractor shall ensure that the pipe is sufficiently joined as to create a water tight seal.

Whenever a pipe requires cutting to fit into the line or to bring it to the required location, the work shall be done in a satisfactory manner so as to leave a smooth end without extra compensation.

The Contractor shall lay pipeline at the low end of a run and proceed upgrade unless otherwise specified or directed by the Engineer. Lay all pipe with bells (if present) pointing upstream. Lay all pipelines in trench excavations on bedding as specified, concrete cradle or other foundations as shown on the Contract Drawings or directed by the Engineer.

Carefully place each pipe and check for alignment and grade. Make adjustments to bring pipe to line and grade

by scraping away or filling in bedding material under the body of the pipe. Wedging or blocking up the pipe barrel is not permitted.

Bring the faces of the spigot ends and the bells of pipes into fair contact and firmly and completely shove the pipe home. Shape bell holes in the bedding material for each joint as required allowing the joint to be properly made and allow the barrel of the pipe to have full bearing throughout its length. Thoroughly tamp bell holes following the making of each joint.

As the work progresses, clean the interior of pipelines of all dirt and superfluous materials. Properly secure the pipe against movement and make the pipe joints in the excavation as required. Carefully grade and compact pipe bedding by hand around the pipe, ensuring pipe haunches are properly supported.

Provide temporary bulkheads at the ends of sections where adjoining pipelines have not been completed and are not ready to connect.

Couplings and Joints Restraints shall be installed per manufacturer's instructions.

If performing an excavated point repair of a pressure sewer pipe, the Contractor shall execute his work in accordance with above, and the following:

The defective pipe shall be uncovered to the extent that competent pipe is found on either end of the defective pipe and inspected by the Contractor and the Engineer. An approximate location, length of repair and existing pipe material are depicted on the Contract Drawings.

The Contractor shall saw-cut the existing pipe where it's found to be competent, such that the ends of the pipe are straight, smooth and free of chips, cracks or any other defects.

The Contractor shall remove the defective pipe section from the trench, dispose of properly and recondition the bedding material as required in accordance with paragraph E above.

The Contractor shall place the repair pipe, which shall be of the same pipe diameter and material as the defective pipe unless otherwise specified or directed by the Engineer, and connect to the existing pipe using restrained pressure type pipe couplings. Secure the pipe couplings in accordance with the manufacturer's recommendations.

After an inspection by the Engineer, the Contractor shall backfill and restore the disturbed area as directed.

Sanitary Sewer Manholes

The Contractor shall take every precaution to prevent damage to the manhole sections and appurtenances during transportation and unloading. Unload manhole sections using skids, pipe hooks, rope slings, or suitable power equipment, if necessary, and keep the sections under control at all times. Do not allow the manhole sections to be dropped, dumped or dragged under any conditions.

Prior to being installed, each precast manhole or structure shall be carefully inspected. Reject those not meeting the specifications and replace at the Contractor's expense.

If any manhole section is damaged in the process of transportation or handling, the Contractor shall reject and immediately remove such sections from the site and replace the damaged manhole sections at his own expense.

Perform trench excavation and backfill in accordance with the Utility owner's specifications.

No manhole base section shall be placed before the subgrade or bedding has been reviewed by the Engineer.

If an existing manhole is to be removed and replaced by a new manhole, the Contractor shall ensure temporary bypass pumping and all appurtenances required to continue service is in place and ready for operation.

Unless otherwise specified, the Contractor shall cut and remove a portion of the existing pipe(s) in order to place the new manhole. The Contractor shall insert a pipe stub in the new manhole, place the manhole and align with the existing pipe. A pipe repair coupling as specified herein shall be used to join the existing pipe with the new pipe stub.

The Contractor shall place the manhole base section at the location, elevation and orientation depicted on the Drawings. The base section shall be level and plumb.

The Contractor shall connect all pipes utilizing the pre-cast openings and pipe to manhole gaskets. After proper placement of the manhole base section, the Contractor shall place subsequent sections.

Doghouse-type manholes shall be installed as specified on the Contract Drawings.

Install sufficient sealing compound so as to show a "squeeze-out" on the outside of the joint.

Apply trowelable grade butyl rubber backplaster material one-quarter (1/4) inch minimum thickness, when dry, on the outside of the manhole at each joint, extending six (6) inches above and below the joint. Apply butyl rubber backplaster on the outside of the chimney from three (3) inches below the bottom adjustment ring on the cone section to, and covering, the adjustment rings just below the casting. Next, apply shrink wrap or visquine to the outside of each joint to further seal manhole.

Set cones or flattops as determined by the depth of the manhole, so that no more than 12 inches of reinforced concrete adjusting rings are required to adjust the top of the manhole casting to grade.

Provide a soil-tight seal between the precast manhole and adjusting ring, and each adjoining adjusting ring, and between the adjusting ring and casting by the use of two (2) rows of 1/2 inch extrudable preformed gasket material or trowelable grade butyl rubber or an approved equal. After butyl rubber is applied to exterior of adjustment rings, install exterior chimney seal if specified. Set manhole frame on 1/2 inch extrudable preformed gasket material or trowelable grade butyl rubber or an approved equal. In paved areas, match top of casting with finished grade; in unpaved/grassy areas, install casting so that the top extends at least six inches above finished grade, and grade surface to provide positive surface drainage away from manhole.

Locate manhole steps to one side of the manhole, not directly above the inlet or outlet pipes, granting access to the bench. Install steps with non-shrink mortar or epoxy grout.

The Contractor shall restore all manholes and associated surface areas to their original condition or as required by the Utility Owner and specified in the description of work. The newly installed pipe shall be restrained and sealed at the manhole in accordance with the manufacturers recommended procedures and with a material approved by the Utility Owner.

Restoration of the bottom of the Manhole shall be done as follows:

1. For restorations less than or equal to three inches grout shall be used. The grout design mix shall meet or exceed 500 psi (3,447 kPa) compressive strength at 28 days. The Contractor may, with the approval of the Utility Owner, incorporate grout additives to improve flow properties, provided that the minimum compressive strength requirements are met.
2. For restorations greater than three inches concrete shall be used. Concrete shall be as specified in the Contract Documents.

Bypass Pumping

The Contractor shall remove manhole sections or make connections to the existing sewer and construct temporary bypass pumping structures as may be required to provide adequate suction conduit.

Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, it is to be removed in a manner that permits the flow of sewage to slowly return to normal without surge to prevent surcharging or causing other major disturbances downstream.

When working inside manhole or sewer line, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.

The Contractor shall obtain all rights and permits prior to the installation of the bypass pipelines if such lines are outside the Limit of Disturbance. When the bypass pipeline crosses local streets and private driveways, the Contractor must place the bypass pipelines in trenches and cover with plating or temporary pavement. Upon completion of the bypass pumping operations, and after the receipt of written permission from the City of Newark or their representative, the Contractor shall remove all the piping, restore all property to previously existing condition and restore all pavement. The Contractor is responsible for obtaining any approvals for placement of the temporary pipeline within public ways from the agency with jurisdiction.

Construction Requirements:

The Contractor is solely responsible for bypass pumping quality assurance during the length of the project. The contractor is responsible for any costs associated with corrective measures required to replace or repair items not meeting the quality standards specified by the Utility Owner or Engineer.

Submittals

The Contractor shall submit the following items for review and approval by the Utility Owner or Engineer in accordance with the Contract Documents. Approval of the submittals by the Utility Owner or Engineer shall be obtained prior to ordering pipe materials and/or the start of the pipe replacement process.

1. Detailed construction procedures, and layout plans to include sequence of construction.
2. Sewer bypass plans, methods, and list of equipment to be utilized.
3. Description of the method to remove and dispose of the host pipe, if required.
4. The safety plan in conformance with the Contract Documents and OSHA regulations.
5. Traffic control plans.
6. Project schedule.

7. Pipe appearances, including gaskets, clamps, shear rings, couplings, and plugs. Include evidence of compliance with ASTM standards
8. Piping, including certified test results from the manufacturer demonstrating compliance with the requirements.
9. Detailed drawings and data on pipe, fittings, joints, gaskets and appurtenance. Include certified test results from the manufacturer demonstrating compliance with the requirements.
10. Certified test results from the manufacturer demonstrating compliance with the requirements of this section.
11. Pipe layouts and schedules.
12. Precast manholes and structures including evidence of compliance with ASTM standards, and a table or chart showing the specific sections and orientation of penetrations for each manhole supplied.
13. Manhole appurtenances, including but not limited to O-ring gasket and joint sealant, resilient connector, manhole frame and cover, and manhole step.
14. Provide manufacturer's written confirmation that all reinforced pre-cast concrete manhole sections contain an inorganic copolymer waterproofing admixture in compliance with manufacturer's application instructions.
15. Sewer Lateral Cleanouts
16. Shop drawings for casing pipe showing size and hold down assemblies or casing spacers for carrier pipe.
17. Working drawings, shop drawings (drawn to scale), catalog cut sheets, technical data, and written procedures describing in detail proposed bore and jack method and entire operation to be used, for information only, including but not limited to:
18. Provide a construction schedule for approval that includes the sequence of installation of the casings and pipelines. Provide a laying schedule (on the Drawings) that shows necessary deviations from the Drawings due to specific utility conflicts discovered during required exploratory excavations. Include a description of the proposed construction methods, including methods to establish and maintain vertical and horizontal alignment.
19. Working and receiving shafts.
20. Dewatering Plan.
21. Method of removing soils and installation of casing and carrier pipe.
22. Size, capacity, and arrangement of equipment.
23. Pipe closure system.
24. Certified Welders Certificate.
25. Backstop.
26. Shaft base material.
27. Type of cutter head.
28. Method of monitoring and controlling the line and grade.
29. Detection of surface movement.
30. Procedure for installing pipe supports, anchor, or placement of grout between carrier pipe and casing pipe.
31. Bulkhead details and proposed positive method of anchoring carrier pipe to prevent floatation.
32. Catalog data for casing spacers when used for temporary support during construction.
33. Procedure for monitoring line and grade.
34. Certification shall be in the form of a letter or company-standard form containing all required data and signed by an officer of the manufacturing, fabricating, or supply company.

Other Utilities:

The Utility Owner or as shown on the drawings shall provide the Contractor with available information relating to the location of utilities adjacent to the pipe to be replaced. The Contractor shall, prior to starting work, verify

the location of all adjacent utilities. The minimum clearance from other utilities shall be approximately 18-inches. The Utility Owner may at its discretion reduce the minimum clearance. The Contractor shall expose all interfering and crossing utilities by spot excavating at the planar intersection of the pipe and removing the soil from around the utility. The cost of exposing these utilities shall be borne by the Contractor.

Emergency Repairs to Damaged Utilities:

Known or Field Located Utilities - In the event that the Contractor or his Subcontractor during the execution of the work breaks any known or field located pressure or gravity main causing the disruption of service and/or an eminent hazard, it shall be the responsibility of the Contractor/Subcontractor to immediately notify the Utility Owner at the designated emergency telephone number and immediately undertake measure to repair the damaged utility. To that effect, the Contractor/Subcontractor shall ascertain prior to initiating the work that the necessary repair parts, tools, equipment, and labor are on ready and available onsite to complete the repair work without delays. The Utility Owner personnel and Engineer shall witness the repair work.

If the Contractor/Subcontractor estimates or determines that he is not going to be able to restore service within a less than two-hour period, the Contractor shall immediately contact the Utility Owner's manager to initiate repair.

The Utility Owner will undertake the repair work and will back charge the Contractor. The Utility Owner will submit an itemized bill within 30 calendar days from the occurrence of the event.

Unknown or Inaccurately Located Utilities - If the utility was not field located or it was inaccurately located in accordance with the prescribed procedures under the One-Call guidelines and the Contractor/Subcontractor cause a line break during the execution of the work, the same notification procedure as above must be followed. The Utility Owner will undertake the repair work at no cost to the Contractor.

Acceptance Testing

After the existing pipe is completely replaced the Contractor and Utility Owner shall perform inspections of the pipe. The newly installed pipe shall be visibly free of defects, which may affect the integrity or strength of the pipe. If in the opinion of the Utility Owner such defects exist, the pipe shall be repaired or replaced at the Contractor's expense.

Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than ten percent (10%) of the wall thickness shall not be used and must be removed from the site.

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. Furnish all Equipment and personnel to conduct the tests specified herein and/or any proposed by the Owner of the utility.

The Contractor shall not make connections to existing sanitary sewers until after the final inspection and all tests have been accepted.

Leakage Tests for Sewer Pipes

Low-Pressure Air Test

1. All sewer pipes will be tested by the "Low-Pressure Air Test."
2. This test will be made by plugging all branch fittings and ends of lateral stubs to withstand internal

pressure. The section of line being tested shall also be securely plugged at each manhole. All stoppers shall be adequately braced when required.

3. Air shall slowly supplied to the plugged pipe line until the internal air pressure reaches 4.0 pounds per square inch (PSI) greater than the average back pressure of any groundwater that may submerge the pipe. At least two minutes shall be allowed for temperature stabilization before proceeding further.
4. The rate of air loss shall then be determined by measuring the time interval required for the internal pressure to decrease from 3.5 to 2.5 PSI. The line shall be considered acceptable if the amount of time is not less than the following formula:

$$T = 0.0850DK/Q, \text{ where}$$

K = 0.000419DL, but not less than 1.0

Q = rate of loss of 0.003 CFM per square foot of internal surface

D = Pipe diameter, inches

L = Length of pipe being tested, feet

Minimum Holding Time Required For Pressure To Drop From 3.5 To 2.5 Psig For Size And Length Of Pipe Indicated For Q = 0.003

Pipe Diameter (inches)	Minimum Time (min:sec)	Length for Minimum Time (feet)	Time for Longer Length (seconds)	Specific Time for Length							
				100 feet	150 feet	200 feet	250 feet	300 feet	350 feet	400 feet	450 feet
4 or less	1:53	597	0.190 L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50	398	0.427 L	2:50	2:50	2:50	2:50	2:50	2:50	2:51	3:12
8	3:47	298	0.760 L	3:47	3:47	3:47	3:47	3:48	4:26	5:04	5:42

Leakage Test for Manholes and Structures

Manholes, vaults and similar structures constructed may be tested by the Vacuum Test. This test shall be performed in accordance with ASTM C 1244. Testing prior to backfilling is highly recommended to facilitate corrective measures in case of test failure.

1. The Contractor shall plug all pipe openings, taking care to securely brace the plugs and inflate the compression band to 40 psi to bring about a seal between the vacuum tester base and the manhole frame.
2. A vacuum to 10 inches of mercury (10" Hg) shall be drawn and the valve closed.
3. Manholes and similar structures shall be considered acceptable if the vacuum remains at 10" Hg or drops to 9" Hg in a time greater than 1 minute.

Manhole Rehabilitation Acceptance

A visual inspection of all manhole repairs and rehabilitation shall be performed by the Engineer. The Contractor shall provide labor and materials required for inspection. There shall be no signs of infiltration, spalling, loss of adhesion, cracks or any other defects in the Contractor's work.

Acceptance is also dependent satisfactory results of field compressive strength testing, if performed.

All manholes that have been rehabilitated shall be re-inspected prior to Final Acceptance, but no less than 12 weeks after Conditional Acceptance. The Engineer shall schedule this reinspection with the Contractor, providing a minimum of 2 weeks' notice. Re-inspection shall include a visual confirmation that no infiltration, spalling, loss of adhesion, cracks or any other defects have formed in the work performed since Conditional Acceptance. Any defects found shall be corrected by the Contractor in accordance with the manufacturer's recommendation at no additional cost to DelDOT.

Re-inspection shall include at least 20% of the manholes rehabilitated. The Engineer will select the manholes to be re-inspected, the Contractor shall provide all labor and materials required for re-inspection, including traffic control.

If more than 10% of the manholes re-inspected fail a visual inspection, an additional 20% of the manholes rehabilitated shall be re-inspected. If more than 10% of the second group of manholes re-inspected fail, all manholes rehabilitated shall be re-inspected.

The Contractor shall pay the Engineer's expense in addition to all other expenses, for re-inspection of manholes rehabilitated beyond the first 20%. The Engineer's expense shall be the same dollar amount as the liquidated damages identified in the Contract Documents.

Other Acceptance Testing

The Engineer reserves the right to perform other testing as they deem necessary, depending on several factors, including but not limited to failed acceptance tests, site and weather conditions, post-construction CCTV inspection and observances during construction. These tests may include the following:

Pipe Alignment Test (Lamp Test): Pipe alignment testing consists of visually examining the inside of the pipe between two consecutive manholes with the aid of a light and mirror. A mirror is held at the invert of the pipe and adjusted so the light and barrel of pipe can be seen. The barrel of the pipe shall have no vertical or horizontal deflection.

Ovality/Deflection Test (Mandrel Test): Ovality/Deflection testing consists of pulling a mandrel, appropriately sized for the pipe diameter(s) constructed, through the constructed pipe sections. The size of the mandrel shall be based on the ovality/deflection requirements specified within the Contract. The mandrel shall pass through all pipe segments without meeting resistance.

Failed Acceptance Test

If any test results indicate the presence of a defect, whether caused by defective materials, improper workmanship or damage to the materials, the Contractor shall, locate and repair the defect at his own expense. The means and methods of repair shall be discussed with the Engineer prior to execution. If defective portions cannot be located, remove and reconstruct as much of the original work as necessary to obtain piping that meets the leakage requirements specified herein and retest, all at no addition to the Contract Price.

The failed test shall be re-performed until the results are within acceptable limits.

CCTV Inspections

The Contractor shall perform post installation internal television inspections of the installed sanitary main. Each reach of sewer shall have audio description with appropriate stationing of services indicated. The data and stationing are to be on the video. All such inspections shall be performed by personnel trained in locating breaks, obstacles and service connections by closed circuit color television.

Post construction video tapes are to be submitted to the Engineer and Utility Owner for review prior to final

payment. Should any portion of the inspection tapes be of inadequate quality or coverage, as determined by the Utility Owner, the Contractor will have that portion video-taped at no additional expense to the State or Utility Owner. All original video tapes remain property of the Utility Owner. The Contractor may, at the discretion of the Utility Owner retain second copy.

Do not make connections to existing sanitary sewers until after the final inspection and tests have been approved. Furnish all Material and labor required for tests, including caps and plugs and the cost thereof included in the prices bid for installing sanitary pipe. Furnish water required for leakage test at no additional cost to the Department.

Method of Measurement and Basis of Payment:

Price and payment for sanitary sewer system shall be lump sum under item 711002.

Item 711002 includes furnishing, transporting, and installing the Materials; testing of the sanitary sewer system; including manholes, cleanouts, and air releases; connecting to existing sanitary sewer systems and services; maintaining service as required; installation of force main and thrust restraints, excavating; disposing of excess excavated Material; backfilling, including Type C borrow required specifically for filling the sewer trench; furnishing Material for backfilling; furnishing and placing warning tape and wire; aggregate pipe bedding, sheeting and shoring, temporary support of existing Utilities, dewatering, furnishing and using tanker trucks for excess flow, constructing and operating a bypass pumping system, temporary bypass pumping and hauling, disposing of excess flow at an approved location; cutting and capping new or existing lines and for all labor, Equipment, tools and necessary incidentals to achieve and accept an operational sanitary sewer system.

Abandonment of all manholes and sewer shall be paid for under Section 211. HDD of HDPE Sewer and Casing Pipe shall be paid under 711100.

All lump sum pay items will be prorated for each pay estimate. A percentage of the lump sum item will be paid, on a monthly basis, based upon the amount of work completed and accepted by the Engineer.

8/16/19

711505 - HORIZONTAL DIRECTIONAL DRILLING FOR SANITARY SEWER

Description:

This work consists of performing Horizontal Directional Drilling (HDD) of High Density Polyethylene (HDPE) Pressure Sewer pipe.

Quality Assurance:

- A. Experience: Actively engaged in horizontal directional drilling for minimum of 3 years.
- B. Field supervisory personnel: Experienced in the performance of work and tasks as stated herein for minimum of 3 years.

Submittals:

- A. Submit for information only.
 - 1. Presentation of similar experience in the last 3 years.
 - 2. Include, but not limited to, owner name, address, telephone number, contact person, date and duration of work, location, pipe information, and contents handled by pipeline.
 - 3. Supervisory field personnel and historical information of HDD experience.
 - a. At least one field supervisor listed must be at site when HDD operations are in progress.
- B. Submit following:
 - 1. Working Drawings and written procedure describing in detail proposed method and entire operation for information only including, but not limited to:
 - a. Size, capacity and arrangement of equipment.
 - b. Location and size of drilling and receiving pits.
 - c. Dewatering and methods of removing spoils material.
 - d. Method of installing detection wire and pipe.
 - e. Type, location and method of installing locator station.
 - f. Method of fusion pipe segment and type of equipment.
 - g. Type of cutting head.
 - h. Method of monitoring and controlling line and grade.
 - i. Detection of surface movement.
 - j. Bentonite drilling mud for information only:
 - 1) Products information, material specifications, and handling procedures.
 - 2) Material safety data sheet and special precautions required.
 - 3) Method of mixing and application.

Project Conditions:

- A. Complete HDD so as not to interfere with, interrupt, or endanger surface and activity thereon.
- B. Do not use HDD in rock stratum or subsoil consisting of boulders and underground obstructions that impede the process.
- C. Follow applicable ordinances, codes, statutes, rules, and regulations of State of Delaware, DelDOT, applicable County building codes, affected Railroad Company, and applicable regulations of Federal Government, OSHA 29CFR 1926, and applicable criteria of ANSI A10.16-1995 (R2001), "Safety Requirements for Tunnels, Shafts, and Caissons."

Materials:

- A. Pipe.
 - 1. HDPE IPS DR-11.
 - 2. HDPE Joints:
 - a. Butt fusion joining technique for joining pipe segments installed by HDD.
 - b. When joining HDPE pipe at ends of directional drilling runs fusion bond to adjacent pipe section.
 - 1) Use butt fusion, socket fusion, or electrofusion coupling joining technique.
 - c. Mechanical Couplings are not permitted for joining of directional drilled pipe sections.

- B. Drilling Fluid:
 - 1. Bentonite drilling mud compatible with environment.
 - 2. Waste oil or environmentally non-compatible polymers cannot be part of composition.

- C. Detection Wire: TW, THW, THWN, or HMWPE insulated copper, 10 gage or thicker wire.

- D. Locator Station.
 - 1. Underground, Flush Mounted:
 - a. Tube minimum 15 inches long with minimum inside diameter of 2-1/2-inches made of non-corrosive material, schedule 40 PVC, HDPE, or equal.
 - b. Factory attached cast iron or high-impact plastic collar with ribs to prevent rotation when removing locking lid after locator station is set in concrete.
 - c. Light blue cast iron or high-impact plastic locking lid that will withstand AASHTO H-20 traffic loads and ultra-violet rays.
 - d. Mark locking lid to identify pipeline with permanent identification such as P.S. Locator.
 - e. Terminal block made of high dielectric material which is made of phenolic resin, plastic, micarta, Lexan or Bakelite for each locator station.
 - 1) Terminal block furnished with two 3/16-inch threaded studs, nuts, and washers made of nickel plated brass.
 - f. Approved manufacturers:
 - 1) C.P. Test Services, Inc., Model Mini.
 - 2) Handly, Industries, Model T2IS2.
 - 3) Or equal.
 - 2. Manhole Mounted:
 - a. Waterproof enclosure made from cast aluminum, galvanized steel, high-impact plastic, Lexan, Gyrlyn, or equal.
 - b. Light blue schedule 40 PVC pipe or schedule 40 galvanized steel with outside diameter of at least 3/4-inch to mount enclosure.
 - c. Use similar materials for pipe and enclosure to fasten enclosure onto pipe following manufacturer's instructions.
 - d. Approved manufacturers:
 - 1) Cott Manufacturing Company, Model Finklet or Finkplate, 2 leads.
 - 2) Gerome Manufacturing Company, Inc., Model Testox Series 300, 2 leads.
 - 3) Or equal.

Execution:

PREPARATION

- A. Excavate pits following Working drawings.
- B. Provide equipment to guard against electrocution and alarm system on drilling equipment capable of detecting electrical current as it approaches electric lines.
- C. Test pit underground utilities crossing before HDD operation following DelDOT procedures and specifications.

OPERATION

- A. General.
 - 1. Determine drilling length and equipment pull strength for type of soil encountered.
 - 2. Provide method to control line and grade.
 - a. Provide and maintain instrumentation that accurately locates pilot hole.
 - b. Drill pilot hole along path following Drawings to these tolerances:
 - 1) Vertical alignment plus or minus 0.5 foot. Vertical path of pilot hole must not establish new high points not shown on Drawings.
 - 2) Horizontal alignment plus or minus 1.0 foot.
 - c. Include electronic monitoring of horizontal and vertical drilling head location. Obtain accuracy range within 1 inch of actual position of pipeline. Record position readings at maximum of 10-foot intervals.
 - d. At completion of pilot hole drilling, furnish tabulations of horizontal and vertical alignment to Engineer.
 - 3. When water is encountered.
 - a. Provide and maintain dewatering system of sufficient capacity to remove water.
 - b. Keep excavation free of water until backfill operation is in progress.
 - c. Perform dewatering in manner that removal of soils particles are held to minimum.
 - d. Dewater into sediment trap following project Erosion and Sediment protection procedures.
 - 4. Maintain close observation to detect settlement or displacement of surface and adjacent facilities.
 - a. Notify Engineer immediately if settlement or displacement is detected.
 - b. Maintain safe conditions and prevent damage.
- B. Drilling Operation.
 - 1. Drilling Fluids.
 - a. Maintain drilling fluid in bore hole to increase stability of surrounding soil and reduce drag on pulled pipe.
 - b. Dispose of drilling fluid and other spoils at location following laws, ordinances, rules, and regulations of local jurisdiction.
 - c. Transport excess fluids and other spoils to disposal site, at no additional cost to the Department.
 - d. Minimize drilling fluid at locations other than entry and exit points. Immediately clean up any drilling fluids that inadvertently surface.
 - e. Provide clean water for drilling, at no cost to the Department, at Engineer's requirement.
 - 2. Pilot Hole Drilling.
 - a. Angle entry hole so that curvature of pilot hole does not exceed allowable

- bending radius of HDPE pipe.
- b. Be able to make a turn of up to 90 degrees and maintain curvature not to exceed allowable bending radius of HDPE pipe.
 - c. Alignment Adjustment and Restarts.
 - 1) Follow pipeline alignment on Drawings within tolerances specified herein. Before adjustments, notify Engineer for approval.
 - 2) Notify Engineer when forward motion of operation is stopped by an obstruction.
 - a) Abandon in place with drilling fluid, unless Engineer directs otherwise.
 - b) Upon Engineer's approval, attempt second installation at approved location or excavate at point of difficulty and install HDPE pipe by trench method following Section 711048.
 - 3) Withdrawals, abandonments, and restarts are at no additional cost to the Department when HDD is provided as an option of installation of pipe.
 - 4) Exercise caution including, but not limited to, locating utilities, drilling downholes (test pits) to observe drill stems or reamer assembly to clear other existing utilities at locations following Drawings.
 - 5) Keep the number of boring pits to a minimum, no closer than following distances, unless otherwise approved by Engineer.
 - a) Equipment must be capable of boring following lengths in a single bore.

<u>Iron Pipe Size (IPS)</u>	<u>Boring Distance (In feet)</u>
1-1/4	400
1-1/2	400
2	350
2-1/2	350
3	300
4	250
8	250

Installation:

- A. Installing HDPE Pipe.
 1. Provide a swivel to reaming assembly and pull section of pipe to minimize torsional stress on pull section after drilling pilot hole.
 2. Hold reaming diameter to 1.5 times outside diameter of HDPE pipe being installed.
 3. Protect pull section as it proceeds during pull back so it moves freely and is not damaged.
 4. Pull detection wire along with HDPE pipe. Extend wire into locator station at each end of HDPE pipe.
 5. When connecting to adjacent pulled or non-pulled section of HDPE pipe, allow pull section of pipe to extend past termination point. Make tie-ins the next day after pullback of HDPE pipe.
 6. Test pit pipe installation to verify horizontal and vertical alignment at Engineer's direction.
 - a. One test pit for every 500 feet along length of pipeline.
 - b. Engineer may order additional test pit for each test pit that reveals pipeline installation is not in compliance with Contract Documents at no additional cost to the Department.
 7. Replace portions of pipeline not in compliance with Contract Documents at

Engineer's direction and at no additional cost to the Department.

B. Installing Locator Station.

1. Locator Stations.

- a. At each end of HDPE pipe. Follow Standard Details or Drawings,
- b. Flush mount underground locator: See Standard Details.
- c. When HDPE pipe is connected to another type of pipe material, continue detector wire over connecting pipe, so locator station is installed out of paved area.
- d. In areas scheduled to be improved identify and protect station locations immediately after installation.
 - 1) Space 3 stakes equally around the station.
 - 2) Extend at least 4 feet above existing grade.
 - 3) Flag with orange fluorescent wrap within 6 inches from top of stakes.

2. Detection Wire.

- a. Install detection wire without splices as shown on Standard Details.
- b. Terminate detection wire inside locator box using proper sized crimp type connectors on wire ends.
- c. Connect each wire to terminal maintaining at least 18 inches slack in each wire for underground flush mounted locator stations.
- d. Neatly coil slack wire in test station below terminal board.
- e. Locate wires on top and along HDPE pipe.
- f. Allow adequate slack and support to protect wires from damage during backfilling operations.
- g. Test each detection wire for continuity after backfill is completed.
 - 1) If test for continuity is negative, repair or replace at Engineer's direction.
 - 2) After continuity is verified, connect each detection wire to terminal block in locator station.

Field Quality Assurance:

- A. Perform field testing of HDPE Pipe.

Method of Measurement and Basis of Payment:

Payment for HDPE pipe installation by HDD and associated casing pipe shall be paid by linear footage installed. All excavation, test pits, casing pipe, fluids, wires, are incidental to the costs of horizontal directional drilling.

8/9/19

720557 - BOLLARD, STEEL

Description:

This work consists of furnishing and installing bollard in accordance with the notes, details on the Plans and as directed by the Engineer.

Materials and Construction Methods:

The bollard shall be made of 6" diameter x 3/16" steel tubestock.

Concrete shall be Class B conforming to the requirements of Section 1022.

Steel housing for the bollard shall be installed in the hole in vertical position on a 6" bed of Delaware No. 57 stone and encased with concrete as shown on the Plans and/or as directed.

All exposed steel is to be painted. Individual coats of paint shall consist of an inorganic zinc-rich primer meeting the requirements of AASHTO M300 Type I or II; an epoxy-polyamide intermediate coat meeting the requirements of SSPC-Paint 22 (pigmented to contrast with both the primer and topcoat); and an aliphatic urethane topcoat meeting the requirements of SSPC-P5 Guide 17.00 Type II. The topcoat color of the exposed steel shall be federal standard 595a, color number 13538 (yellow). The Contractor shall select a complete coating system from one manufacturer. This selected coating system must be submitted to the Department's Material and Research Section for approval prior to coating. Steel surfaces that have not been shop-coated shall be solvent-cleaned. Surfaces that contain loose rust, loose mill scale, and other foreign substances shall be mechanically cleaned by power wire brushing or sand blasting. Minor amounts of residual rust that cannot be removed by applying a sharp knife to any edge, will be allowed to remain. After cleaning, one coat of primer shall be applied.

Method of Measurement:

The quantity of bollards will be measured as the actual number fabricated, installed and accepted.

Basis of Payment:

The quantity of bollards will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for furnishing and placing all materials, excavation, backfilling, disposing of the surplus material, for all labor, backfill, tools, equipment and incidentals necessary to complete the work.

6/1/2018

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: Top and bottom pay limit elevations for all excavation bid items that are not field measured by Construction inspection personnel. The Contractor shall notify the Engineer when these pay limit elevations are ready and allow for a minimum of two calendar days for the Engineer to obtain the information.
- (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 $[3\text{mm}+2\text{ppm}\times\text{D}]$ 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 and Automatic Level 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 (DELDOT Construction Inspectors). 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. Choosing to use GPS technology does not give the contractor authority to use machine control.- Construction Engineering (GPS) Machine Control Grading shall only be used if noted in the General Notes in the plan set outlining the available files that will be provided to the Contractor and "the Release for delivery of documents in electronic form to a contractor" are signed by all parties prior to delivery of any electronic files. Only files designated in the General Notes shall be provided to the contractor. If machine control grading is allowed on the project see the "machine control" section of this specification. GPS technology and machine control technology shall not be used in the construction of bridges.

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 sub contracting 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 verify the precision of given control points. Establishing plan coordinates and elevation 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 0.035 ft times. The Horizontal Control precision ratio shall have a minimum precision of 1:20,000 feet 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 must 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 before and 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 or their designated representative, the Contractor shall survey top of beam elevations at a maximum of 10-ft 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 utility relocations, which will be performed by others, after the Notice to Proceed has been given to the Contractor, 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 intervals through wetland areas. In open field and yard areas that have been identified as wetlands, 6 foot posts shall be driven into the ground at approximate 50-foot intervals and tied with the flagging. The flagging shall extend approximately 12 inches in length beyond the post. Posts shall be oak with cross sectional dimensions of 1 ½ inches to 2 inches by 1 ½ inches to 2 inches or ¼ inch rebar.
 - 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 posts 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.
- (h) Whenever the Engineer will be recording data for establishment of pay limits, the Contractor will be invited to obtain the data jointly with the Engineer's Survey Crew(s) in order to agree with the information. If the Contractor's representative is not able to obtain the same data, then the information obtained by the Engineer shall be considered the information to be used in computing the quantities in question.

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, electronic files, and other records necessary to accomplish the work shall be made available to the Department in a neat and organized manner at any time 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. Copies of all notes must be furnished to the engineer at the completion of the project.

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 - traverse closure report.
- (e) Description of newly established benchmarks with location, elevation and closed loop survey field notes - bench closure report
- (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 borrows 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.

Machine Control Grading

This Section of the specification shall only be used if machine control is authorized for use on the project.

Description:

This specification contains the requirements for grading operations utilizing Global Positioning Systems (GPS).

Use of this procedure and equipment is intended for grading the subgrade surface; it is not intended for the use in constructing final surface grades.

The Contractor may use any manufacturer's GPS machine control equipment and system that results in achieving the grading requirements outlined in section 202 of the standard specifications. The Contractor shall convert the electronic data provided by the Department into the format required by their system. The Department will only provide the information outlined in this document and no additional electronic data will be provided.

The Contractor shall perform at least one 500 foot test section with the selected GPS system to demonstrate that the Contractor has the capabilities, knowledge, equipment, and experience to properly operate the system and meet acceptable tolerances. The engineer will evaluate and make the determination as to whether additional 500 foot test sections are required. If the Contractor fails to demonstrate this ability to the satisfaction of the Department, the Contractor shall construct the project using conventional surveying and staking methods.

Materials:

All equipment required to perform GPS machine control grading, including equipment needed by DeIDOT to verify the work, shall be provided by the Contractor and shall be able to generate end results that are in accordance with the requirements of Division 200 - EARTHWORK of the Standard Specifications.

Construction:

A. DeIDOT Responsibilities:

1. The Department will set initial vertical and horizontal control points in the field for the project as indicated in the contract documents, (plans set). If the Contractor needs to establish new control points they shall be traversed from existing control points and verified to be accurate by conventional surveying techniques.
2. The Department will provide the project specific localized coordinate system.
3. The Department will provide data in an electronic format to the Contractor as indicated in the General Notes.
 - a. The information provided shall not be considered a representation of actual conditions to be encountered during construction. Furnishing this information does not relieve the Contractor from the responsibility of making an investigation of conditions to be encountered including, but not limited to site visits, and basing the bid on information obtained from these investigations, and the professional interpretations and judgments of the Contractor. The Contractor shall assume the risk of error if the information is used for any purpose for which the information is not intended.
 - b. Any assumption the Contractor makes from this electronic information shall be at their risk. If the Contractor chooses to develop their own digital terrain model the Contractor shall be fully responsible for all cost, liability, accuracy and delays.
 - c. The Department will develop and provide electronic data to the Contractor for their use as part of the contract documents in a format as indicated in the General Notes. The Contractor shall independently ensure that the electronic data will function in their machine control grading system.
4. The Files that are provided were originally created with the computer software applications MicroStation (CADD software) and INROADS (civil engineering software). The data files will be provided in the native formats and other software formats described below. The contractor shall perform necessary conversion of the files for their selected grade control equipment. The Department will furnish the Contractor with the following electronic files:
 - a. CAD files
 - i. Inroads -Existing digital terrain model (.DTM)
 - ii. Inroads -Proposed digital terrain model (.DTM)
 - iii. Microstation -Proposed surface elements - triangles
 - b. Alignment Data Files:
 - i. ASCII Format

5. The Engineer shall perform spot checks of the Contractor's machine control grading results, surveying calculations, records, field procedures, and actual staking. If the Engineer determines that the work is not being performed in a manner that will assure accurate results, the Engineer may order the Contractor to redo such work to the requirements of the contract documents, and in addition, may require the Contractor to use conventional surveying and staking, both at no additional cost to the Department.

B. Contractor's Responsibilities

1. The Contractor shall provide the Engineer with a GPS rover and Automatic Level, for use during the duration of the contract. At the end of the contract, the GPS rover and Automatic Level will be returned to the Contractor. The Contractor shall provide a total of 8 hours of formal training on the Contractor's GPS machine control system to the Engineer and up to three additional Department appointees per rover.
2. The Contractor shall review and apply the data provided by the Department to perform GPS machine control grading.
3. The Contractor shall bear all costs, including but not limited to the cost of actual reconstruction of work, that may be incurred due to application of GPS machine control grading techniques. Grade elevation errors and associated corrections including quantity adjustments resulting from the contractor's use of GPS machine control shall be at no cost to the Department.
4. The Contractor shall convert the electronic data provided by the Department into a format compatible with their system.
5. The Contractor's manipulation of the electronic data provided by the Department shall be performed at their own risk.
6. The Contractor shall check and if necessary, recalibrate their GPS machine control system at the beginning of each workday in accordance with the manufacturer's recommendations, or more frequently as needed to meet the requirements of the project.
7. The Contractor shall meet the accuracy requirements as detailed in the Standard Specifications.
8. The Contractor shall establish secondary control points at appropriate intervals and at locations along the length of the project. These points shall be outside the project limits and/or where work is performed. These points shall be at intervals not to exceed 1000 feet. The horizontal position of these points shall be determined by conventional survey traverse and adjustments from the original baseline control points. The conventional traverse shall meet or exceed the Department's Standards. The elevation of these control points shall be established using differential leveling from the project benchmarks, forming a closed loop. A copy of all new control point information including closure report shall be provided and approved by the Engineer prior to construction activities. The Contractor shall be responsible for all errors resulting from their efforts and shall correct deficiencies to the satisfaction of the Engineer and at no additional cost to the Department.
9. The Contractor shall provide stakes at all alignment control points, at every 500 foot stationing, and where required for coordination activities involving environmental agencies and utility companies at the Contractor's expense. Work that is done solely for utility companies and that is beyond the work performed under item 763501 - Construction shall follow and be paid for under item 763597 -Utility Construction Engineering.

10. The Contractor shall at a minimum set hubs at the top of finished grade at all hinge points on the cross section at 500 foot intervals on the main line and at least 4 cross sections on side roads and ramps as directed by the engineer or as shown on the plans. Placement of a minimum of 4 control points outside the limits of disturbance for the excavation of borrow pits, Stormwater Management Ponds, wetland mitigation sites etc. These control points shall be established using conventional survey methods for use by the Engineer to check the accuracy of the construction.
11. The Contractor shall preserve all reference points and monuments that are identified and established by the Engineer for the project. If the Contractor fails to preserve these items the Contractor shall reestablish them at no additional cost to the Department.
12. The Contractor shall provide control points and conventional grades stakes at critical points such as, but not limited to, PC's, PT's, superelevation points, and other critical points required for the construction of drainage and roadway structures.
13. No less than 2 weeks before the scheduled preconstruction meeting, the Contractor shall submit to the Engineer for review a written machine control grading work plan which shall include the equipment type, control software manufacturer and version, and proposed location of the local GPS base station used for broadcasting differential correction data to rover units.
14. The Contractor shall follow the guidelines set forth in the "Geometric Geodetic Accuracy Standards and Specifications for Using GPS Relative Positioning Techniques" and follow a minimum of Second Order Class 1, (2-1) classification standards.

Automated equipment operations have a high reliance on accurate control networks from which to take measurements, establish positions, and verify locations and features. Therefore, a strong contract control network in the field which is the same or is strongly integrated with the project control used during the design of the contract is essential to the successful use of this technology with the proposed Digital Terrain Model (DTM). Consistent and well designed site calibration for all machine control operations (as described below under Contract Control Plan) are required to ensure the quality of the contract deliverables. The Contract Control Plan is intended to document which horizontal and vertical control will be held for these operations. Continued incorporation of the Base Station(s) as identified in the Contract Control Plan is essential to maintaining the integrity of positional locations and elevations of features. The Contract Control Plan shall be submitted to the Department for review and approval by the Departments Survey Section 3 weeks prior to the start of any machine control work. The Contractor shall operate and maintain all elements of the Machine Grade Control continuously once the operations begin until otherwise approved by the Engineer.

Contract Control Plan:

The Contractor shall develop and submit a Contract Control Plan for all contracts which use Machine Control Grading. Contract control includes all primary and secondary horizontal and vertical control which will be used for the construction contract. Upon the Contractor's completion of the initial survey reconnaissance and control verification, but prior to beginning primary field operations, the Contractor shall submit a Contract Control Plan document (signed and sealed by the Delaware licensed Land Surveyor or Delaware Professional Engineer who oversees its preparation) for acceptance by the Engineer, which shall include the following:

1. A control network diagram of all existing horizontal and vertical control recovered in the field as contract control.
2. Include a summary of the calculated closures of the existing control network, and which control has been determined to have been disturbed or out of tolerance from its original positioning.

3. An explanation of which horizontal and vertical control points will be held for construction purposes. If necessary include all adjustments which may have been made to achieve required closures.
4. An explanation of what horizontal and vertical control (including base stations) was set to accomplish the required stakeout or automated machine operation. Include how the position of these new control points was determined.
5. Describe the proposed method and technique (technology and quality control) for utilizing the control to establish the existing and/or proposed feature location and to verify the completed feature location and/or measured quantity.
6. A listing of the horizontal and vertical datums to be used and the combined factor to be used to account for ellipsoidal reduction factor and grid scale factor.
7. If the Contractor chooses to use machine control as a method of measuring and controlling excavation, fill, material placement or grading operations as a method of measuring and controlling excavation, fill, material placement or grading operations, the Contractor Control Plan shall include the method by which the automated machine guidance system will initially be site calibrated to both the horizontal and vertical contract control, and shall describe the method and frequency of the calibration to ensure consistent positional results.
8. Issues with equipment including inconsistent satellite reception of signals to operate the GPS machine control system will not result in adjustment to the "Basis of Payment" for any construction items or be justification for granting contract time extension.

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.

2/28/2018

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.

8/15/17

763508 - PROJECT CONTROL SYSTEM DEVELOPMENT PLAN
763509 - CPM SCHEDULE UPDATES AND/OR REVISED UPDATES

Description:

The Contractor shall plan, schedule and construct the Project by using a Critical Path Method Project Schedule (CPM) meeting the requirements of these specifications. Use the CPM for coordinating and monitoring the Work specified in the Contract Documents including all activities of Subcontractors, vendors, suppliers, utilities, railroads, the Department, and all other parties associated with the construction of the Contract. Include all Work in the CPM; including but not limited to submittals, major procurement, delivery, and construction activities. Include all activities, including bid items, quantified in the Contract Documents. Base the CPM upon the entirety of the Contract Documents. Utilize CPM software that generates files compatible with Primavera P6 Project Management Release: 7.0.0.

Scheduling Representative:

Designate a scheduling representative prior to submission of the Original Critical Path Method Project Schedule (OCPM). The scheduling representative is the person primarily responsible for development and maintenance of the CPM schedule; the Contractor's representative in all matters regarding the schedule; and the Contractor's designated attendee for all schedule related meetings. The scheduling representative shall also be knowledgeable of the status of all parts of the Work throughout the duration of the Project. Replacement of the scheduling representative will require written approval from the Engineer.

Submit the qualifications of the scheduling representative to the Engineer for approval. This approval is required before the OCPM will be accepted. The scheduling representative shall have at least three years of verifiable experience for preparing and maintaining CPM project schedules on Contracts of similar size and complexity.

Critical Path, Project Completion Date, and Float:

The critical path is defined as the series of activities in a CPM that has the longest path in time. The submitted activity sequence and durations must generate a CPM with only one critical path. Divide Project wide activities such as Maintenance of Traffic, Construction Engineering, or Temporary Erosion Control that, by their nature, generate long durations and complement other activities into "establish" and "conclude" activities to prevent this type of Work from occupying a significant portion of the critical path.

The project start date, or initial data date, of the original CPM shall be the first chargeable day of Work. Nonproductive Work and administrative activities may begin and/or end prior to the project start date. The Original CPM must use all of the Contract Time and contain a critical path containing exactly zero float. Early completion schedules are not permitted. The schedule ending date of the Original CPM that uses all of the Project Time is the contract completion date.

Total Float is the difference between the schedule's finish date and the contract completion date. Free float is the difference in time between an activity's early finish and late finish. Free float is a shared commodity for the use of the Department and the Contractor and is not for the exclusive use or benefit of either party. Both parties have the full use of free float until depleted.

Submittal of the OCPM; the Start of Work and the Schedule of Record:

Complete and submit the proposed original CPM schedule (OCPM) database and the written narrative (WN) within 30 calendar days after Contract is Awarded. The WN is a description of any elements of the

Schedule that deviate from the proposed construction sequence shown in the Contract Documents. Submit the OCPM in CPM format fully compatible with Primavera P6 Project Management Release: 7.0.0 by email or CD ROM as a single compressed database in CPM format.

The Engineer will complete the review of the OCPM within 30 calendar days after submittal. If required, a Joint Review Conference will be convened at which time the Engineer and Contractor may make corrections and adjustments to the proposed OCPM. If a revision is necessary due to the Engineer's review or the Joint Review Conference, submit the proposed revision within seven calendar days after receiving the Engineer's review comments or within seven calendar days after the date of the Joint Review Conference, whichever is the latest. Make revisions in accordance with the requirements for the OCPM. The Engineer will respond to the revised OCPM within seven calendar days after receipt. Clearly identify each submittal and resubmittal for clarity by labeling "2nd Draft", "3rd Draft", etc.

Do not start any Work until the OCPM is accepted. If the Engineer is ready to issue a Notice to Proceed but the OCPM is not yet accepted, the Engineer may issue the NTP and start Contract Time, but forbid Work to begin until the OCPM is accepted. The Engineer may partially accept a OCPM and allow Work to begin if the required corrections to the OCPM are minor, but the Engineer will not accept submittals that do not show the complete schedule. The Engineer will not pay any estimates until the OCPM is partially accepted. Once the OCPM is partially accepted, the Engineer will pay the first estimate. If the Contractor fails to make a good faith effort to address the Engineer's comments before the second estimate is due for payment, the Engineer will not pay the second estimate until a good faith effort is made by the Contractor to comply. The Engineer may not withhold an estimate payment if, within the estimate period in question, the Engineer has failed to provide timely review comments in response to the Contractor's submittal. The Engineer may, however, withhold the payment of subsequent estimates if the Contractor fails to make a good faith effort to address the Engineer's comments. Upon issuance of the Notice to Proceed, the start date utilized in the OCPM will be adjusted to comply with the first chargeable day of Work. Any delay in starting Work caused by the acceptance of the OCPM by the Engineer will not be considered as a basis for any adjustment in the Contract amount or time. For Contracts that have fast-tracked starts, the Engineer and the Contractor may agree to alter the response times and approval dates listed above.

Upon notification that the OCPM has been accepted, the corrected copy will become the CPM of record. The CPM of record shall be the Contractor's work plan for completing the entire Contract as specified in the Contract Documents.

Requirements for the OCPM:

The format of the OCPM database shall be the precedence diagram method with days as the planning unit and shall be based on Calendar Days. Use the Department's partially predetermined coding structure (CS) that is furnished by the Engineer.

Activity Sequencing. Activity sequence must be logical and representative of the Contractor's order of the Work. Successors and predecessors determine the schedule logic or activity sequence. A given activity cannot start until all of the given activity's predecessors have been completed. Use only finish to start dependency relationships (links); do not use lag times without approval from the Engineer. The Engineer may request that the Contractor resequence the activities to reflect realistic job logic. When scheduling using multiple resources, each resource unit shall have a corresponding activity. Durations of activities include all the time necessary to complete the activity including, but not limited to, Contractor's non-work periods (other than those shown on the calendars), reasonably foreseeable inclement weather, weekends and holidays. Base schedule calculations on retained logic, contiguous durations, and total float as finish float.

Activity Resources. Sequence activities to reflect resource apportionment. Logically connect and code each activity to reflect the crew (resource) performing the operation. Submit a summary list of crews, their crew

codes, and their operation(s) with each schedule submission, unless unchanged. Identify responsibility for each activity. Identify Subcontractors, DBE's, utilities and Work performed by others that affects the Schedule.

Breakdown and Durations of Activities. An individual activity is required for each construction element or each activity not under the control of the Contractor that affects the sequence or progress of the Work. The Engineer reserves the right to require additional breakdown of the Work activities at any time. Each activity must be identified by a name, symbol and coding, and shall have a duration, sequence, responsibility and resource(s). Choose activity names that are descriptive and identify single construction elements. Activity symbols, or ID's, shall be unique and systematic.

Activity types must be either "task", "start milestone", or "finish milestone". Do not use "hammock" type activities. Date constraints, float and duration constraints, and/or flags for activities are not permitted.

Assign a reasonable duration to each activity representative of its scope. Durations may not exceed 14 calendar days unless approved by the Engineer. Determine the duration of each activity by using productivity rates based on Calendar Days.

Include the preparation and approval of Working Drawings as activities. Include phasing (staging) milestones as activities. Correlate phasing milestones with the sequence of construction provided in the Contract Documents. Use a separate start and finish milestone activity to delineate each phase (stage).

Utility Work. Include all Work performed by utilities on the Project as activities in the OCPM. Include each utility item of Work shown in the Contract's Utility Statement as an activity. Durations for utility activities shall be the same as the durations shown in the Utility statement for each activity unless otherwise approved by the Engineer.

Calendars. Assign a calendar to each activity in the schedule. Use a minimum of 6 calendars, when applicable: (1) Full Schedule; (2) Permit Requirements; (3) Winter Condition; (4) Concrete Work; (5) Asphalt Paving Work; and (6) Nighttime Asphalt Paving Work. Use additional calendars if needed. Calendar non-work periods shall reflect the average Delaware weather history for the jobsite and the restrictions identified in the Contract Documents. The Contractor may choose perform Work during an activity's calendar non-work period at no additional cost to the Department if weather conditions are favorable for such Work and the Work does not violate a set forth in the Contract Documents. The maximum allowable non-work period for each calendar is set forth below. The Contractor may choose to shorten non-work periods at his/her discretion.

CALENDAR	MAXIMUM NON-WORK PERIOD
Full Schedule	None
Winter Condition	December 1 through March 15
Concrete Work	December 1 through March 15
Asphalt Paving	November 15 through March 15
Nighttime Asphalt Paving	October 15 through April 30

Written Narrative (WN). Provide a written narrative (WN) as part of the OCPM explaining the following:

- (a) Relationships between activities not obviously identified
- (b) Equipment usage and limitations.
- (c) Manpower usage and limitations.
- (d) Use of additional shifts and overtime.
- (e) Activity codes, abbreviations, and activity identification system.
- (f) All calendars utilized in the CPM and the basis of determining each non-work period

- (g) All abbreviations.
- (h) Use of calendars.
- (i) Any other conditions that affect the schedule and are not readily discernible in the database.

CPM Updates:

Provide monthly updates to the CPM of record. Meet with the Engineer once a month prior to submitting the update to review the status of the schedule's activities. Prepare an updated list of activities showing all of the actual start and actual finish for each of the schedule's activities so that both parties can agree on the dates. Use the dates that were agreed upon in the meeting to status the CPM of record and submit the updated schedule to the Engineer for approval. Assign a unique file name to each update (Number/version). The data date of the update shall be the next day after the end of the update period. As part of the monthly update, submit a written description that identifies any delays or disruptions to the schedule experienced during the period of an update, any change in manpower or equipment, and any potential delays to the completion date of the schedule.

Do not include any revisions to the CPM without prior approval. Failure to submit complete updates in a timely manner may result in the withholding of estimates by the Engineer. The Engineer agrees to refrain from withholding estimates unless the Contractor is habitually late in providing updates, is more than four weeks late in submitting an update or has failed to submit an update that is part of a resolution to a serious problem that must be addressed immediately.

Revisions to the Schedule of Record:

Revisions are defined as any changes to the database other than status updates, log entries and moving the data date. Discuss any proposed revisions to the CPM verbally with the Engineer. If the revision is minor in nature, the Engineer may allow the revision to be included on the next Update of the CPM. If the Engineer determines that the revision is not minor in nature, submit the proposed revision for review and approval prior to deviating from the approved CPM. When a revision to the CPM is required due to changes in the Contract initiated by the Engineer, immediately contact the Engineer to discuss the changes. The Engineer may allow a deviation from the approved CPM for specific mitigating activities.

The Engineer may direct the Contractor to revise the schedule of record at the Contractor's expense if: the critical path has less than minus ten (-10) Calendar Days of total float due to the Contractor's failure to perform the Work in accordance with the schedule; the Contractor requests to re-sequence the Work; and/or the Contractor has performed a significant amount of Work out of sequence. The Engineer may direct the Contractor to revise the schedule for any other reason; and such a revision will be paid at the unit cost for a CPM Revision.

The Engineer will review and respond to the proposed revision within 7 Calendar Days after receipt. Resubmit, if required, within seven calendar days after receipt of the Engineer's review comments. The Engineer reserves the right to reject any proposed revision that adversely impacts the Department, utilities, or other concerned parties.

Extensions of Contract Time and/or Incentive/Disincentive Dates.

Make requests for extension of Contract time in writing and subject to the notice and timeliness of submission provisions as provided for elsewhere in the Contract. Requests for an extension of Contract time or change in an incentive/disincentive date will be evaluated by the Engineer's analysis of the CPM of record and any proposed revision submitted. Include in the request a written narrative of the events that impacted the schedule and a detailed explanation of why the Contractor cannot meet the requirements of the schedule of record. Only delays to activities that affect the Contract completion date or will be considered for an extension of Contract time. Only delays to activities that affect the completion duration of an incentive/disincentive period will be considered for an extension of an incentive/disincentive completion date. The extension of the specified Contract

completion date or incentive/disincentive date will be based upon the number of Calendar Days the Contract completion date or incentive/disincentive date is impacted as determined by the Engineer's analysis. The Engineer and Contractor may agree to defer the analysis of a potential impact to the schedule until the completion of the activities that are affected. Such a deferment does not relieve the Contractor of his/her duty to identify potential impacts to the schedule in the applicable schedule updates.

All requests for extensions of Contract Time must be supported by the most recent CPM Update. If, within a reasonable period of time, the Contractor fails to make a good faith effort to produce an acceptable CPM update and uses an unacceptable CPM update to support a request for a time extension, the Contractor loses the right to receive that time extension; and/or the right to receive compensation for that delay caused in whole or in part by the Engineer.

Final As Built Schedule.

Submit a final CPM Schedule database within 14 Calendar Days of Substantial Completion. Failure to submit a final CPM Schedule may result in the withholding of estimates by the Engineer.

Method of Measurement:

The Project Control System will be measured in two items. The item, "Project Control System Development Plan" will be lump sum. The item "CPM Schedule Updates and/or Revised Updates" will be measured one each per update that is submitted and accepted.

Basis of Payment:

The item, "763508 – Project Control System Development Plan" will be paid at the Contract's lump sum bid price on the next monthly estimate after completion of the requirements of the Project Control System Development Plan, which includes the approval of the Original CPM Schedule. Price and payment will constitute full compensation for preparing the CPM database, acquiring the necessary software, attending all scheduling meetings with the Department, submitting and resubmitting all documents and for all labor, tools, equipment and incidentals necessary to complete the Work.

The item, "763509 – CPM Schedule Updates and/or Revised Updates" will be paid at the Contract unit price per each approved CPM schedule update as described above. Price and payment will constitute full compensation for preparing, submitting and resubmitting all CPM updates, for attendance at all scheduling meetings with the Department, for preparing and reviewing a list of actual start and actual finish dates with the Engineer, and for all labor, tools, Equipment and incidentals necessary to complete the Work.

2/11/2015

763598 - FIELD OFFICE, SPECIAL I

Description:

The field office work shall consist of furnishing, erecting, equipping, maintaining, and removing a doublewide modular office and adjacent parking area. Equivalent rented space may be substituted for the modular field office and its parking area as approved by the Engineer. Rented space may be no more than one mile from the project limits. The Contractor shall submit a specific location layout drawing and construction details for the proposed field office and its parking area for approval by the Engineer. The field office and parking area shall be for the exclusive use of Department Officials, Engineers, Designers, North Region Construction (NRC) Personnel, Consultants, and Inspectors.

The field office structure shall be free of asbestos and/or other hazardous materials. The field office 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 the field office and its parking area. The costs of obtaining such licenses and permits 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 and Equipment:

The double wide field office shall be new and have a minimum floor space of 2,000 square feet with minimum exterior dimensions of 50'-0" length by 24'-0" width. The floor to ceiling height shall be nominal 8'-0". The exterior walls, ceiling, and floor 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. Each entry shall have an exterior light. 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 office of at least 5000 square feet and having a minimum of 10 functional parking spaces striped for full size cars. Lighting of the parking area shall be provided. 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 parking area and from the entrance pathways to 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 to 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 to be incidental to the "Field Office, Special I" Item.

The field office shall have full carpeting, kitchenette facilities, interior 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 alike and at least 2 complete sets of keys shall be supplied to the Engineer's representatives. The exterior doors 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 1150 square inches and a horizontal mini-blind covering the full glass area. The windows shall be insulated or have storm windows. All windows shall be equipped with a locking device. All doors and windows 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, and soft rubber hose with spray nozzle 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, 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 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. Fire extinguisher(s) may be chemical or dry powder 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.

The Contractor shall provide an alarm system for field office security with electronic, direct connection to a security service provider. The security system shall have interior motion, window, and entrance detectors and built in manual fire alarm. 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. 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 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. Signs indicating the toilet facilities as being for Men, Women, or Unisex shall be placed on the door 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.

The Contractor shall be responsible for performing or for making arrangements for all necessary telephone connections and 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 6 lines consisting of 5 direct single lines with call forward busy feature and 1 dedicated facsimile line and have 8 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) and 1 TLS or T1 circuit line for data transmission, all for the official and exclusive use of the Engineer and other representatives of the Department. Location of telephone lines and key sets shall be 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 including phone company provision of a termination point with smart-jack. Initial installation and setup costs shall be the responsibility of the Contractor as well. All subsequent monthly billings, after initial installation and setup, for the field office telephone system and the TLS or T1 circuit line 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 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. 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 a fully adjustable ergonomic design spring back stool with five leg base having wheel casters, 10 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, 2 rough plan racks, 3 legal size filing cabinets with 4 drawers, 3 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 stackable steel flat file cabinets for 43" by 32" size plan sheets each cabinet having 5 drawers with full suspension, rear hood, and hinged front depressor, 2 book shelves minimum 3'-6" by 4'-6", 3 vertical surface legal size three compartment pockets, 2 dry erase boards minimum 4' by 3' each with markers and erasers, and 2 cork bulletin boards minimum height 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 for the field office, all which are to be approved by the Engineer prior to installation. Location of the office equipment shall be as directed by the Engineer. 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:

8 heavy-duty calculators having extra large 12-digit fluorescent display, full size keyboard with contoured keys, two-color ribbon printer, and AC powered;

1 Muratec 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 compact plain paper copying machine and cabinet with stationary platen, bypass feeding, and dual loading cassette system with cassettes for letter, legal, and ledger size paper. Copy machine to have zoom and preset reduction and enlargement features, automatic two (2) sided copying, automatic document feeder with minimum 30 sheet capacity, and 20 bin collator 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;

6 compact digital cameras with 10 megapixels or greater, maximum dimensions of 3" x 5" x 3, built in flash, autofocus, video mode LCD for review of images, LCD viewfinder acceptable, removable memory compatible with compact flash, or secure digital (SD) or secure digital high capacity (SDHC), ISO compatible with 100, 200, 400 standard of quality of better, and memory cards supported by camera of 8 GB or better;

1 Canon Vixia HF M300, Panasonic HDC SD60, Samsung HMX-R10 or approved equal digital video camera, 1080p, CMOS optical sensor, digital format H.264, digital photo mode, camcorder sensor resolution 3.2 megapixels or greater, SD memory expansion card for still images, connection type, HDMI, USB, component video/audio output;

1 video projector, DLP projector, resolution of 1280x720 or greater, 16.7 million colors, contrast ratios of minimum 2000:1 or greater, video inputs to include SVGA, HDMI, S-Video and RGB, component, video modes minimum 720p or greater;

1 heavy duty 3-hole punch with minimum 40 sheet capacity;

1 extra heavy-duty stapler with anti-jam feature having capacity up to 200 sheets; and

1 comb binding machine with manual punching capacity of 10 sheets having a minimum binding capacity of 150 sheets.

Consumables as required to manage the business of the project for the 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, various size plastic combs, rolls, toner, cleaning kits, microcassette tapes and batteries, answering machine cassettes, camera batteries and memory cards/sticks, DVD

and CD R/RW media, printer ink cartridges, etc.

Maintenance of all office equipment 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 the Field Office:

Included in the unit price bid per month for the Field Office on this project will be four (4) IBM compatible Microcomputer Systems both which will be furnished and maintained by the Contractor for use by the Engineer. 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. Each of the four (4) Microcomputer Systems shall consist of:

Central Processing Unit (CPU) – Lap Top

Intel Core i5 or Core i7 series processor and wireless networking capability included,

Minimum 4.0 GB RAM with expansion capability to at least 8.0 GB, and

Microsoft "Windows® 7 Professional with 64-bit support operating system with latest updates;

Memory (Storage)

DVD+RW or Blue Ray BD-RE (rewritable) drive with support for DVD RW support capability, and 120GB hard drive minimum, integrated Ethernet 10/100. Included software shall support system and data backups with the DVD/Blue Ray device using double/dual layer DVD discs;

Monitor (LCD)

Monitor for docking station and docking station. 21" minimum diagonal visual area flat panel capable of multiple frequency color graphics, 1440x900(wide) or 1280x1024 or better resolution, 16.7 million display colors, 5 ms response time, D-Sub and DVI video input ports and

Laptop - shall have 15.4" diagonal display minimum;

Color Graphics Card

PCIe video card or integrated video;

Keyboard

Keyboard shall be ergonomic, enhanced layout minimum with keyboard

interface cable;

Printer

Laser printer, color, capable of printing 8-1/2"x 11", 11"x17" and envelope, having wireless and hard line network connectivity, 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" or "Windows® XP Professional". The required applications software follows and is to be latest version unless noted:

- collection - "Office 2010 Business Professional" with Word, Excel, antivirus - "Norton™,
- schedule - Primavera Project Planner YMBOL210\Symbol" version 3.1 SP3 or latest,
- replication - Adobe Acrobat X Suite Software w/Adobe Photoshop® CS5 suite, 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,

An electrical outlet with dedicated circuit for the main computer unit,

A wireless optical mouse with proper driving software having complete Microsoft emulation,

Necessary cables for proper operation,

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, and

All cards, hardware, and operating, anti-virus, and equipment software to be fully installed and operational;

Related Equipment

Wireless networking hub/router, 802.11g or better with all associated hardware (adapters, cables, etc) and software to enable wireless networking for resource/equipment sharing among all office computers and printers, the cost of wireless and network connections and service to be incidental to the "Field Office, Special I" Item, and

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 shutdown of the computer system with software and connections for automatic system shutdown;

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, and full technical support) for each software application shall be provided for by a 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 the field office for the length of the Contract. These consumables shall be furnished on request and include but not be limited to memory cards/sticks compatible with provided digital cameras having 8 GB or greater capacity and compatible with provided computers, 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, printer ink cartridges, and toner cartridges.

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 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 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 the 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 will be paid for on a unit price bid per month, which price shall be full compensation for performing the work specified, obtaining all licenses and permits, and furnishing of all materials, labor, tools, equipment and incidentals necessary to maintain the field office and its adjacent parking area and restore the field office area 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 this field office or its parking area. One (1) unit of payment will constitute erecting, furnishing, equipping, maintaining, and removing the double wide field offices, its entrance and parking area.

Payment will be made only for the actual number of months that the office is acceptably provided by the Contractor.

Per Standard Specification subsection 108.02, the Engineer shall issue a Notice to Proceed and stipulate the date on or before which the Contractor is expected to begin work. The field office, its entrance, and parking area and all materials and equipment shall be ready for use at least seven calendar days prior to the date which the Contractor is expected to begin work as stipulated in the Notice to Proceed and before any construction operations begin. Contract time charges shall begin on the day work actually starts or on the date stipulated in the notice to proceed, whichever is earlier. There will be no delays in beginning the contract time charges due to delays in preparing the field office.

12/11/2018

813500 - PEDESTRIAN CHANNELIZING BARRICADE SYSTEM

Description:

Furnish, place, relocate, and maintain a pedestrian channelizing barricade system in accordance with the requirements of the Americans with Disabilities Act (ADA), the Delaware Manual on Uniform Traffic Control Devices (DE MUTCD), these specifications, the plans and details, and as directed by the Engineer.

Materials:

Furnish a pedestrian channelizing barricade system meeting the National Cooperative Highway Research Program (NCHRP) Report 350 or the Manual for Assessing Safety Hardware (MASH) Test Level 2 certification. The approved system must have been tested as a barricade in accordance with the NCHRP 350 and/or MASH testing criteria. Submit a copy of the FHWA certification letter and associated documentation to the Engineer prior to acceptance by the Department and prior to installation of the device on the project.

A. Barricade Rails:

1. Manufactured from high density polyethylene (HDPE) with UV inhibitors.
2. Barricade rails must accommodate a minimum of 7 3/4" wide retroreflective sheeting on both sides of the rails.
 - a. Use white prismatic and fluorescent orange retroreflective sheeting where the white and fluorescent orange colors are placed at 45-degree angles.

B. Barricade supports:

1. Manufactured from high density polyethylene (HDPE) with UV inhibitors and internally ballasted.
 - a. Use ballast material in accordance with manufacturer recommendations.

Construction Methods:

Construct the barricade with continuous delineation along the designated walkway for use as a pedestrian channelization device.

- A. Assemble the barricade without hardware and in accordance with manufacturer's recommendations.
- B. Provide continuous upper and lower rails for hand or cane trailing.
 1. Install upper rail of barricade a minimum 36" above the ground, measured from the ground to the top of the upper rail.
 2. Install lower rail of the barricade a minimum of 1 1/2" above the ground, measured from the ground to the bottom of the lower rail.
- C. No portion of the barrier structure or supports may extend into the walkway more than 3/4" further than the common plane formed by the upper and lower rails.
- D. Ensure that barricade joints are smooth and snag-resistant to accommodate safe hand trailing.
- E. Provide accommodations for attachment of audible information devices.
- F. Pedestrian channelizing barricades cannot be used as road closure barricades or provide positive protection between the temporary walkway and vehicular traffic.
- G. Remove pedestrian channelizing when it is no longer needed.
 1. Dispose of all materials in accordance with Subsection 106.08

Method of Measurement:

Pedestrian channelizing barricade will be measured along the linear centerline of the barricade in units of linear feet per day (LF/DY), acceptably installed, maintained, removed and completed as specified.

Basis of Payment:

Pedestrian channelizing barricade will be paid for at the contract unit price bid per linear feet per day for the item Pedestrian Channelizing Barricade System. Price and payment includes full compensation for providing certification, furnishing, placing, maintaining, and relocating the barricades as required, all labor, equipment, tools, and all incidentals necessary to complete the work. Replace barricades stolen or damaged at no cost to the Department.

1/26/2018

813503 – TEMPORARY PEDESTRIAN PATHWAY

Description:

Furnish, place, relocate, and maintain temporary pedestrian pathway in accordance with the requirements of the Americans with Disabilities Act, locations, notes and details in the Plans and as directed by the Engineer.

Surface Materials:

Portland Cement Concrete	Section 1022
Asphalt Cement	Section 1012
Cold-Patch	Section 1015
Graded Aggregates	Section 1005

Construction Methods:

1. Construct a temporary pedestrian pathway having a smooth, continuous hard surface using one of these materials: Portland cement concrete (PCC), hot-mix, cold patch or milled hot-mix base course.
 - a. Placement of Portland Cement Concrete in accordance with Section 500
 - b. Placement of Bituminous Pavement in accordance with Section 400
 - c. Placement of Base Course in accordance with Section 300
2. Meet the requirements of the Americans with Disabilities Act for running slope, cross slope, vertical differences and openings.
3. Remove temporary pedestrian pathway when it is no longer needed. A. Dispose of all materials in accordance with Subsection 106.08

Method of Measurement:

The quantity of temporary pedestrian pathway will be measured as the number of square yards of surface area acceptably installed, maintained, removed and completed as specified.

Basis of Payment:

The quantity of temporary pedestrian pathway will be paid for at the Contract unit price per square yard acceptably installed, maintained, removed and completed as specified by the Contract. Price and payment will constitute full compensation for preparing, furnishing, placing, finishing and compacting the materials, maintaining the pathway, removal and disposal of the pathway when it is no longer needed, restoring and seeding the area to its original configuration, and for furnishing all labor, equipment, tools and incidentals required to complete the work.

Any necessary seeding will be paid under the respective item.

12/19/17

- 831500 - FURNISH AND INSTALL UP TO 6" SCHEDULE 80 PVC CONDUIT (OPEN CUT)
- 831501 - FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (OPEN CUT)
- 831502 - FURNISH AND INSTALL 3" SCHEDULE 80 PVC CONDUIT (OPEN CUT)
- 831503 - FURNISH AND INSTALL 2-1/2" SCHEDULE 80 PVC CONDUIT (OPEN CUT)
- 831504 - FURNISH AND INSTALL 2" SCHEDULE 80 PVC CONDUIT (OPEN CUT)
- 831505 - FURNISH AND INSTALL 1" SCHEDULE 80 PVC CONDUIT (OPEN CUT)
- 831506 - FURNISH AND INSTALL 1" FLEXIBLE METALLIC-LIQUIDTIGHT CONDUIT
- 831507 - FURNISH AND INSTALL 2" FLEXIBLE METALLIC-LIQUIDTIGHT CONDUIT
- 831508 - FURNISH AND INSTALL 3" FLEXIBLE METALLIC-LIQUIDTIGHT CONDUIT
- 831509 - FURNISH AND INSTALL 4" FLEXIBLE METALLIC-LIQUIDTIGHT CONDUIT
- 831512 - FURNISH AND INSTALL 1" SCHEDULE 80 PVC CONDUIT (TRENCH)
- 831513 - FURNISH AND INSTALL 2" SCHEDULE 80 PVC CONDUIT (TRENCH)
- 831514 - FURNISH AND INSTALL 2-1/2" SCHEDULE 80 PVC CONDUIT (TRENCH)
- 831515 - FURNISH AND INSTALL 3" SCHEDULE 80 PVC CONDUIT (TRENCH)
- 831516 - FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (TRENCH)
- 831517 - FURNISH AND INSTALL 1" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)
- 831518 - FURNISH AND INSTALL 2" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)
- 831519 - FURNISH AND INSTALL 2-1/2" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)
- 831520 - FURNISH AND INSTALL 3" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)
- 831521 - FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)
- 831522 - FURNISH AND INSTALL 1" GALVANIZED STEEL CONDUIT (TRENCH)
- 831523 - FURNISH AND INSTALL 2" GALVANIZED STEEL CONDUIT (TRENCH)
- 831524 - FURNISH AND INSTALL 2-1/2" GALVANIZED STEEL CONDUIT (TRENCH)
- 831525 - FURNISH AND INSTALL 3" GALVANIZED STEEL CONDUIT (TRENCH)
- 831526 - FURNISH AND INSTALL 4" GALVANIZED STEEL CONDUIT (TRENCH)
- 831527 - FURNISH AND INSTALL 1" GALVANIZED STEEL CONDUIT (BORE)
- 831528 - FURNISH AND INSTALL 2" GALVANIZED STEEL CONDUIT (BORE)
- 831529 - FURNISH AND INSTALL 2-1/2" GALVANIZED STEEL CONDUIT (BORE)
- 831530 - FURNISH AND INSTALL 3" GALVANIZED STEEL CONDUIT (BORE)
- 831531 - FURNISH AND INSTALL 4" GALVANIZED STEEL CONDUIT (BORE)
- 831532 - FURNISH AND INSTALL 1" GALVANIZED STEEL CONDUIT (OPEN CUT)
- 831533 - FURNISH AND INSTALL 2" GALVANIZED STEEL CONDUIT (OPEN CUT)
- 831534 - FURNISH AND INSTALL 2-1/2" GALVANIZED STEEL CONDUIT (OPEN CUT)
- 831535 - FURNISH AND INSTALL 3" GALVANIZED STEEL CONDUIT (OPEN CUT)
- 831536 - FURNISH AND INSTALL 4" GALVANIZED STEEL CONDUIT (OPEN CUT)
- 831537 - FURNISH AND INSTALL 1" GALVANIZED STEEL CONDUIT (ON STRUCTURE)
- 831538 - FURNISH AND INSTALL 2" GALVANIZED STEEL CONDUIT (ON STRUCTURE)
- 831539 - FURNISH AND INSTALL 2-1/2" GALVANIZED STEEL CONDUIT (ON STRUCTURE)
- 831540 - FURNISH AND INSTALL 3" GALVANIZED STEEL CONDUIT (ON STRUCTURE)
- 831541 - FURNISH AND INSTALL 4" GALVANIZED STEEL CONDUIT (ON STRUCTURE)
- 831542 - FURNISH AND INSTALL 2" HDPE SDR-13.5 CONDUIT (BORE)
- 831543 - FURNISH AND INSTALL 2-1/2" HDPE SDR-13.5 CONDUIT (BORE)
- 831544 - FURNISH AND INSTALL 3" HDPE SDR-13.5 CONDUIT (BORE)
- 831545 - FURNISH AND INSTALL 4" HDPE SDR-13.5 CONDUIT (BORE)
- 831560 - FURNISH AND INSTALL UP TO 4" SCHEDULE 80 PVC CONDUIT (OPEN CUT)
- 831561 - FURNISH AND INSTALL 1-1/2" SCHEDULE 80 PVC CONDUIT (TRENCH)
- 831562 - FURNISH AND INSTALL 1-1/2" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)
- 831563 - FURNISH AND INSTALL 1-1/2" GALVANIZED STEEL CONDUIT (OPEN CUT)
- 831564 - FURNISH AND INSTALL 1-1/2" GALVANIZED STEEL CONDUIT (TRENCH)
- 831565 - FURNISH AND INSTALL 1-1/2" GALVANIZED STEEL CONDUIT (BORE)
- 831566 - FURNISH AND INSTALL 1-1/2" GALVANIZED STEEL CONDUIT (ON STRUCTURE)

- 831569 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT
- 831570 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1-1/2" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT
- 831571 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT
- 831572 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2-1/2" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT
- 831573 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 3" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT
- 831574 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 4" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT
- 831575 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2" HDPE 13.5 SDR CONDUIT IN DIRECTIONAL BORE
- 831576 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2-1/2" HDPE 13.5 SDR CONDUIT IN DIRECTIONAL BORE
- 831577 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 3" HDPE 13.5 SDR CONDUIT IN DIRECTIONAL BORE
- 831578 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 4" HDPE 13.5 SDR CONDUIT IN DIRECTIONAL BORE
- 831579 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT
- 831580 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1-1/2" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT
- 831581 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT
- 831582 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2-1/2" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT
- 831583 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 3" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT
- 831584 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 4" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT
- 831585 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1" STEEL CONDUIT IN DIRECTIONAL BORE
- 831586 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1-1/2" STEEL CONDUIT IN DIRECTIONAL BORE
- 831587 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2" STEEL CONDUIT IN DIRECTIONAL BORE
- 831588 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2-1/2" STEEL CONDUIT IN DIRECTIONAL BORE
- 831589 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 3" STEEL CONDUIT IN DIRECTIONAL BORE
- 831590 - FURNISH & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 4" STEEL CONDUIT IN DIRECTIONAL BORE

Description:

This work consists of furnishing and installing a conduit or shield, of the type and size required and as specified in the contract documents or as directed by the Engineer.

Materials:

All conduits shall be UL listed.

HDPE Conduit - 2" and 4" diameter, high density polyethylene (HDPE) SDR-13.5, smooth wall conduit with permanently pre-lubricated lining, meeting ASTM D2447, ASTM D3035 and NEMA TC7 specifications.

PVC Conduit - 4", 3", 2-½", 2" or 1" diameter, schedule 80 rigid polyvinyl chloride (PVC) conduit, meeting Commercial Standard CS-272-65 (PVC), ASTM D-1785 and U.C. Standard 651 specifications.

Galvanized Steel Conduit - 4", 3", 2-1/2", 2", 1-1/2 or 1" diameter, rigid galvanized steel conduit meeting National Electric Code 2002, Article 344.

HDPE Conduit to PVC Conduit Coupling - Galvanized steel meeting Commercial Standard CS-272-65 (PVC), ASTM D-1785 and U.C. Standard 651 specifications

Flexible Metallic-Liquidtight Conduit - meets National Electric Code 2002, Article 350

Weatherhead for galvanized or PVC conduit - material shall match the adjoining conduit

Insulated grounding bushing with knockouts - meet or exceed UL 514 B

Condulets for conduit sizes - material shall match the adjoining conduit

Anchors - A 307, Galvanized per A 153

One hole conduit hangers - Steel City Series 6H or 6H-B, CADDY CD3B Rigid Conduit Hanger, or approved equal

End caps - material shall match the adjoining conduit

LONG sweep sections for conduit sizes - material shall match the adjoining conduit, and shall be manufactured 90 degree sweeping bends.

Construction Methods:

General Installation Requirements -

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 600 feet for fiber optic conduit or no more than 300 feet for copper in conduit, or as directed by the Engineer. If bends are required during installation, they must be manufactured sweeping bends. The Engineer will be consulted before any bends are installed to ensure that the proper arc is provided.

Underground conduit shall have a minimum cover as measured from the finished grade of 24 inches and a maximum cover of 48 inches. 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 metallic 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 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 inside a junction well. See Standard Construction Details or applicable Plan Details for typical methods of termination.

All underground conduits shall be marked in the ground with a metallic warning tape. The marking tape shall be buried directly above the conduit run that it identifies, at a depth of approximately 12 inches below final grade. The tape identifying ALL conduits shall be at least 6 inches wide, and have a minimum thickness of 3 mils and 500 percent elongation.

The color of the metallic 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, 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 shall be installed in each conduit for future use. In instances where the Contractor installs the cable, the fish wire may be eliminated.

All PVC and HDPE conduits shall have a continuous metallic trace wire installed for the entire length of the conduit run for all fiber installations.

Generally, Item No. 908020 - Erosion Control Blanket Mulch in the Department's 2016 Standard Specifications would be used to stabilize slopes that are 2:1 or flatter. For slopes that are steeper than 2:1 and/or receive a moderate amount of concentrated flow, Item No. 908021 - Turf Reinforcement Matting, Type 1 in the Department's 2016 Standard Specifications would be used for slope stabilization. However, if required Contractor shall refer to DelDOT's Erosion and Sediment Control Manual for the placement of steep slope stabilization.

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". The size of a bore shall not exceed the outside diameter of the conduit by more than 1 inch. If it does, cement grout shall be pumped into the void. Only HDPE and/or Galvanized Steel conduit may be installed by Directional Bore methods.

Installation of Conduit Under Existing Pavement, Open Cut -

Installation by sawcutting the full pavement depth and removing the existing pavement with an excavator or by hand methods, shall be used only for conduits not less than 1-1/2" diameter. The Engineer must first approve all open cutting of roadways. The width and length of open cut and patch restoration materials shall be as shown on the plan details. The Contractor shall be responsible for the removal of all cut pavement and surplus excavation, and for the replacement and correction of any damaged pavement outside the sawcut limits after the conduit(s) are installed. Asphalt pavement, concrete, base course, sawcutting, and/or borrow from an outside source as required to restore the roadway will be paid for separately under their respective bid items.

Installation of Conduit Under Existing Pavement, 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 be removed either by the use of an approved sod cutter and then replaced, or 6 inches 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. Sodding and/or topsoil from an outside source if required will be paid for separately under their respective bid items. Seeding is considered incidental to the conduit item.

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 apart. Any 90-degree turns in the conduit run shall be accomplished by placing the proper size and type manufactured 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 furnished and installed as specified, shall be measured as the number of linear feet of conduit furnished, installed as specified, complete in place, and accepted.

The length of each conduit installed under existing pavement by a directional bore or by open cutting the pavement shall be measured along the path of the bore or open cut, from the point that cannot be trenched to the point that trenching can resume.

The length of any conduit that is reduced or divided (with a junction well or conduit body) shall be measured as part of the larger conduit.

Basis of Payment:

The quantity of conduit will be paid for at the Contract unit price per linear foot. Price and payment shall include full compensation for all materials, and labor, topsoil and seed if needed, and incidentals necessary to complete the item. Payment for all necessary couplings shall be incidental to the price of the conduit.

For conduit installed by Directional Bore, the linear foot payment also includes excavation and backfilling for Bore Equipment, placing the conduit, caps if required, and all other requirements and incidentals listed in the body of this specification.

For conduit installed by Open Cutting existing pavement, the linear foot payment also includes excavating, backfilling, placing the conduit, disposal of excess materials, and all other requirements and incidentals listed in the body of this specification.

For conduit installed in an Unpaved Trench, the linear foot payment also includes excavating, removal of sod if required, backfilling, placing the conduit, disposal of excess materials, replacing excavated on-site sod if required, seeding if required, and all other requirements and incidentals listed in the body of this specification. Sod and/or topsoil furnished from an outside source, will be paid for separately.

For conduit installed on a structure, the linear foot payment also includes furnishing and installing anchors and hangers, removal of excess materials, and all other requirements and incidentals listed in the body of this specification.

4/12/2018

850519 - LED Luminaire: Special Fixture

Description:

This work consists of furnishing and installing a special LED light fixture on poles, in accordance with these specifications and as shown on the Plans.

Materials:

The complete fixture shall have a heavy-duty, cast-aluminum housing, door with extruded aluminum heat sink, tool-less entry, hinged removable power tray door for easy maintenance, and have fastening hardware that is stainless steel or zinc plated steel. The fixture shall meet ANSI 136.31 3.0 G vibration requirements. Fixture shall have a two-bolt slip fitter system for mounting on a 1-1/4 inch to 2-3/8 inch mounting arm connection. A grey powder coat finish, or as approved by the engineer, shall be applied to the fixture.

The fixture shall also meet the following criteria:

1. Lamps: LED
2. Wattage: 445 Watt
3. Voltage: 120V - 277V
4. CRI: 70 Minimum
5. Lumens: 48,000
6. Rated L70 Lamp Life: 100,000 Hours Minimum when operated at 25 Degrees C (77 Degrees F)
7. Distribution: Type IV - Forward Throw
8. Color Temperature: 4,000 K
9. Drive Current: 1A
10. Driver: 0-10V Dimming
11. IP66 Rating for optical portion of the housing
12. 10kV/10kA minimum internal surge suppression module, meeting UL 1449/ANSI C62.41.2 Category C
13. 3 Pin NEMA Photocontrol Receptacle with a Shorting Cap.

The fixture shall match or have similar photometrics of:

EATON GAUEON: GAN-AF-08-LED-U-T4FT

or any approved equal.

Luminaire mounting height shall be as indicated on drawings.

Luminaire shall provide point illumination of not less than the given values in the table below.

Point 1 coordinates are 90 feet longitudinal distance. Point 2 coordinates are 90 feet longitudinal and 30 feet transverse. The point values given in the table are based on a 30 foot mounting height with a Light Loss Factor of 1. The point values produced by the submitted fixture shall be included with the fixture submittal.

Foot-Candle Point Table	
Point 1	Point 2
0.16	0.33

Metal Parts shall be free of burrs and sharp corners and edges. Doors, frames, and other internal access shall be smooth operating and free of light leakage under operating conditions.

Factory applied labels shall comply with UL 1598. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place. Labels shall include the following lamp characteristics:

1. CCT and CRI for all luminaires

Luminaire finish shall be manufacturers standard paint applied to factory-assembled and tested luminaire before shipping.

The following installation requirements shall be followed:

1. Comply with NECA 1.
2. Fasten luminaire to pole.
3. Install luminaires at height indicated on drawings and level and square with finished grade.
4. Perform an illumination test.

After installation of luminaires and control devices and after electrical circuitry has been energized, test units to confirm proper operation.

Inspect each installed luminaire for damage. Replace damaged luminaires and components.

Luminaires will be considered defective if they do not pass tests and inspections.

Contractor shall provide fixture cutsheets, details, and the IESNA LM-79 and LM-80 test reports to the engineer for shop drawing review before purchasing.

Provide documentation that demonstrates that the proposed model of LED luminaire has been tested for electromagnetic compliance following the measurement protocols specified in ANSI standard C63.4-2003, and required by 47 CFR 15.31.

If Contract Documents require each light fixture to be provided with an independent photoelectric control device, a photocell shall be provided with each lighting fixture in place of the shorting cap. Provide photoelectric control using solid state circuitry, cadmium sulfide type with hermetically sealed silicone rectifier rated 120volt, 60 cycle AC and 1000 watts maximum load. Photoelectric control shall be provided with "Fail On" functionality such that in the event of a photocell becoming inoperative, the light fixture will remain in a permanent "On" state through day and nighttime hours. Photo control shall be twist lock type, with suitable mounting bracket with locking type receptacle.

The photoelectric control shall be set to operate, by default factory setting or by field adjustment, using the following criteria:

- Turn on the light fixture at a minimum vertical illumination value of 3 foot-candles.
- Turn off the light fixture at a maximum vertical illumination value of 6 foot-candles.

All electrical Materials shall conform to the requirements of the National Electrical Code of the National Fire Protection Association, and to all local and state laws and/ordinances governing such installations.

Warranty:

Luminaire to be free from defects and operate as indicated for a period of 5 years from the date of delivery.

Method of Measurement:

The quantity of LED Light Fixtures will be measured as the actual number of luminaires provided complete in place and accepted.

Basis of Payment:

The quantity of LED Light Fixtures will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for furnishing all materials, and for all labor, tools, equipment, and incidentals necessary to complete the item installation.

9/14/18

850521 - LED Luminaire: 250 Watt HPS Equivalent

Description:

This work consists of furnishing and installing an LED light fixture on poles, in accordance with these specifications and as shown on the Plans.

Materials:

The complete fixture shall have a heavy-duty, cast-aluminum housing, door with extruded aluminum heat sink, tool-less entry, hinged removable power tray door for easy maintenance, and have fastening hardware that is stainless steel or zinc plated steel. The fixture shall meet ANSI 136.31 3.0 G vibration requirements. Fixture shall have a two-bolt slip fitter system for mounting on a 1-1/4 inch to 2-3/8 inch mounting arm connection. A grey powder coat finish shall be applied to the fixture unless otherwise shown on the plans, or as directed by the engineer.

The fixture shall also meet the following criteria:

1. Lamps: LED
2. Wattage: 175 Watt Maximum
3. Voltage: 120V - 277V
4. CRI: 70 Minimum
5. Lumens: 16,000 to 20,000
6. Rated L70 Lamp Life: 100,000 Hours Minimum when operated at 25 Degrees C (77 Degrees F)
7. Distribution: Type II or Type III (unless otherwise indicated)
8. Color Temperature: 3,500 K - 4,500 K
9. Drive Current: 850mA Maximum
10. Driver: 0-10V Dimming
11. IP66 Rating for optical portion of the housing
12. 10kV/10kA minimum internal surge suppression module, meeting UL 1449/ANSI C62.41.2 Category C
13. 3 Pin NEMA Photocontrol Receptacle with a Shorting Cap.

Luminaire mounting height shall be as indicated on drawings.

Luminaire shall provide point illumination of not less than the given values in the table below.

Point 1 coordinates are 90 feet longitudinal distance. Point 2 coordinates are 90 feet longitudinal and 30 feet transverse. The point values given in the table are based on a 30 foot mounting height with a Light Loss Factor of 1. The point values produced by the submitted fixture shall be included with the fixture submittal.

Foot-Candle point Table	
Point 1	Point 2
0.27	0.37

Metal Parts shall be free of burrs and sharp corners and edges. Doors, frames, and other internal access shall be smooth operating and free of light leakage under operating conditions.

Factory applied labels shall comply with UL 1598. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place. Labels shall include the following lamp characteristics:

1. CCT and CRI for all luminaires

Luminaire finish shall be manufacturers standard paint applied to factory-assembled and tested luminaire before shipping.

The following installation requirements shall be followed:

1. Comply with NECA 1.
2. Fasten luminaire to pole.
3. Install luminaires at height indicated on drawings and level and square with finished grade.
4. Perform an illumination test.

After installation of luminaires and control devices and after electrical circuitry has been energized, test units to confirm proper operation.

Inspect each installed luminaire for damage. Replace damaged luminaires and components.

Luminaires will be considered defective if they do not pass tests and inspections.

Contractor shall provide fixture cutsheets, details, and the IESNA LM-79 and LM-80 test reports to the engineer for shop drawing review before purchasing.

Provide documentation that demonstrates that the proposed model of LED luminaire has been tested for electromagnetic compliance following the measurement protocols specified in ANSI standard C63.4-2003, and required by 47 CFR 15.31.

If Contract Documents require each light fixture to be provided with an independent photoelectric control device, a photocell shall be provided with each lighting fixture in place of the shorting cap. Provide photoelectric control using solid state circuitry, cadmium sulfide type with hermetically sealed silicone rectifier rated 120volt, 60 cycle AC and 1000 watts maximum load. Photoelectric control shall be provided with "Fail On" functionality such that in the event of a photocell becoming inoperative, the light fixture will remain in a permanent "On" state through day and nighttime hours. Photo control shall be twist lock type, with suitable mounting bracket with locking type receptacle.

The photoelectric control shall be set to operate, by default factory setting or by field adjustment, using the following criteria:

- Turn on the light fixture at a minimum vertical illumination value of 3 foot-candles.
- Turn off the light fixture at a maximum vertical illumination value of 6 foot-candles.

All electrical Materials shall conform to the requirements of the National Electrical Code of the National Fire Protection Association, and to all local and state laws and/ordinances governing such installations.

Warranty:

Luminaire to be free from defects and operate as indicated for a period of 5 years from the date of delivery.

Method of Measurement:

The quantity of LED Light Fixtures will be measured as the actual number of luminaires provided complete in place and accepted.

Basis of Payment:

The quantity of LED Light Fixtures will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for furnishing all materials, and for all labor, tools, equipment, and incidentals necessary to complete the item installation.

9/14/18

905500 - SUPER SILT FENCE

Description:

This work consists of furnishing, installing, constructing, maintaining, and ultimately removing super silt filter fences as a temporary measure to control sedimentation within the limits of construction. Super silt fence shall be constructed as shown on the details in the Plans, at the locations shown on the Plans, and as directed by the Engineer.

Materials:

General. All materials shall be approved prior to use by the Department's Materials and Research Section.

Chain Link Fence. The construction requirements for the placement of the chain link fence shall be as specified in **SECTION 727 FENCES AND GATES** with the following exceptions:

(a) Concrete footings (727.07), Top Rail, Tension Wire, Horizontal Braces shall not be used.

Fasteners. Aluminized steel tie wires long enough to securely attach the fabric to the posts.

Seed. Seed shall conform to the requirements of Section 908.

Mulch. Mulch shall conform to the requirements of Section 908.

Geotextile. Geotextile shall conform to the requirements of Section 1060. It shall be a minimum of 36" wide.

Construction Methods:

Construction of Super Silt Fence.

The Contractor shall excavate the trench along the upstream side of the post line as shown on Standard Construction Detail, Super Silt Fence. Posts shall be installed on the Downstream edge of the trench, along the established fence line. The geotextile shall be fastened to the upstream side of the chain link. The geotextile and chain link must extend a minimum of 33" above the ground. The chain link fabric and geotextile shall be embedded 8 inches into the excavated trench. The trench shall be backfilled and compacted over the chain link and geotextile to prevent water from flowing under the chain link and geotextile.

The super silt fence shall not be constructed across a ditch, or swale, or area of concentrated flow. On slopes, the terminal ends of super silt fence shall be turned upslope a sufficient distance to eliminate flow around the ends of the super silt fence. All geotextile damaged prior to installation, during installation, or during the life of the Contract shall be repaired or replaced to the satisfaction of the Engineer.

Maintenance of Super Silt Fence.

Throughout the Project construction period, the super silt fence shall be maintained by removing trapped sediment. The Contractor shall clean the geotextile of trapped sediment by tapping the geotextile when dry. No trash shall be allowed to accumulate to the height of the fence. Any geotextile that does not function due to clogging or deterioration shall be replaced.

Sediment Removal.

After every heavy rainfall, the Contractor shall check for excessive buildups of sediment which must be removed so that the super silt fence can continue to function as intended. Remove accumulated sediment when it reaches 50% of the height of the super silt fence.

Removal of Super Silt Fence.

The super silt fence shall be removed when the Engineer determines that it is no longer required. The super silt fence and all materials incidental to the super silt fence construction shall be removed. All areas affected by the construction of the super silt fence shall be restored to the original or plan contours and stabilized with seed and mulch.

Method of Measurement:

The quantity of super silt fence will be measured as the actual number of linear feet (linear meters) of super silt fence placed and accepted.

Basis of Payment:

The quantity of super silt fence will be paid for at the Contract unit price per linear foot for each type of fence. Price and payment will constitute full compensation for furnishing all materials; for excavating and backfilling associated with the construction of the super silt fence; for maintaining the super silt fence during the Project construction period; sediment removal, for removing the super silt fence with all related hardware after completion of the Project; for restoring the site; for seeding and mulching; and for all labor, equipment, tools and incidentals required to complete the work. No payment will be made for any replacement of or repairs to the super silt fence damaged prior to installation, during installation, or during the life of the Contract. No payment will be made for the replacement of the super silt fence.

3/05/2018

910500- BIO-RETENTION SOIL, MIX I

Description:

The item shall consist of furnishing and placing a soil mixture of peat, shredded mulch, and sand for planting. The soil mixture must be provided from a DNREC approved Biosoil-14 supplier. The soil mixture shall be a rich, friable material conforming to the requirements of these specifications and shall be placed within the bio-retention areas at locations as shown on the Plans, and as directed by the Engineer.

Materials:

The Bioretention Soil, Mix 1 (BSM) is a mixture of peat, mulch, and sand consisting of the following:

Item	Composition by Volume	Reference
Peat	10%	Aged, STA Certified Compost.
Shredded 3x Hardwood Mulch	30%	
Sand	60%	Concrete Sand; fineness modulus >2.75

At least 45 days prior to the start of construction of bio-retention facilities, the Contractor shall submit the BSM supplier to the Engineer for approval. Stockpiles of BSM must be placed on an impervious surface, and once a stockpile of the BSM has been established, no material shall be added to the stockpile. BSM stockpiles shall be covered at all times.

The BSM shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches excluding mulch. No other materials or substances shall be mixed or dumped within the bio-retention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The BSM shall be provided from DNREC approved Biosoil-14 supplier

Construction Methods:

Bio-retention facilities shall not be constructed until all contributing drainage areas are stabilized with at least 3" (75 mm) tall grass of the specified mix as shown on the Contract Plans and to the satisfaction of the Engineer. Bio-retention facilities shall not be used as sediment control facilities. No heavy equipment shall operate within the perimeter of a bio-retention facility during excavation, underdrain placement, backfilling, planting, or mulching of the facility.

The bioretention facility shall be excavated to the dimensions, side slopes, and elevations shown on the Contract Plans. The method of excavation shall minimize the compaction of the bottom of the bioretention facility. Excavators and backhoes, operating on the ground adjacent to the bioretention facility, shall be used to excavate the facility if possible. Low ground-contact pressure equipment may also be used for excavation. No heavy equipment shall be allowed on the bottom of the bioretention facility.

The BSM shall be placed and graded using low ground-contact pressure equipment or by excavators and/or backhoes operating on the ground adjacent to the bio-retention facility. No heavy equipment shall be used within the perimeter of the bio-retention facility before, during, or after the placement of the BSM. The BSM shall be placed in horizontal layers not to exceed 12" (300 mm) for the entire area of the bio-retention facility. The BSM shall be compacted by saturating the entire area of the bio-retention facility after each lift of BSM is placed until water flows from the underdrain. Water for saturation shall be applied by spraying or sprinkling. Saturation of each lift shall be performed in the presence of the Engineer. An appropriate sediment control device shall be used to treat any sediment-laden water discharged from the underdrain. If the BSM becomes contaminated during

the construction of the facility, the contaminated material shall be removed and replaced with uncontaminated material at no additional cost to the Department. Final grading of the BSM shall be performed after a 24-hour settling period. Final elevations shall be within 2" (50 mm) of elevations shown on the Contract Plans.

Method of Measurement and Basis of Payment:

The quantity of Bio-retention Soil, Mix I will be paid for at the Contract unit price per cubic yard (meter). Price and payment will constitute full compensation for furnishing, hauling, storing, re-handling of material and placement of the BSM backfill, compaction of the BSM backfill by saturation, grading and slope adjustments, and for all material, labor, equipment, tools, and incidentals necessary satisfactorily complete the work.

8/20/19

UTILITY STATEMENT
AUGUST 18, 2019
Revised SEPTEMBER 10, 2019
P6 #15-00001
F.A.P. #ESTP - N011 (31)
State Contract No. T201504401
ELKTON ROAD
MD LINE TO CASHO MILL ROAD
New Castle County

The following utility companies maintain facilities within the project limits:

City of Newark - Electric
City of Newark - Sewer
City of Newark - Water
Comcast Cable Communications, Inc.
Delmarva Power – Electric Distribution
Delmarva Power – Gas Distribution
Eastern Shore Natural Gas
Elkton Gas
FMC Stine Research Center
Level 3 Communications
Lightower Fiber Networks (Crown Castle/Fibertech)
Suez Water
UNITI Fiber
Unknown Utility
Verizon of Delaware
Windstream Broadband

The following is a breakdown of the utilities involved, adjustments and/or relocations as required (all stations, offsets, lengths and calendar days are approximate):

City of Newark - Electric

City of Newark maintains aerial and underground facilities throughout the project limits.

The City of Newark proposes the following adjustments and/or relocations in advance of project construction to its existing facilities:

1. Eight (8) existing poles will be adjusted within the project limits at the following locations:
 - a. Sta. 305+47 offset right 49' on McIntire Drive: Existing utility pole to remain; Proposed LED Light.
 - b. Sta. 305+41 offset left 73' on McIntire Drive: Existing utility pole to remain; 120/240V power source to be provided for signal equipment.

- c. Sta. 6052+07 offset left 57' on Elkton Road: Existing utility pole to remain; Relocate anchor and guys.
 - d. Sta. 6056+74 offset left 57' on Elkton Road: Existing utility pole to remain; Relocate anchor and guy.
 - e. Sta. 6059+19 left offset 58' on Elkton Road.: Existing utility pole to remain; Relocate anchor and guy.
 - f. Sta. 6080+33 offset left 69' on Elkton Road: Existing utility pole to remain: Existing lighting mast arm and luminaire to be removed; Proposed LED Light. Relocate anchor and guy.
 - g. Sta. 6081+76 offset left 60' on Elkton Road: Existing utility pole to remain; Existing lighting mast arm and luminaire to be removed; Proposed LED Light
 - h. Sta. 6083+19 offset left 55' on Elkton Road: Existing utility pole to remain; Existing lighting mast arm and luminaire to be removed; Proposed LED Light.
2. Twelve (12) proposed LED lights will be installed and powered on other utility poles within the project limits at the following locations:
- a. Sta. 103+13 offset left 63' on Otts Chapel Road.: Proposed LED light on DPL pole.
 - b. Sta. 104+76 offset left 62' on Otts Chapel Road.: Proposed LED light on DPL pole.
 - c. Sta. 107+21 offset left 61' on Otts Chapel Road.: Proposed LED light on DPL pole.
 - d. Sta. 7012+27 offset right 57' on Elkton Road.: Proposed LED light on DPL pole.
 - e. Sta. 7013+76 offset right 56' on Elkton Road.: Proposed LED light on DPL pole.
 - f. Sta. 7015+17 offset right 54' on Elkton Road.: Proposed LED light on DPL pole.
 - g. Sta. 7016+83 offset right 53' on Elkton Road.: Proposed LED light on DPL pole.
 - h. Sta. 7025+20 offset right 49' on Elkton Road.: Proposed LED light on DPL pole.
 - i. Sta. 7027+06 offset right 62' on Elkton Road.: Proposed LED light on DPL pole.
 - j. Sta. 6030+05 offset left 62' on Elkton Road: Proposed LED Light on DPL pole.
 - k. Sta. 6031+86 offset left 61' on Elkton Road.: Proposed LED light on DPL pole.
 - l. Sta. 6017+15 offset left 50' on Elkton Road.: Proposed LED light on Verizon pole.
3. Two (2) existing luminaires and mast arms will be removed on other utility poles within the project limits at the following locations:
- a. Sta. offset 6029+01 left 51' on Elkton Road: Existing lighting mast arm and luminaire to be removed on DPL pole.
 - b. Sta. offset 6017+15 left 44' on Elkton Road: Existing lighting mast arm and luminaire to be removed on Verizon pole.
4. Thirty-nine (39) existing poles and corresponding underground facilities will be relocated within the project limits at the following locations:
- a. Sta. 6012+10 offset left 47' to Sta. 6012+13 offset left 50' on Elkton Road, relocate secondary underground riser.
 - b. Sta. 6015+64 offset left 45' to Sta. 6015+60 offset left 52' on Elkton Road: Proposed LED Light. Relocate anchor and guys.
 - c. Sta. 6030+06 offset left 51' to Sta. 6030+05 offset left 62', relocate 2-single phase underground risers to new DP&L pole.

- d. Sta. 6032+23 offset left 49' and Sta. 6032+21 offset left 51' to Sta. 6032+29 offset left 61' on Elkton Road.
- e. Sta. 6033+37 offset left 51' to Sta. 6033+36 offset left 61' on Elkton Road: Proposed LED Light. Relocate anchor and guys.
- f. Sta. 6034+44 offset left 48' to Sta. 6034+44 offset left 58' on Elkton Road.
- g. Sta. 501+83 offset right 29' to Sta. 501+56 offset right 33' on Interchange Blvd.: Relocate anchor and guys, relocate 3 phase underground risers.
- h. Sta. 501+86 offset left 35' to Sta. 501+56 offset left 38' on Interchange Blvd.: Relocate anchor and guys, relocate 3 phase underground risers.
- i. Sta. 6036+06 offset left 48' to Sta. 6036+18 offset left 58' on Elkton Road.
- j. Sta. 6037+70 offset left 48' to Sta. 6037+71 offset left 58' on Elkton Road. Remove anchor and guy.
- k. Sta. 6039+14 offset left 47' to Sta. 6039+13 offset left 57' on Elkton Road.
- l. Sta. 6040+45 offset left 48' to Sta. 6040+45 offset left 58' on Elkton Road. Relocate anchor and guys.
- m. Sta. 6041+51 offset left 48' to Sta. 6041+51 offset left 58' on Elkton Road.
- n. Sta. 7041+07 offset right 56' to Sta. 7041+09 offset right 83', relocate 1 primary phase underground risers to new DP&L pole.
- o. Sta. 6042+57 offset left 50' to Sta. 6042+57 offset left 58' on Elkton Road. Existing lighting mast arm and luminaire to be relocated. Relocate anchors and guys.
- p. Sta. 7042+62 offset right 56' to Sta. 7042+62 offset right 86', relocate 2 primary underground risers to new DP&L pole.
- q. Sta. 6044+75 offset left 52' to Sta. 6044+74 offset left 60' on Elkton Road.: Relocate anchor and guys, relocate underground secondary riser.
- r. Sta. 7044+75 offset right 55' to Sta. 7044+72 offset right 72' relocate 1 primary underground riser to new pole.
- s. Sta. 6046+66 offset left 54' to Sta. 6046+66 offset left 60' on Elkton Road.
- t. Sta. 6048+57 offset left 55' to Sta. 6048+24 offset left 61' on Elkton Road.: Remove anchor and guy, relocate secondary underground riser.
- u. Sta. 6050+32 offset left 56' to Sta. 6050+32 offset left 64' on Elkton Road.: Relocate 2 primary underground risers to new pole, relocate anchor and guys.
- v. Sta. 7057+54 offset right 85', relocate primary underground riser to new DP&L pole at Sta. 7057+54 offset right 88'.
- w. Sta. 6057+96 offset left 60' to Sta. 6057+98 offset left 60' on Elkton Road.: Relocate anchor and guys.
- x. Sta. 6060+22 offset left 52' to Sta. 6060+23 offset left 58' on Elkton Road.
- y. Sta. 6061+32 offset left 49' to Sta. 6061+32 offset left 58' on Elkton Road.: Relocate anchor and guys.
- z. Sta. 6062+45 offset left 45' to Sta. 6062+44 offset left 58' on Elkton Road.
- aa. Sta. 383+74 offset right 47' to Sta. 383+57+06 offset right 57' on Suburban Drive: Relocate underground primary riser, 1 phase secondary riser, anchor and guys.
- bb. Sta. 384+04 offset right 61' to Sta. 383+98 offset right 83' on Suburban Drive: 120/240V power source to be provided for ITMS equipment. Relocate 1 phase secondary underground riser.

- cc. Sta. 6064+30 offset left 47' to Sta. 6064+08 offset left 60' on Elkton Road.: Existing lighting mast arm and luminaire to be removed. Relocate anchor and guys.
 - dd. Sta. 6066+34 offset left 48' to Sta. 6066+28 offset left 62' on Elkton Road. Existing lighting mast arm and luminaire to be removed. Relocate anchor and guys.
 - ee. Sta. 6067+81 offset left 49' to Sta. 6067+80 offset left 65' on Elkton Road. Existing lighting mast arm and luminaire to be removed; Proposed LED Light. Relocate anchor and guy.
 - ff. Sta. 6069+34 offset left 49' to Sta. 6069+34 offset left 63' on Elkton Road: Proposed LED Light. Relocate anchor and guy.
 - gg. Sta. 6070+73 offset left 50' to Sta. 6070+73 offset left 62' on Elkton Road: Proposed LED Light. Relocate anchor and guy.
 - hh. Sta. 6072+05 offset left 51' to Sta. 6072+04 offset left 61' on Elkton Road: Proposed LED Light. Relocate anchor and guy.
 - ii. Sta. 6073+30 offset left 50' to Sta. 6073+19 offset left 61' on Elkton Road: Existing lighting mast arm and luminaire to be removed. Proposed LED Light. Relocate anchor and guy.
 - jj. Sta. 6074+60 offset left 50' to Sta. 6074+51 offset left 54' on Elkton Road: Existing lighting mast arm and luminaire to be removed. Proposed LED Light. Install span support pole and guys at sta. 7074+49 offset right 45'.
 - kk. Sta. 6075+85 offset left 48' to Sta. 6075+74 offset left 61' on Elkton Road: Existing lighting mast arm and luminaire facing Elkton Road to be removed; Existing lighting mast arm and luminaire facing Millstone Drive to be relocated; Proposed LED Light.
 - ll. Sta. 6077+33 offset left 56' to Sta. 6077+31 offset left 69' on Elkton Road: Existing lighting mast arm and luminaire to be removed. Proposed LED Light. Install anchor and guy.
 - mm. Sta. 6079+04 offset left 65' to Sta. 6078+89 offset left 68' on Elkton Road: Existing lighting mast arm and luminaire to be removed. Proposed LED Light.
5. Two (2) new poles will be installed within the project limits at the following locations:
- a. Sta. 6045+80 offset left 60'.
 - b. Sta. 6025+07 offset left 62'.
6. Three (3) existing poles will be removed within the project limits at the following locations:
- a. Sta. 6037+69 offset left 59'.
 - b. Sta. 7042+62 offset right 70'.
 - c. Sta. 7057+54 offset right 85'.
7. Four (4) existing pedestrian lights will be relocated within the project limits at the following locations:
- a. Sta. 301+22 offset left 22' on McIntire Dr.
 - b. Sta. 302+44 offset left 20' on McIntire Dr.
 - c. Sta. 303+69 offset left 25' on McIntire Dr.
 - d. Sta. 304+83 offset left 25' on McIntire Dr.

8. One (1) existing pedestrian light will be removed within the project limits at the following location:
 - a. Sta. 305+90 offset left 26' on McIntire Dr.

The City of Newark will complete these changes. This work will take approximately 140 calendar days.

These facilities will remain in place and active during the duration of this contract.

No working/existing City of Newark facilities can be taken out of service.

City of Newark - Sewer

City of Newark maintains the following facilities within the project limits:

1. 1.5" PVC sanitary sewer force main on the westerly side of Elkton Road and crosses Elkton Road at Sta. 7016+66 and continues along the easterly side of Elkton Road and connects to 4" PVC sanitary sewer force main at Sta. 7016+70.
2. 4" PVC sanitary sewer force main on the easterly side of Elkton Road that exits a pump station at Sta. 7015+10, and discharges to 8" PVC sanitary sewer main at Sta. 7037+67.
3. 8" PVC sanitary sewer main on the easterly side of Elkton Road from Sta. 7037+67 to Sta. 7049+63 where it heads east away from the project area.
4. 8" PVC sanitary sewer main on the westerly side of Elkton Road from Sta. 6064+66 and connects to the active 30" PVC sanitary sewer main at Sta. 6084+43.
5. 30" Ductile Iron sanitary sewer main that crosses Elkton Road at Sta. 6084+43, throughout the project limits.
6. 18" Asbestos Cement sanitary sewer main that crosses Elkton Road at Sta. 6084+27, throughout the project limits.

City of Newark Sewer proposes the following adjustments and/or relocations in the construction project to its existing facilities:

1. Install 4" ductile iron force main/4" HDPE force main from Sta. 7015+11 offset right 84' to Sta. 7027+01 offset right 45' per contract plans and profiles.
 - a. Install 48" sanitary cleanout manhole and connect to ex. 4" PVC sanitary sewer force main at Sta. 7015+11 offset right 84'.
 - b. Install 48" sanitary air release manhole at Sta. 7016+32 offset right 127'.
 - c. Install 48" sanitary cleanout manhole at Sta. 7016+51 offset right 64'.
 - d. Install 84"x36" sanitary cleanout junction chamber at Sta. 7017+10 offset right 47'.
 - e. Install 48" sanitary cleanout manhole at Sta. 7019+56 offset right 45'.
 - f. Install 48" sanitary cleanout manhole at Sta. 7021+13 offset right 77'.
 - g. Directional Drill 4" IPS HDPE DR-11 with 8" IPS HDPE DR-11 Casing Pipe from launching pit at Sta. 7021+03 offset right 75' to receiving pit at Sta. 7023+73 offset right 66'.

- h. Install 48" sanitary cleanout manhole at Sta. 7023+53 offset right 67'.
 - i. Install 48" sanitary cleanout manhole and connect to ex. 4" PVC sanitary force main at Sta. 7023+93 offset right 40'.
 - j. Install 48" sanitary cleanout manhole and connect to ex. 4" PVC sanitary force main at Sta. 7027+01 offset right 45'.
2. Install 1.5" IPS HDPE DR-11 force main from Sta. 7016+68 offset left 23' to Sta. 7017+10 offset right 47' per contract plans and profiles.
 - a. Connect to ex. 1.5" IPS HDPE DR-11 sanitary force main at Sta. 7016+68 offset left 23'.
 - b. Connect to installed 84"x36" sanitary cleanout junction chamber at Sta. 7017+11 offset right 46'.
 3. Install 4" ductile iron force main from Sta. 7029+28 offset right 68' to Sta. 7039+31 offset right 64' per contract plans and profiles.
 - a. Install 48" sanitary cleanout manhole and connect to ex. 4" PVC sanitary force main at Sta. 7029+28 offset right 68'.
 - b. Install 48" sanitary cleanout manhole at Sta. 7033+72 offset right 65'.
 - c. Install 48" sanitary force main discharge manhole (epoxy lined) at Sta. 7039+31 offset right 64'.
 4. Install 8" PVC sewer main from Sta. 7039+31 offset right 64' to Sta. 7045+64 offset right 38' per contract plans and profiles.
 - a. Install 48" sanitary force main discharge manhole (epoxy lined) at Sta. 7042+29 offset right 83'.
 - b. Install 48" sanitary manhole at Sta. 7043+80 offset right 70'.
 - c. Connect to ex. 48" sanitary manhole at Sta. 7045+64 offset right 38'.
 5. Abandon ex. 4" PVC sanitary sewer force main from Sta. 7015+11 offset right 84' to Sta. 7027+01 offset right 45'. All abandoned sewer mains shall be filled with flowable fill.
 - a. Cap ex. 4" PVC sanitary sewer force main at Sta. 7015+12 offset right 84'.
 - b. Remove ex. 48" sanitary cleanout manhole at Sta. 7015+64 offset right 25'.
 - c. Cap ex. 1.5" PVC sanitary sewer force main at Sta. 7016+71 offset right 9'.
 - d. Remove ex. 48" sanitary cleanout manhole at Sta. 7017+09 offset right 52'.
 - e. Cap ex. 2" PVC sanitary sewer force main at Sta. 7017+08 offset right 41'.
 - f. Remove ex. 48" sanitary cleanout manhole at Sta. 7019+90 offset right 41'.
 - g. Cap ex. 4" PVC sanitary sewer force main at Sta. 7023+97 offset right 36'.
 - h. Cap ex. 4" PVC sanitary sewer force main at Sta. 7026+76 offset right 33'.
 - i. Remove ex. Sanitary sewer cleanout manhole at Sta. 7026+91 offset right 33'.
 - j. Cap ex. 4" PVC sanitary sewer force main at Sta. 7027+02 offset right 45'.
 6. Abandon ex. 4" PVC sanitary sewer force main from Sta. 7029+34 offset right 64' to Sta. 7037+67 offset right 39'. All abandoned sewer mains shall be filled with flowable fill.
 - a. Cap ex. 4" PVC sanitary sewer force main at Sta. Sta. 7029+34 offset right 64'.

- b. Remove ex. Sanitary sewer cleanout manhole at Sta, 7029+88 offset right 29'.
 - c. Remove ex. Sanitary sewer manhole at Sta, 7037+67 offset right 39'.
7. Abandon ex. 8" PVC sanitary sewer main from Sta. 7037+67 offset right 39' to Sta. 7045+64 offset right 38'. All abandoned sewer mains shall be filled with flowable fill.
- a. Remove ex. Sanitary sewer manhole at Sta, 7041+63 offset right 40'.
 - b. Cap ex. 8" PVC sanitary sewer main at Sta. 7045+64 offset right 38'.
8. Adjust the following.
- a. Sewer manhole at Sta. 6014+26 offset left 47'to be adjusted.
 - b. Sewer manhole at Sta. 6028+81 offset left 99'to be adjusted.
 - c. Sewer manhole at Sta. 7045+64 offset right 38'to be adjusted.
 - d. Sewer manhole at Sta. 7049+64 offset right 37'to be adjusted.
 - e. Sewer manhole at Sta. 6064+66 offset left 92'to be adjusted.
 - f. Sewer manhole at Sta. 6074+04 offset left 44'to be adjusted.
 - g. Sewer manhole at Sta. 6075+50 offset left 41'to be adjusted.
 - h. Sewer manhole at Sta. 6075+91 offset left 39'to be adjusted.
 - i. Sewer manhole at Sta. 6079+46 offset left 86'to be adjusted.
 - j. Sewer manhole at Sta. 6079+90 offset left 42'to be adjusted.
 - k. Sewer manhole at Sta. 6083+18 offset left 17'to be adjusted.
 - l. Sewer valve at Sta. 6013+23 offset left 32'to be adjusted.
 - m. Sewer valve at Sta. 6014+26 offset left 37'to be adjusted.
9. All sanitary sewer construction, unless otherwise noted, shall be in accordance with the City of Newark Sewer details, standards, and specifications, and all subsequent revisions, details, and supplements. All valves, bends and fittings must be properly restrained per City of Newark Sewer specifications. Operation of any valves or bypass pumping shall be coordinated with the City of Newark Public Works and Water Resources Department prior to operation.

The State's contractor will complete these changes.

These facilities will remain in place and active during the duration of this contract.

No working/existing City of Newark facilities can be taken out of service.

City of Newark - Water

City of Newark maintains the following facilities within the project limits:

- 1. 12" Ductile Iron water main that runs throughout the project limits on the westerly side of Elkton Road from Sta. 7084+77 to Sta. 6064+13. The 12" Ductile Iron water main then turns 90° and runs along the westerly side of Suburban Drive.

2. 6" Ductile Iron water main that comes from the west and connects at a tee to the 12" Ductile Iron water main at Sta. 6067+98.
3. 6" Ductile Iron water main that comes from the west and connects at a tee to the 12" Ductile Iron water main at Sta. 6071+33.
4. 6" Ductile Iron water main that comes from the west and connects at a tee to the 12" Ductile Iron water main at Sta. 6074+10.
5. 6" Ductile Iron water main that comes from the west and connects at a tee to the 12" Ductile Iron water main at Sta. 6075+32.

City of Newark Water proposes the following adjustments and/or relocations in the construction project to its existing facilities:

- Install 12" ductile iron water main from Sta. 6064+46 offset left 86' to Sta. 6073+97 offset left 36' per contract plans and profiles.
 - a. 12"x12" wet tap on existing 12" ductile iron water main at Sta. 6064+46 offset left 86'.
 - b. Jack and bore 20" Steel Casing Pipe and 12" ductile iron water main from launching pit at Sta. 6066+07 offset left 79' to receiving pit at Sta. 6064+53 offset left 76'.
 - c. Install 12" water valve at Sta. 6067+92 offset left 82'.
 - d. Install 12"x6" tee, 6" water valve, and tie into ex. 6" ductile iron water main at Sta. 6067+94 offset left 82'.
 - e. Install 12"x6" tee, 6" water valve, and Fire Hydrant at Sta. 6069+70 offset left 83'.
 - f. Install 12" water valve at Sta. 6071+30 offset left 83'.
 - g. Install 12"x6" tee, 6" water valve, and tie into ex. 6" ductile iron water main at Sta. 6071+35 offset left 81'.
 - h. 12"x12" wet tap on existing 12" ductile iron water main at Sta. 6074+03 offset left 35'.
- Abandon ex. 12" ductile iron water main from Sta. 6064+39 offset left 79' to Sta. 6073+90 offset left 35'. All abandoned water mains shall be filled with flowable fill.
 - a. Plug active 12" ductile water main and cap ex. 12" ductile iron water main at Sta. 6064+39 offset left 79'
 - b. Cap ex. 6" ductile iron water main at Sta. 6067+97 offset left 85'.
 - c. Cap ex. 6" ductile iron water main at Sta. 6071+37 offset left 84'.
 - d. Cap ex. 6" ductile iron water main at Sta. 6074+10 offset left 35'.
 - e. Abandon 12" water valve at Sta. 6064+11 offset left 35'.
 - f. Abandon 6" water valve at Sta. 6067+96 offset left 34'.
- Adjust the following.
 - a. Water valve at Sta. 6073+96 offset left 36' to be adjusted.
 - b. Water valve at Sta. 6075+33 offset left 72' to be adjusted.
 - c. Adjust existing fire hydrant at approx. Sta. 6075+30 offset left 73' and re-install per The City of Newark, Delaware Department of Public Works specifications.
 - d. Water valve at Sta. 6075+33 offset left 35' to be adjusted.
 - e. Water valve at Sta. 6079+27 offset left 51' to be adjusted.
 - f. Water valve at Sta. 6079+29 offset left 54' to be adjusted.

- All water main construction, unless otherwise noted, shall be in accordance with the City of Newark Public Works and Water Resources details, standards, and specifications, and all subsequent revisions, details, and supplements. All valves, bends and fittings must be properly restrained per City of Newark Water specifications. Operation of any valves shall be coordinated with the City of Newark Water Department prior to operation.

The State's contractor will complete these changes.

Comcast Cable Communications, Inc.

Comcast Cable Communication maintains the following aerial facilities within the project limits:

1. Comcast maintains aerial facilities across McIntire Drive from pole #54D34 at Sta. 305+75 RT49 to pole #54D32 at Sta. 305+41 LT73 and continuing across Elkton Road to pole #54C22 at Sta. 6064 L45.
2. Comcast maintains aerial facilities along the Southbound side of Elkton Road from Pole #54C22 at Sta. 6064 L45 extending North-East to Pole #57E42 at Sta. 6030+06 L51.
3. Comcast maintains aerial facilities along the Southbound side of Elkton Road from Pole #34D12 at Sta. 6073+30 L50 extending North-East to Pole #34E12 at Sta. 6080+32 L69.
4. Comcast maintains aerial facilities across Elkton Road from pole#30F41 at Sta. 6086+59 L33 to pole #30F44 at Sta. 7086+71 R26.
5. Comcast maintains aerial facilities along the Northbound side of Elkton Road from Pole #30F43 at Sta. 7085+90 R428 extending North-East to Pole #30F45 at Sta. 7087+75 R26 and extending further Northbound outside project limits.

Comcast Cable Communication maintains the following underground facilities within the project limits:

1. Comcast maintains underground facilities along east side of McIntire Drive from pole #54D34 at Sta. 305+75 RT49 and continuing South outside project limits.
2. Comcast maintains underground facilities from pole #54D34 at Sta. 305+75 RT49 crossing Elkton Road to approximate Sta. 6016+66 L51'
3. Comcast maintains underground facilities running along the utility pole line along Southbound side of Elkton Road from approximate sta.6016+66 L51' to pole #57E42 at Sta. 6030+06 L51'.
4. Comcast maintains underground facilities at pole #57E42 at Sta. 6030+06 L51' and extending north outside the project limits.
5. Comcast maintains underground facilities running along the utility pole line along Southbound side of Elkton Road from approximate pole #57E42 at Sta. 6030+06 L51' to approx. Sta. 6048+44 L51' near pole #38A15.
6. Comcast maintains underground facilities across Elkton Road from approximate Sta. 6048+44 L51' to Sta. 7048+47 R60'.

7. Comcast maintains underground facilities running along the west side of Interchange Blvd. at Sta. 7042+82 R84' and Sta. 7042+97 R65' and extending south outside the project limits.
8. Comcast maintains underground facilities running along the Northbound side of Elkton Road from Sta. 7042+82 R84' and Sta. 7042+97 R65' to Sta. 7048+47 R60' and Sta. 7048+50 R56'.
9. Comcast maintains underground facilities running along the Northbound side of Elkton Road from Sta. 7048+47 R60' and Sta. 7048+50 R56' to Sta. 7054+63 R53' and Sta. 7054+70 R48'.
10. Comcast maintains underground facilities running along the Northbound side of Elkton Road from Sta. 7048+47 R60' and Sta. 7048+50 R56' to Sta. 7054+63 R53' and Sta. 7054+70 R48'.
11. Comcast maintains underground facilities from Sta. 7048+47 R60' and Sta. 7048+50 R56' to Sta. 7054+63 R53' and Sta. 7054+70 R48' and continuing south outside the project limits.
12. Comcast maintains underground facilities running along the utility pole line along Southbound side of Elkton Road from approximate Sta. 6048+44 L51' to approximate Sta. 6062+69 L43' near pole #34B31.
13. Comcast maintains underground facilities running along Southbound side of Elkton Road from approximate Sta. 6062+69 L43' near pole #34B31 curving along Suburban Drive to pole #34C35 at Sta. 383+73 L48' and continuing north outside the project limits.
14. Comcast maintains underground facilities running along Southbound side of Elkton Road from approximate Sta. 6062+69 L43' near pole #34B31 to pole # 34C32 at Sta. 6066+36 L48' and continuing north along east side of Suburban Drive.
15. Comcast maintains underground facilities running along Southbound side of Elkton Road from pole # 34C32 at Sta. 6066+36 L48' to pole #34D21 at Sta. 6073+30 L50'.
16. Comcast maintains underground facilities running along Southbound side of Elkton Road from pole #34D21 at Sta. 6073+30 L50' to pole #6080+36 L70'.
17. Comcast maintains underground facilities running along Southbound side of Elkton Road from pole #6080+36 L70' to pole #30F41 at Sta. 6086+59 L33'.
18. Comcast maintains underground facilities running along Southbound side of Elkton Road from pole #30F41 at Sta. 6086+59 L33' to Sta. 6087+76 L34' and curving along Casho Mill Road and continuing north outside project limits.

Anticipated Comcast Aerial Relocations:

1. Comcast will relocate aerial facilities to the new Delmarva/Verizon poles.

Anticipated Comcast Underground Relocations:

1. Comcast will relocate underground facilities to approved DelDOT locations.

One (1) existing pole will be removed within the project limits at the following locations:

1. Sta. 7044+65 offset right 59.'

Comcast will complete these relocations/adjustments are expected to take approximately 90 calendar days to complete after the Company has been given a minimum 30 calendar days advance notice that work shall begin, and the right-of-way and proposed work has been laid out by the State's contractor.

Delmarva Power – Electric Distribution

The Delmarva Power – Electric Distribution Company maintains aerial and underground facilities throughout the project limits.

Existing Pole at 7019+56 Offset 48' RT will need to be held during City of Newark sewer manhole construction.

The Delmarva Power – Electric Distribution Company proposes the following adjustments and/or relocations in advance of project construction to its existing facilities:

1. Three (3) existing poles will be adjusted within the project limits at the following locations:
 - a. Sta. 104+76 offset left 62' on Otts Chapel Rd: Existing utility pole to remain; Proposed LED Light (to be installed and powered by the City of Newark)
 - b. Sta. 103+13 offset left 63' on Otts Chapel Road: Existing utility pole to remain; Proposed LED Light (to be installed and powered by the City of Newark)
 - c. Sta. 7057+62 offset right 55' on Elkton Road: Existing utility pole to remain; Existing lighting mast arm and luminaire to be removed

2. Forty-two (42) existing poles will be relocated within the project limits at the following locations:
 - a. Sta. 7010+86 offset right 57' to Sta. 7010+80 offset right 58' on Elkton Road
 - b. Sta. 7012+32 offset right 57' to Sta. 7012+27 offset right 57' on Elkton Road: Proposed LED Light (to be installed and powered by the City of Newark)
 - c. Sta. 7013+81 offset right 56' to Sta. 7013+76 offset right 56' on Elkton Road: Proposed LED Light (to be installed and powered by the City of Newark)
 - d. Sta. 7015+28 offset right 55' to Sta. 7015+17 offset right 54' on Elkton Road: Proposed LED Light (to be installed and powered by the City of Newark)
 - e. Sta. 7016+78 offset right 53' to Sta. 7016+83 offset right 53' on Elkton Road: Proposed LED Light (to be installed and powered by the City of Newark)
 - f. Sta. 7017+96 offset right 50' to Sta. 7017+91 offset right 50' on Elkton Road.
 - g. Sta. offset 7025+42 right 46' to Sta. 7025+20 offset right 49' on Elkton Road: Existing lighting mast arm and luminaire to be relocated, Proposed LED Light (to be installed and powered by the City of Newark)
 - h. Sta. 7026+92 offset right 45' to Sta. 7027+06 offset right 62' on Elkton Road: Proposed LED Light (to be installed and powered by the City of Newark)
 - i. Sta. 107+37 offset left 62' to Sta. 107+21 offset left 61' on Otts Chapel Road: Proposed LED Light (to be installed and powered by the City of Newark)
 - j. Sta. 106+44 offset left 62' to Sta. 106+48 offset left 62' on Otts Chapel Road:
 - k. Sta. 6027+91 offset left 52' to Sta. 6027+82 offset left 66' on Elkton Road
 - l. Sta. 7029+03 offset right 68' to Sta. 7029+18 offset right 81' on Elkton Road: 120/240V power source to be provided for lighting equipment (to be provided by the City of Newark), 120/240V power source to be provided for ITMS equipment (to be provided

by the City of Newark), 120/240V power source to be provided for signal equipment (to be provided by the City of Newark)

- m. Sta. 7029+92 offset right 57' to Sta. 7030+05 offset right 80' on Elkton Road
 - n. Sta. 6029+02 offset left 51' to Sta. 6029+14 offset left 63' on Elkton Road
 - o. Sta. 6030+06 offset left 51' to Sta. 6030+05 offset left 62' on Elkton Road
 - p. Sta. 6031+86 offset left 50' to Sta. 6031+86 offset left 61' on Elkton Road.: Proposed LED Light (to be installed and powered by the City of Newark)
 - q. Sta. 7030+95 offset right 51' to Sta. 7030+06 offset right 56' on Elkton Road
 - r. Sta. 7031+80 offset right 45' to Sta. 7031+80 offset right 80' on Elkton Road
 - s. Sta. 7032+79 offset right 47' to Sta. 7032+91 offset right 80' on Elkton Road
 - t. Sta. 7033+67 offset right 50' to Sta. 7034+97 offset right 81' on Elkton Road
 - u. Sta. 7035+50 offset right 54' to Sta. 7036+55 offset right 83' on Elkton Road
 - v. Sta. 7037+38 offset right 56' to Sta. 7038+00 offset right 80' on Elkton Road
 - w. Sta. 7039+22 offset right 56' to Sta. 7039+71 offset right 83' on Elkton Road
 - x. Sta. 7041+07 offset right 56' to Sta. 7041+09 offset right 83' on Elkton Road
 - y. Sta. 7042+62 offset right 56' to Sta. 7042+62 offset right 86' on Elkton Road
 - z. Sta. 7042+93 offset right 55' to Sta. 7042+91 offset right 84' on Elkton Road
 - aa. Sta. 7044+75 offset right 55' to Sta. 7044+72 offset right 72' on Elkton Road
 - bb. Sta. 7046+63 offset right 55' to Sta. 7046+30 offset right 72' on Elkton Road
 - cc. Sta. 7048+50 offset right 56' to Sta. 7048+04 offset right 72' on Elkton Road
 - dd. Sta. 7050+32 offset right 55' to Sta. 7050+31 offset right 72' on Elkton Road
 - ee. Sta. 7052+19 offset right 55' to Sta. 7052+19 offset right 72' on Elkton Road
 - ff. Sta. 7054+00 offset right 55' to Sta. 7053+72 offset right 80' on Elkton Road
 - gg. Sta. 7055+75 offset right 55' to Sta. 7055+15 offset right 86' on Elkton Road
 - hh. Sta. 7059+44 offset right 53' to Sta. 7059+30 offset right 88' on Elkton Road. Existing lighting mast arm and luminaire to be removed.
 - ii. Sta. 7061+30 offset right 50' to Sta. 7061+39 offset right 82' on Elkton Road
 - jj. Sta. 7063+92 offset right 51' to Sta. 7064+27 offset right 77' on Elkton Road. Existing lighting mast arm and luminaire to be removed.
 - kk. Sta. 7066+40 offset right 50' to Sta. 7066+63 offset right 75' on Elkton Road. Existing lighting mast arm and luminaire to be removed; 120/240V power source to be provided for lighting equipment (to be provided by the City of Newark), 120/240V power source to be provided for signal equipment (to be provided by the City of Newark).
 - ll. Sta. 7068+80 offset right 47' to Sta. 7068+78 offset left 59' on Elkton Road
 - mm. Sta. 7072+27 offset right 46' to Sta. 7072+23 offset left 46' on Elkton Road
 - nn. Sta. 7074+06 offset right 52' to Sta. 7074+02 offset left 51' on Elkton Road
 - oo. Sta. 7079+43 offset right 58' to Sta. 7079+46 offset left 58' on Elkton Road
 - pp. Sta. 7081+28 offset right 57' to Sta. 7081+25 offset left 57' on Elkton Road
3. Three (3) new poles will be installed within the project limits at the following locations:
- a. Sta. 7056+42 offset right 87'.
 - b. Sta. 7057+54 offset right 88'.
 - c. Sta. 7063+02 offset right 80'

4. Three (3) existing poles will be removed within the project limits at the following locations:

- a. Sta. 6027+29 offset left 53'
- b. Sta. 6027+31 offset left 52'
- c. Sta. 6029+95 offset left 70'

Delmarva Power Delivery would require 170 calendar days to complete the proposed distribution work following 30 calendar days advance notice of completion of clearing and grubbing, cuts and fills made, staking of rights-of-way and back of curbs, the installation of drainage and completion of the Utility Pre-Construction Meeting for this contract scheduled by DelDOT North District Construction Department, the procurement of any easements / P.E. by DelDOT.

These facilities will remain in place and active during the duration of this contract.

No working/existing Delmarva Power facilities can be taken out of service.

Delmarva Power – Gas Distribution

Delmarva Power operates 2", 4" and 6" plastic and steel gas mains and services within the project limits. At the conclusion of all proposed work, existing mains and services to be abandoned shall be capped and left in place.

In advance of the project, Delmarva Power proposes to relocate its gas main according to the following:

Beginning at **Station 7017+00** offset right approximately 54 ft. then proceeding north along the R.O.W, 4" Polyethylene (PE) natural gas main will be installed.

- **Station 7018+00** – 4" PE gas main to cross northbound lanes of Elkton Road through an 8" HDPE casing pipe and exit in the median. Continuing from this point along the median to Station 7026+25, where the pipe transitions from 4" to 8" PE.
- **Station 7020+26 to 7023+18**, 4" PE gas main to be installed under the West Branch Christina River. Offset left ranges from 21 ft. to 22 ft.
- **Station 7026+35** – 8" PE gas main to cross north-bound lanes of Elkton Road through a 12" HDPE casing, continue parallel to centerline of N.B. Lanes offset right 50 ft. and then connect with exiting 6" PE gas main on Otts Chapel Road near Station 107+40 offset left 65 ft.
- **Station 7026+35 to 7029+50** median, 8" PE gas main will be installed parallel to median. Segment of 8" PE main will be inserted into 12" HDPE casing beneath paved roadway (Otts Chapel Road median crossing).
- **Station 7026+35** median to **6029+86**, 2" PE gas main will be installed across south bound lanes of Elkton Road and connected with an existing 2" PE gas main 56 ft. offset left.

- **Station 7029+50**, 8" PE gas main will be installed across and perpendicular to N.B. lanes of Elkton Road. Gas main will be inserted into 12" HDPE casing beneath paved roadway.
- **Station 7029+50** offset right 71 ft. to **7033+18**, 8" PE gas main will be installed and one existing 4" PE main will be tied-over within the N.B. R.O.W.
- **Station 7033+18** offset right 71 ft. to **7037+25**, 8" PE gas main will be installed. Gas main will be inserted into a 12" HDPE casing pipe crossing beneath the roadway (Interchange Blvd. Driveway 1) surface.
- **Station 7037+80**, 6" PE gas service will be installed perpendicular to Elkton Road crossing beneath both north and southbound lanes. Gas service will be inserted into a 10" HDPE casing beneath the roadway surface and tie-over to the existing 6" PE service.
- **Station 7037+80** to **7043+00** continuing along the R.O.W north offset 61 ft. to 78 ft. right, 8" PE to be installed with one 4" intersecting PE main tie-over.
- **Station 7043+00** to **7068+32**, 8" PE to be installed along north R.O.W with offsets ranging from 78 ft. to 40 ft. PE gas main will be inserted into 12" HDPE casings beneath paved roadway surfaces including Interchange Blvd., Interchange Blvd. Driveway 2, Patriot Way and SR4 Christina Parkway. At Station 7068+32, a 2" PE gas main will be installed across and perpendicular to the north and southbound lanes of Elkton Road and tie-over to an existing 2" PE main along the south R.O.W of Elkton Road.
- **Station 7068+32** to **7073+67**, 8" PE to be installed along north R.O.W, offset 40 ft. right with one 4" PE perpendicular crossing at Station 7073+67. The 4" PE main will be cased in 8" HDPE pipe and tied over to an existing 4" PE main within the south R.O.W.
- **Station 7073+67** to **7082+00**, 8" PE to be installed along the north R.O.W, offset right ranges from 25 ft. to 40 ft. At Station 7082+00, a 4" PE perpendicular gas main will be installed across Elkton Rd. and tied into an existing 4" PE main along the south R.O.W. The 4" PE main will be inserted into an 8" HDPE casing.
- **Station 7082+00** to **7084+55**, 8" PE gas main to be installed within LOC under the Christina River. Offset right ranges from 25 ft. to 89 ft. to align crossing with proposed launch and receiving pit locations. The 8" PE will be inserted into a 12" HDPE casing.

In addition to the gas main relocation work, existing gas services ranging from 1" to 1-1/4" PE, will be relocated and/or tied over to the newly installed gas pipe.

All station locations and offset dimensions are approximate and subject to change based on the actual location of existing features identified on the DelDOT design drawings or any unforeseen conditions encountered.

HDPE casing pipe shall be utilized for roadway and river crossings identified. HDPE pipe diameters shall range from 6" to 12" with yellow polyethylene carrier pipe diameters ranging from 4" to 8". Casing pipe shall be directionally drilled unless extenuating circumstances agreed upon between DelDOT and Delmarva Power requires a change in the method of installation to open cut excavation.

This work will take approximately 10 months and require an estimated 200 cubic yards of select borrow.

These facilities will remain in place and active during the duration of this contract.

No working/existing Delmarva Power facilities can be taken out of service.

Eastern Shore Natural Gas

Eastern Shore Natural Gas (Eastern Shore) maintains a four-inch (4") steel high-pressure gas transmission main through a portion of the project limits. This main exists from station 6013+60 to station 6028+25 on the north side of SR 279, Elkton Road and is approximately 40 feet left of the proposed construction baseline throughout this station range.

Anticipated Eastern Shore Relocations:

Eastern Shore proposes to relocate the existing transmission gas main as a six-inch (6") main to avoid the proposed roadway widening, proposed storm drainage and other utility relocations. Eastern Shore will remain outside of the paved areas wherever possible. The relocation work is as follows:

- **Station 6013+60** - start placement of the proposed six-inch (6") gas transmission lateral into the existing Metering and Regulating Station, approximately 60-feet left of the proposed construction baseline.
- From station 6013+60 to station 6025+10, Eastern Shore will place the proposed six-inch (6") transmission main between 10 to 20-feet left of the proposed construction baseline. This places the proposed transmission main within the median.
- At station 6025+10, the proposed six-inch (6") gas transmission lateral will turn north, left of the proposed construction baseline, leave the DelDOT right-of-way and enter a private easement, 65-feet left of the proposed construction baseline.

Eastern Shore anticipates the above relocation work will take approximately 72 calendar days to complete after receiving 30 days advanced notice provided by the Project Engineer. Eastern Shore will complete this work during the advanced utility relocation phase of this project.

Eastern Shore's estimate is based on information contained in DelDOT's Final Plans for Contract T201504401, received on March 8, 2018, and all available data as of this date. Changes in the project scope or in the project's current construction phasing may revise the number of working days required.

These facilities will remain in place and active during the duration of this contract.

No working/existing Eastern Shore Natural Gas facilities can be taken out of service.

Elkton Gas

Elkton Gas maintains facilities between the Delaware/Maryland State line and Sta. 7013+38 on both sides of Elkton Road and crossing Elkton Road at Sta. 7013+38.

No relocations are anticipated.

These facilities will remain in place and active during the duration of this contract.

No working/existing Elkton Gas facilities can be taken out of service.

FMC Stine Research Center

FMC Stine Research Center maintains private facilities within the project limits on the westerly side of Elkton Road at Sta. 6030+00 to Sta. 6046+65.

No relocations are anticipated. Facilities will be accessed for service connections from other utilities.

These facilities will remain in place and active during the duration of this contract.

No working/existing FMC facilities can be taken out of service.

Level 3

Level 3 maintains the following facilities within the project limits:

- Facilities on the northerly side of Otts Chapel to the easterly side of Elkton Road at Sta. 7037+30.
- Facilities on the easterly side of Elkton Road between Sta. 7043+83 and Sta. 7048+95 and crosses Elkton Road at Sta. 7048+95

No relocations are anticipated. Facilities will be accessed for service connections from other utilities.

These facilities will remain in place and active during the duration of this contract.

No working/existing Level 3 facilities can be taken out of service.

Lighttower Fiber Networks (Crown Castle/Fibertech)

Lighttower Fiber Networks maintains:

- Aerial facilities on the easterly side of Elkton Road throughout the project limits, crossing Elkton Rd at Sta.7061+30 and Sta. 7063+92.
- Aerial facilities on the southerly side of Suburban Drive throughout the project limits.

Lighttower Fiber Networks will relocate aerial facilities in the following locations:

- Aerial facilities from DPL utility pole # 41839 from Sta. 7010+80 offset right 58' to DPL utility pole #42305 at Sta. 7081+25 offset left 57' along south side of Elkton Road.
- Aerial facilities crossing Elkton Road at:
 - From DPL pole #42172 at Sta. 7061+39 offset right 82' across to CON pole #34B32 at Sta. 6061+32 offset left 58'.
 - From DPL pole #42191 at Sta. 7064+27 offset right 77' across to CON pole #34C33 at Sta. 6064+08 offset left 60'.

Lighttower Fiber Networks will complete these changes as required. These adjustments are expected to take approximately 8 calendar days to complete after the company has been given a minimum of 30 calendar days advance notice that work shall begin, and the right-of-way and proposed work has been laid out in the field by the State's contractor. Lighttower Fiber Networks' aerial work will proceed once Delmarva power and City of Newark have completed the necessary work.

These facilities will remain in place and active during the duration of this contract.

No working/existing Lighttower facilities can be taken out of service.

Suez Water

Suez Water Company maintains the following facilities within the project limits:

- Facilities on the easterly side of Elkton Road between the Maryland/Delaware State line and Sta. 7018+10 crossing Elkton Road at Sta. 7015+75.
- Facilities on the northerly side of McIntire Drive.
- Facilities on the westerly side of Elkton Road. between Sta. 7013+90 and 7030+20 and crossing Elkton Road at Sta. 7030+13.
- Facilities on the northerly side of Otts Chapel Road and to the easterly side of Elkton Road between Sta. 7028+85 and Sta. 7037+38.
- Facilities on the easterly side of Elkton Road between Sta. 7042+83 and 7049+90 and crosses Elkton Road from the easterly side at 7046+50 to the westerly side at Sta. 7044+76

Suez Water Delaware proposes the following adjustments and/or relocations in the construction project to its existing facilities:

- Install 12" ductile iron water main from Sta. 7014+25 offset right 42' to Sta. 6021+28 offset left 45' per contract plans and profiles.
 - a. Tie into ex. 12" water main with 12" sleeve at Sta. 7014+25 offset right 42'.
 - b. Install 12" water valve at Sta. 7014+32 offset right 44'.
 - c. Install 12"x6" tee, 6" water valve, and Fire Hydrant at Sta. 7014+44 offset right 50'.
 - d. Install 12"x8" tee at Sta. 7014+87 offset right 50'.
 - e. Install 12"x12" tee at Sta. 7016+27 offset right 62'.
 - f. Install 12"x12" tee at Sta. 7016+61 offset right 42'. Tie into ex. 12" water main with 12" sleeve at Sta. 7016+73 offset right 51'.
 - g. Install 12"x6" tee at Sta. 7017+41 offset right 37'.
 - h. Install 1.5" service tap on 12" water main at Sta. 7018+20 offset right 36'.
 - i. Install 20" steel casing pipe and 12" ductile iron water main from station 7020+58 offset right 33' to Sta. 7020+58 offset left 16'.
 - j. Jack and bore 20" Steel casing pipe and 12" ductile iron water main from launching pit at Sta. 7020+58 offset left 16' to receiving pit at Sta. 6020+57 offset left 43'.
 - k. 12"x12" wet tap existing 12" ductile iron water main at Sta. 6021+28 offset left 45'.
 - l. Install 12" insertion valve on ex. 12" water main at Sta. 6021+28 offset left 44'.

- Install 8" ductile iron water main from Sta. 7014+87 offset right 50' to Sta. 6014+87 offset left 52' per contract plans and profiles.
 - a. Install 12"x8" tee at Sta. 7014+87 offset right 50'.
 - b. Install 8" water valve at Sta. 7014+87 offset right 48'.
 - c. Install 16" steel casing pipe and 8" ductile iron water main from station 7014+87 offset right 38' to Sta. 7014+87 offset left 29'.
 - d. Jack and bore 16" steel casing pipe and 8" ductile iron water main from launching pit at Sta. 7014+87 offset left 29' to receiving pit at Sta. 6014+87 offset left 46'.
 - e. 8"x8" wet tap on existing 8" water main at Sta. 6014+87 offset left 52'.

- Install 12" ductile iron water main from Sta. 7016+27 offset right 62' to Sta. 305+50 offset right 30' per contract plans and profiles.
 - a. Install 12"x12" tee at Sta. 7016+27 offset right 62'.
 - b. Install 12" water valve at Sta. 305+66 offset right 32'.
 - c. Tie into ex. 12" water main with 12" sleeve at Sta. 305+50 offset right 30'.

- Install 6" ductile iron water main from Sta. 7017+41 offset right 37' to Sta. 6016+87 offset right 54'.
 - a. Install 12"x6" tee at Sta. 7017+41 offset right 37'.
 - b. Install 6" water valve at Sta. 7017+41 offset right 35'.
 - c. Install 12" steel casing pipe and 6" ductile iron water main from station 7017+41 offset right 31' to Sta. 7017+41 offset left 21'.
 - d. Jack and bore 12" steel casing pipe and 6" ductile iron water main from launching pit at Sta. 7017+41 offset left 21' to receiving pit at Sta. 6017+40 offset left 44'.

- e. Install 2" temporary blow off to be converted to a 2" service at Sta. 6016+87 offset left 45'.
 - f. Install 6" gate valve at Sta. 6016+87 offset left 49'.
 - g. Tie into ex. 6" water main with 6" sleeve at Sta. 6016+87 offset right 54'.
- Install 1.5" polyethylene service line from Sta. Sta. 7018+20 offset right 36' to Sta. ta. 6018+19 offset left 49' per contract plans and profiles.
 - a. Install 1.5" service tap on 12" water main at Sta. 7018+20 offset right 36'.
 - b. Directional drill 2" polyethylene casing pipe and 1.5" polyethylene service line from launching pit at Sta. 7018+20 offset right 35' to receiving pit at Sta. 6018+19 offset left 39'
 - c. Install 1.5" curb stop at Sta. 6018+19 offset left 47'.
 - d. Tie into ex. 1.5" service line with 1.5" sleeve at Sta. 6018+19 offset left 49'.
 - Install 12" ductile iron water main from Sta. 7035+31 offset right 52' to Sta. 7036+18 offset right 53' per contract plans and profiles.
 - a. Tie into ex. 12" water main with 12" sleeve at Sta. 7035+31 offset right 52'.
 - b. Encase 12" ductile iron in concrete from Sta. 7035+40 offset right 57' to Sta. 7036+08 offset right 57'.
 - c. Tie into ex. 12" water main with 12" sleeve at Sta. 7036+18 offset right 53'.
 - Abandon ex. 12" ductile iron water main from Sta. 6015+77 offset left 79' to Sta. 306+15 Offset Left 21'. All abandoned water mains shall be filled with flowable fill.
 - a. Cap ex. 12" ductile iron water main at Sta. 6015+77 offset left 79'.
 - Abandon ex. 12" ductile iron water main from Sta. 7014+38 offset right 41' to Sta. 306+15 Offset Left 21'. All abandoned water mains shall be filled with flowable fill.
 - a. Cap ex. 12" ductile iron water main at Sta. 7014+38 offset right 41'.
 - b. Abandon ex. 12" water valve at Sta. 306+15 Offset Left 26'.
 - Abandon ex. 12" ductile iron water main from Sta. 305+63 offset right 29' to Sta. 306+15 Offset Left 21'. All abandoned water mains shall be filled with flowable fill.
 - a. Cap ex. 12" ductile iron water main at Sta. 7014+38 offset right 41'.
 - b. Abandon 12" water valve 306+09 offset left 21'.
 - Abandon ex. 12" ductile iron water main from Sta. 305+50 offset right 29' to Sta. 306+14 Offset Right 73'. All abandoned water mains shall be filled with flowable fill.
 - a. Cap ex. 12" ductile iron water main at Sta. 306+13 offset right 64'.
 - Abandon ex. 12" ductile iron water main from Sta. 6015+78 offset left 51' to Sta. 6021+28 Offset Left 38'. All abandoned water mains shall be filled with flowable fill.
 - a. Cap ex. 12" Sta. 6021+28 Offset Left 38'

- Remove ex. 12" water main from Sta. 7035+31 offset right 52' to Sta. 6021+28 offset left 45' per contract plans and profiles.

Adjust/Relocate fire hydrants and associated valves at the following locations:

- Station 7009+58, Offset Right 46'
- Station 6015+70, Offset Left 48'
- Otts Chapel Road Station 106+50, Offset Right 63'
- McIntire Drive Station 302+04, Offset Right 30'

Adjust valves at the following locations:

- Elkton Road Station 6013+77 (2 Each), Offset Left 45'
- Elkton Road Station 6030+15, Offset Left 63'
- Elkton Road Station 7008+23, Offset Right 52'
- Elkton Road Station 7046+43 (3 Each) Offset Right 67'

All water main construction, unless otherwise noted, shall be in accordance with the Suez Water Delaware details, standards, and specifications, and all subsequent revisions, details, and supplements. All valves, bends and fittings must be properly restrained per Suez Water Delaware specifications. Operation of any valves shall be coordinated with Suez Water Delaware prior to operation.

The State's contractor will complete these changes.

These facilities will remain in place and active during the duration of this contract.

No working/existing Suez facilities can be taken out of service.

Unknown Utility

An unknown utility provided has been identified in the following approximate locations within the project limits:

Interchange Blvd.:

- An unknown fiber crosses Interchange Blvd. at approximately Sta. 500+39 and extends to outside of the ROW.
- From Sta. 500+39 R46' to Sta. 502+15' (Sta. 7043+72, offset right 48', Elkton Rd.): the unknown fiber is located along east side of Interchange Blvd. (right of the construction alignment) and turns 90° east.

Elkton Road

- The unknown utility from at Sta. 7043+72, offset right 48' continuing to approximate Sta. 7048+50, offset right 56' to existing hand hole and ties in to Windstream's existing facilities.
- Windstream has connection to an unknown utility at approximate Sta. 6048+45, offset left 67' with the unknown utility continuing to utility pole #38A15.

No relocations are anticipated. These facilities will remain in place and active during the duration of this contract.

No working/existing utility facilities can be taken out of service.

UNITI Fiber

UNITI Fiber Company maintains the following facilities within the project limits:

1. Aerial facilities on the easterly side of Elkton Road. between Maryland/Delaware state line to Sta. 7026+90 and throughout the project limits on Delmarva power poles.
2. Underground facilities on the southerly side of Otts Chapel Road and throughout the project limits.
3. Underground facilities on the easterly side of Elkton Road. between Sta. 7027+00 and Sta. 7036+60.
4. Aerial facilities on the easterly side of Elkton Road at Sta. 7084+44 and throughout the project limits and crossing over Elkton Road at Sta. 7084+44.
5. Aerial facilities on the westerly side of Elkton Road between Sta. 7042+50 and Sta 7064+32

UNITI Fiber proposes the following adjustments and/or relocations to its existing facilities:

1. Relocate to new (Delmarva/City of Newark/Verizon) pole replacing existing pole #49796/??581 once (Delmarva/City of Newark/Verizon) has set the new pole and transferred the existing power lines.
2. Uniti shall remove the existing hand hole at Sta. 7036+50 and relocate it to Sta. 7036+00 R47' of the construction alignment. Once installed, UnitiFiber will tie into the exiting fiber and remove the existing hand hole.
3. Uniti shall remove the existing hand hole at Sta. 7042+39 and relocate it to Sta. 7042+00 R46' of the construction alignment. Once installed, UnitiFiber will tie into the exiting fiber and remove the existing hand hole.

UNITI Fiber will complete these relocations/adjustments are expected to take approximately twenty-one (21) calendar days to complete after the Company has been given a minimum thirty (30) calendar days advance notice that work shall begin, and the right-of-way and proposed work has been laid out by the State's contractor.

These facilities will remain in place and active during the duration of this contract.

No working/existing Uniti Fiber facilities can be taken out of service.

Verizon of Delaware

Verizon of Delaware Inc. maintains the following aerial facilities within the project limits:

1. Verizon maintains aerial facilities along the Southbound side of Elkton Road from Pole #GS116 at Sta. 6009+80 L45 extending North-East beyond the project limits.
2. Verizon maintains aerial facilities along the Northbound side of Elkton Road from Pole #41825/40091 at Sta. 7008+98 R56 extending South beyond the project limits.
3. Verizon maintains aerial facilities from Pole #41857/40147 at Sta. 6015+64 L45 extending South-East across Elkton Road to Pole #54D32 at Sta. 305+41 L73, then continuing North-East across McIntire Dr to Pole #54D34 at Sta. 305+47 R49
4. Verizon maintains aerial facilities from Pole #41857/40147 at Sta. 6015+64 L45 extending East across Elkton road to Pole #41879/40154 at Sta. 7016+78 R53, turning North-East to Pole #41885/40162 then crossing Elkton Road to Pole #VZ 110 at Sta. 6018+10 L44.
5. Verizon maintains aerial facilities extending from Pole #DST103 at Sta. 6027+29 L53 extending South-East across Elkton Road to Pole #41941/40224 at Sta. 7026+92 R45, then continuing South-East along Otts Chapel Road beyond project limits.
6. Verizon maintains aerial facilities on the Northbound side of Elkton Road from Pole #41961/40241 at Sta. 7029+04 R68 extending North to Pole #42206/40514 at Sta. 7066+40 R49.
7. Verizon maintains aerial facilities on the Southbound side of Elkton Road from Pole #57G23 at Sta. 6044+75 L52 extending North-West to Pole #30 at Sta. 6044+74 L106.
8. Verizon maintains aerial facilities crossing Elkton Road from Pole #38A15 at Sta. 6048+57 L55 extending South-East to Pole #42086/40386 at Sta. 7048+50 R56.
9. Verizon maintains aerial facilities on the Southbound side of Elkton Road from Pole #42129/40454 at Sta. 6056+74 L57 extending North-West beyond the project limits.
10. Verizon maintains aerial facilities extending from Pole #42162/40490 at Sta. 6061+32 L49 across Elkton Road to Pole #42172/40479 at Sta. 7061+30 R50.
11. Verizon maintains aerial facilities on the South side of Suburban Dr from Pole#34C33 at Sta. 384+52 R86 extending North to Unknown Pole number (no ID) at Sta. 383+74 R47.
12. Verizon maintains aerial facilities from Pole #42338/40683 at Sta. 6087+50 L20 heading North along Casho Mill Road beyond project limits.

Verizon of Delaware Inc. maintains the following underground/buried facilities within the project limits:

1. Verizon maintains underground facilities from Pole #709 at Sta. 6010+29 R46 extending South-West to Fletchwood Road and continuing West beyond the project limits.
2. Verizon maintains buried facilities from Pole #41825/40091 at Sta. 7008+98 R56 extending South beyond the project limits.
3. Verizon maintains buried facilities from Pole #4XX69/40XX3 at Sta. 7015+28 R55 to VZ Ped at Sta. 7015+36 R54, then extending East across McIntire Dr and turning South along the East side of McIntire Dr and continuing through the VZ HH at Sta. 303+69 R56 to the VZ Ped at Sta. 300+67 R40.
4. Verizon maintains underground facilities from VZ Ped at Sta. 300+67 R40 extending West across McIntire Dr to VZ HH at Sta. 300+48 L30 then continuing West beyond the project limits.
5. Verizon maintains buried facilities from Pole #4XX69/40XX3 at Sta. 7015+28 R55 extending South to VZ Ped at Sta. 305+10 L88 then continuing South beyond the project limits.
6. Verizon maintains underground facilities from Pole #54D34 extending East beyond the project limits.
7. Verizon maintains underground facilities on the Southbound side of Elkton Road from MH 430 at Sta. 401+53 L6 extending South across Elkton Road and continuing along Otts Chapel Road to Pole #41956/40216 at Sta. 106+44 R62.
8. Verizon maintains buried facilities from Pole #41961/40241 at Sta. 7029+04 R68 extending South-West along Otts Chapel Road beyond the project limits.
9. Verizon maintains buried facilities on the Southbound side of Elkton Road from Pole #41955/40266 at Sta. 6029+45 L70 extending West beyond the project limits.
10. Verizon maintains underground facilities Pole #57E43 at Sta. 6031+86 L50 extending South-East across Elkton Road to Pole #41975/40264 at Sta. 7031+80 R45.
11. Verizon maintains buried facilities on the Southbound side of Elkton Road from Pole #57G22 at Sta. 6042+50 L63 extending West to VZ Pedestal at Sta. 6042+57 L50.
12. Verizon maintains buried facilities on the Southbound side of Elkton Road from Pole #30 at Sta. 6044+74 L106 extending North beyond project limits.
13. Verizon maintains buried facilities on the Northbound side of Elkton Road from Pole #57G25 at Sta. 7042+93 R56 extending South-West through Verizon X-connect Cabinet #405 at Sta. 7042+89 R76 to VZ Pedestal at Sta. 7042+83 R84, then continuing South-West along Interchange Blvd beyond the project limits.
14. Verizon maintains underground facilities on the Southbound side of Elkton Road from Pole #38A15 At Sta. 6048+57 L55 extending North to existing Verizon X-connect Cabinet at Sta. 6048+66 L85.

15. Verizon maintains underground facilities on the Northbound side of Elkton Road from Pole #42086/40386 at Sta. 7048+50 R56 extending North-East along Elkton Road to Sta. 7049+54 R56 where it turns and continues South-East beyond project limits.
16. Verizon maintains underground facilities on the Northbound side of Elkton Road from Pole #42098/40400 at Sta. 7050+32 R55 extending South-West along Elkton Road to Sta. 7049+54 R56 where it turns and continues South-East beyond project limits.
17. Verizon maintains an existing Verizon Fiber hub, mounted on Pole #42086/40386 at Sta. 7048+50 R56.
18. Verizon maintains buried facilities on the Northbound side of Elkton Road from Pole #34B46 at Sta. 7057+54 R85 extending South beyond the project limits.
19. Verizon maintains buried facilities on the South side of Suburban Dr from Unknown Pole number (no ID) at Sta. 383+74 R47 extending North-West along Suburban Dr.
20. Verizon maintains underground facilities on the Southbound side of Elkton Road from MH 450 at Sta. 6066+00 L53 extending South-West across Suburban Dr and dead ending near Sta. 6064+51 L55.
21. Verizon maintains underground facilities on the Southbound side of Elkton Road from MH 450 at Sta. 6066+00 L53 extending North-West along Suburban Dr beyond the project limits.
22. Verizon maintains underground facilities on the Southbound side of Elkton Road from MH 450 at Sta. 6066+00 L53 extending North-East to Pole #34C32 (VZ #709/73) at Sta. 6066+35 L44.
23. Verizon maintains underground facilities on the Southbound side of Elkton Road from MH 450 at Sta. 6066+00 L53 extending East along Elkton Road and dead ending near Sta. 6066+38 L28.
24. Verizon maintains buried facilities on the North side of Christiana Pky from Unknown Pole number (no ID) at Sta. 1001+14 L81 extending South-East along Christiana Pky.
25. Verizon maintains buried facilities on the Southbound side of Elkton Road from Pole #34D13 at Sta. 6075+85 L48 extending East beyond the project limits.
26. Verizon maintains underground facilities on the Southbound side of Elkton Road from MH 449 at Sta. 6087+86 L18 extending South-East along Elkton Road to Pole #42321/40665 (VZ #54) at Sta. 6084+96 L38.
27. Verizon maintains underground facilities on the Southbound side of Elkton Road from MH 449 at Sta. 6087+86 L18 extending North-East along Elkton Road beyond the project limits.

Anticipated Verizon Aerial Relocations:

1. Verizon will maintain 2' of clearance between its relocated aerial facilities and the proposed Traffic Signal Span wires/Structures.
2. Verizon will transfer/relocate aerial cables and equipment on the Southbound side of Elkton Road to the relocated DP&L Poles Between Pole #709 at Sta. 6010+29 L46 and Pole

- #42099/40423 at Sta. 6052+07 L57. Lateral cables will be transferred and/or relocated as required. (Required Anchors and Guys are shown.)
3. Verizon will relocate Unknown Pole number (no ID) at Sta. 7015+20 R55 outside of the clear zone as shown on the Plan markups. (Pole is required to hold Relocated Cross Connect cabinet).
 4. Verizon will transfer/relocate aerial cables and equipment on the Southbound side of Elkton Road to the relocated DP&L Poles Between Pole #34B42 (VZ 78) at Sta. 6059+20 L58 and Pole #34E12 at Sta. 6080+32 L69. Lateral cables will be transferred and/or relocated as required. (Required Anchors and Guys are shown.)
 5. Verizon will transfer/relocate aerial cables and equipment on the Northbound side of Elkton Road to the relocated DP&L Poles Between Pole #54D31 at Sta. 7015+20 R52 and Pole #42172/40479 at Sta. 7061+30 R50. Lateral cables will be transferred and/or relocated as required. (Required Anchors and Guys are shown.)
 6. Verizon will transfer existing Verizon Light span Cabinet mounted on Unknown Pole number (no ID) at Sta. 7015+20 R55, at the intersection of Elkton Road and McIntire Dr, to New Pole location at 7015+17 R54.
 7. Verizon will transfer existing Verizon X-connect Cabinet mounted on Pole 54D31 at Sta. 7015+28 R55, at the intersection of Elkton Road and McIntire Dr, to New Pole location at Sta. 7015+26 R59.
 8. Verizon will relocate existing aerial cable crossing Elkton Road from pole DST 103 at Sta 6027+29 L53 to Pole #4194140224 at Sta. 7026+92 R45, To Proposed Poles at Stations 6027+82 L66 and 7027+26 R108.
 9. Verizon will relocate existing Verizon Fiber hub, mounted on Pole #42086/40386 at Sta. 7048+50 R56, to Proposed Pole location at Sta. 7049+04 R72.
 10. Verizon will remove the aerial service wires on the Northbound side of Elkton Road from Pole #42172/40479 at Sta. 7061+30 R50 extending North to DP&L Pole #42206/40514 at Sta. 7066+40 R50, and the aerial service wires from Pole #42172/40479 extending East across Elkton Road to Pole #42162/40490 at Sta. 6061+31 L89.
 11. Verizon will relocate eleven (11) existing poles within the project limits at the following locations:
 - a. Pole #41827/4115 at Sta. 6011+74 L45' to Sta. 6011+74 L49' on Elkton Road.
 - b. Pole #41838/40128 at Sta. 6012+97 L47' to Sta. 6013+09 L53' on Elkton Road.
 - c. Pole #41847/40139 at Sta. 6014+36 L46' to Sta. 6014+36 L56' on Elkton Road.
 - d. Pole #VZ111 at Sta. 6017+15 L44' to Sta. 6017+15 L50' on Elkton Road; Existing lighting mast arm and luminaire to be relocated by the City of Newark, Proposed LED Light to be installed and powered by the City of Newark.
 - e. Pole #VZ110 at Sta. 6018+10 L44' to Sta. 6018+10 L49' on Elkton Road.
 - f. Pole #VZ109 at Sta. 6019+47 L43' to Sta. 6019+47 L48' on Elkton Road.
 - g. Pole #VZ108 at Sta. 6020+91 L43' to Sta. 6020+91 L50' on Elkton Road.
 - h. Pole #VZ107 at Sta. 6022+23 L42' to Sta. 6022+32 L50' on Elkton Road.

- i. Pole #VZ106 at Sta. 6023+23 L43' to Sta. 6023+22 L50' on Elkton Road.
- j. Pole #VZ105 at Sta. 6024+33 L46' to Sta. 6024+30 L52' on Elkton Road.
- k. Pole #VZ104 (54E11) at Sta. 6025+82 L51' to Sta. 6026+15 L64' on Elkton Road.

Anticipated Verizon Underground/Buried Relocations:

1. Verizon will relocate buried facilities (including 1 VZ Pedestal) extending from Unknown Pole number (no ID) at Sta. 7015+28 R55 to the Proposed DP&L Pole location.
2. Verizon will relocate roughly 500' of the buried facilities extending from Pole #41961/40241 at Sta.7029+04 R68 heading South-West along Otts Chapel Road to Sta. 102+97 R59. (Proposed 24"x36" hand hole to be placed at tie-in location.)
3. Verizon will relocate buried facilities on the Southbound side of Elkton Road from Pole #41955/40266 at Sta.6029+95 L70 extending West beyond project limits, to Proposed Pole location.
4. Verizon will extend conduit dips for its underground facilities extending from Pole #57E43 at Sta. 6031+86 L50 across Elkton Road to Pole #41975/40264 at Sta. 7031+80 R45 to the new Pole locations.
5. Verizon will relocate existing Verizon X-connect Cabinet #405, and associated buried facilities, at Sta. 7042+90 R76 to new location shown on the Plan markups.
6. Verizon will relocate the VZ Ped at Sta. 6042+50 L63 to the location shown on the Plan markups.
7. Verizon will relocate underground facilities on the Northbound side of Elkton Road from Pole #42086/40386 at Sta. 7048+50 R56 extending North-East along Elkton Road, to Proposed Pole location as shown on the Plan markups.
8. Verizon will relocate underground facilities on the Northbound side of Elkton Road from Pole #42098/40400 at Sta. 7050+32 R55 heading South-West along Elkton Road, to new Pole location as shown on the Plan markups.
9. Verizon will relocate underground facilities on the Southbound side of Elkton Road extending from Pole #38A15 at Sta. 6048+57 L55 to existing Verizon X-connect Cabinet at Sta. 6048+65 L85 to Proposed Pole location.
10. Verizon will transfer cable dip for existing buried facilities on the Northbound side of Elkton Road extending South-East along Interchange Blvd (driveway 2), from Pole #34B46 at Sta. 7057+54 R85 to Proposed Pole location.
11. Verizon will relocate underground facilities on the South side of Suburban Dr from Unknown Pole number (no ID) at Sta. 383+74 R47 extending North-West along Suburban Dr to Proposed Pole location.
12. Verizon will abandon underground facilities on the Southbound side of Elkton Road from MH 450 at Sta. 6066+00 L53 extending North-East to Pole #34C32 (VZ #709/73) at Sta. 6066+35 L44.

13. Verizon will abandon approximately 60' of 6PC-4" C ductbank extending North-West from MH 450 and relocate 2PC-4" C to Prop. Pole at Sta. 6066+28 L63.
14. Existing 8PC-4" C heading South-West from MH 450 at Sta. 6066+00 L53 will be abandoned.
15. Verizon will relocate abandoned ducts on the Southbound side of Elkton Road from Proposed Pole at Sta. 6064+07 L58 to Proposed Pole at Sta. 6067+82 L63.
16. Verizon will relocate 2-4" conduit dips from Pole #34D13 at Sta. 6075+85 L48 to Proposed Pole at Sta. 6075+74 L61.
17. Adjust MH frames and covers for MH 430 on the Southbound side of Elkton Road at Sta. 401+53 L6 (1 MH Lid).
18. Verizon will abandon MH450 on the Southbound side of Elkton Road at Sta. 6066+00 L50.

Areas of Concern:

1. New Guy Pole Required to Support Pole #34D11 at Station 7074+49 R45.
2. Potential conflicts:

Potential Conflicts with Proposed DOT-E-DUCT	
Station	Ex. VZ size
401+53 L6	MH 430
107+89 L11	2-4"

Verizon of Delaware Inc. will complete these changes as required. These adjustments are expected to take approximately 120 calendar days to complete after the company has been given a minimum of 30 calendar days advance notice that work shall begin, and the right-of-way and proposed work has been laid out in the field by the State's contractor. Verizon's aerial work will proceed once Delmarva power and City of Newark have completed the necessary work.

These facilities will remain in place and active during the duration of this contract.

No working/existing Verizon facilities can be taken out of service.

Windstream Broadband

Windstream broadband maintains the following facilities within the project limits:

- Windstream has an existing underground 4" conduit from utility pole #38A15 to hand hole at Sta. 6048+45 L67' of the construction alignment. This is the connection point to a private (unknown owner) service entering into the ROW.

- From Sta. 6048+45 left of the construction alignment, Windstream has an existing underground 4" conduit with fiber crossing Elkton Road at approximately Sta. 6048+45 to a hand hole approximately R56' of the construction alignment.
- Windstream has an existing empty underground 4" conduit from utility pole #42068 to hand hole at Sta. 6048+45 R56' of the construction alignment. This is the connection point to a private service (unknown owner).

No relocations are anticipated. Facilities will be accessed for service connections from other utilities. These facilities will remain in place and active during the duration of this contract.

Anticipated Windstream Underground/Buried Abandonment:

- Windstream will cap and abandon the 4" conduit from the hand hole at Sta. 6048+45 R56' to the existing DP&L pole #42068.

This work will be completed in advance of the State's contract.

No working/existing Windstream facilities can be taken out of service.

GENERAL UTILITY NOTES

Outside of the companies and facilities discussed above, no additional utility involvement is anticipated. Should any conflicts be encountered as a result of the contractor's means and methods during construction requiring adjustment and/or relocation, the necessary relocation work shall be accomplished by the respective utility company and funded by the State's Contractor as directed by the District Engineer. The State Contractor shall coordinate any potential conflicts with utility companies and provide adequate notice prior to performing work. Any utility conflicts that are not readily discernable shall be coordinated by the State Contractor once the conflict is recognized. The time to complete any relocations/adjustments found to be necessary during construction of the highway project will depend on the nature of the work.

Once the State's contractor has given the Utility the advance notice required above, it is the responsibility of the State's contractor to have the work area prepared and accessible for the Utility to perform the tasks listed above. If the site conditions are not ready and the state contractor has given notice to the utility on when the work is to be accomplished, the State's Contractor shall be responsible for any extra cost incurred by the utility company and the State Contractor shall also be responsible for any time delays. Between when the required notice is given to the Utility and when the work is performed and completed, the coordination and scheduling of the Utility is the sole responsibility of the State's Contractor. All costs related to the coordination and scheduling of the utilities is incidental to the contract.

Any adjustments and/or relocations of municipally owned sewer or water facilities shall be performed by the State's Contractor in accordance with the respective agency's standard specifications as directed by the District Engineer. The State contractor shall coordinate any

potential conflicts of municipally owned sewer or water facilities with facility owners and provide adequate notice to the municipally and to the District Engineer prior to performing work.

GENERAL NOTES

1. The Contractor's attention is directed to Section 105.09 Utilities, Delaware Standard Specifications, August 2016. 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 and operating purposes for his equipment and, if necessary, make arrangements directly with the utility companies for field adjustments for adequate clearances.
2. The information shown in the Contract Documents, including the Utility Statement and the Utility Schedule contained herein, concerning the location, type, and size of existing and proposed utilities, their locations, and construction timing has been compiled by the preparer based on information furnished by each of the involved Utility Companies. It shall be the responsibility of the State's Contractor to verify all information and coordinate with the Utility Companies prior to and during construction, as specified in Section 105.09 of the Standard Specifications.
3. It is understood and agreed that the Contractor has considered in his bid all permanent and temporary utility appurtenances in their present and relocated positions as shown on the plans or described in the Utility Statement or are readily discernible and that no additional compensation will be allowed for any delays, inconvenience, or damage due to any interference from the utility facilities and appurtenances or the operation of moving them, except that the Contractor may be granted an equitable extension of time unless the delay is caused by the Contractor's delay in having the site conditions ready for the utility relocation work after the Contractor has provided the advance notice that the site conditions would be ready for the utility relocation work. The contractor's means and method of construction are not taken into account when known utility conflicts are identified. If the Contractor's means and method of construction create a utility conflict, the Utility Statement will prevail in discussions with the utility and the Contractor. The State's Contractor shall be responsible for any costs associated with any temporary outages; holding, bracing and shielding of utility facilities; temporary relocations; or permanent relocations that are not specifically identified in this utility statement or shown in the contract plan set.
4. Coordination and cooperation among the Utility Companies and the State's Contractor are of prime importance. Therefore, the Contractor is directed to contact the following Utility Company representatives with any questions regarding this work prior to submitting bids and work schedules. Proposed work schedules should reflect the Utility Companies' proposed relocations. The Utility Companies do not work on weekends, nights or legal holidays.

Bhadresh Patel	City of Newark - Electric	bpatel@newark.de.us	(302) 366-7000 ext. 2085
Tim Filasky	City of Newark - Public Works – (Sewer, Water)	TFilasky@newark.de.us	(302) 366-7000
Matt Murray	Comcast Cable Communications, Inc.	mattm@americomm-llc.com	(717) 713-7586
Tom Smith	Delmarva Power – Electric Distribution	Thomas.smith1@delmarva.com	(302) 283-5757
Laszlo Keszler	Delmarva Power – Gas Distribution	laszlo.keszler@delmarva.com	(302) 429-3069
Mark Parker	Eastern Shore Natural Gas	mcparker@chpk.com	(302) 213-7270
John Eggolt	Elkton Gas	jeggolt@southernco.com	(908) 662-8319
Patti Adcock	FMC Stine Research Center	Patti.Adcock@dupont.com	(302)-366-5296
Karl Brenton	Level 3 Communications	Karl.Brenton@level3.com	(610) 879-4026
Bill Reynolds	Lighttower Fiber Networks	wreynolds@fibertech.com	(585) 743-1742
Ted Harris	Suez Water	Ted.harris@suez-na.com	(302) 252-3016
Mike Llamas	UNITI Fiber	mllamas@unitifiber.com	(443) 827-1786
George Zang	Verizon	George.w.zang@verizon.com	(302) 422-1238
Harry Sheppard	Windstream	Harry.sheppard@windstream.com	(302) 224-7121

5. As outlined in Chapter 3 of the DeIDOT Utilities Manual, individual utility companies are responsible for obtaining all required permits from municipal, State and federal government agencies and railroads. This includes but is not limited to water quality permits/DNREC Water Quality Certification, DNREC Subaqueous Lands/Wetlands permits, DNREC Coastal Zone Consistency Certification, County Floodplain permits (New Castle County only), U.S. Coast Guard permits, US Army Corps 404 permits, sediment and erosion permits, and railroad crossing permits.
6. Individual utility companies are required to restore any areas disturbed in conjunction with their relocation work. If an area is disturbed by a utility company and is not properly restored,

the Department may have the State's Contractor perform the necessary restoration. Any additional costs incurred as a result will be forwarded to the utility company.

7. 16 Del. C. § 7405B requires notification to and mutually agreeable measures from the public utility operating the electric line for any person intending to carry on any function, activity, work or operation within dangerous proximity of any high voltage overhead electric lines. All contractors/other utilities must also maintain a minimum distance of 10'-0" from all energized lines. Additional clearance may be required from high voltage transmission lines.
8. Any existing facilities that are comprised of hazardous materials will be removed by the Utility Company unless otherwise outlined in the contract documents or language above. Any existing facilities containing hazardous materials will be purged by the Utility Company unless otherwise outlined in the contract documents or language above.

Prepared and Recommended by:



Bill Dougherty, PE / JMT

09/10/2019

DATE

Approved as to form by:



Utilities Section, DelDOT

September 10, 2019

DATE

- cc. Deborah Kukulich, DelDOT Utilities
- Breanna Kovach, DelDOT
- Bradley Herb, JMT

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
PO BOX 778
DOVER, DELAWARE 19903

CERTIFICATE OF RIGHT-OF-WAY STATUS

STATE PROJECT NO. T201504401

F.A.P. NO. ESTP-N011(22)

ELKTON ROAD, MD LINE TO CASHO MILL ROAD

NEW CASTLE COUNTY

Certificate of Right-of-Way Status - Conditional

Status - Level 3

As acquired by 23 CFR, Part 635, and other pertinent Federal and State regulations or laws, the following certificates are hereby made in reference to this highway project:

The acquisition or right of occupancy and use of some remaining parcels is not complete, but all occupants of the residences on such parcels has had replacement housing made available to them in accordance with 49 CFR 24.04. The parcels which are not available are:

SEE ATTACHED SHEET FOR PARCELS

All necessary real property interests have been or shall be acquired in accordance with current FHWA/State directives covering the acquisition of real property.

No occupants were permanently displaced for this project and the State has physical possession and the right to remove, salvage, or demolish any personal property acquired as part of this project.

The State shall ensure that any occupants of residences, businesses, farms, or non-profit organizations and who have not yet moved from the right-of-way are protected against unnecessary inconvenience and disproportionate injury or any action coercive in nature.; and,

Anticipated clearance for all parcels is January 31, 2020.

RIGHT OF WAY SECTION



Monroe C. Hite, III
Chief of Right of Way

August 20, 2019

Project Number T201504401

Elkton Road, MD Line to Casho Mill Road

Status of Parcels for a Stipulated Level 3 Certification

<u>Parcel Number:</u>	<u>Owner:</u>	<u>Status</u>	<u>Availability</u>
Parcel 5-L	Slijepcevic	Condemnation	November 1, 2019
Parcel 16-L	Ronald & Joan Mayer	Right of Entry	
Parcel 17-L	Ronald & Joan Mayer	Right of Entry	
Parcel 18-L	Ronald & Joan Mayer	Right of Entry	
Parcel 20-L	Pauline Mayer, Inc.	Right of Entry	
Parcel 21-L	Pauline Mayer, Inc.	Right of Entry	
Parcel 22-L	Pauline Mayer, Inc.	Right of Entry	
Parcel 23-L	Pauline Mayer, Inc.	Right of Entry	
Parcel 26-L	Graybul Christina, LLC	In Negotiations	December 31, 2019
Parcel 6-R	BRE Foxtrot	In Negotiations	January 31, 2020
Parcel 10-R	900 Interchange, LLC	Right of Entry	
Parcel 13-R	Pauline Mayer, Inc.	Right of Entry	
Parcel 16-R	Pauline Mayer, Inc.	Right of Entry	



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

September 11, 2019

STIPULATED

ENVIRONMENTAL REQUIREMENTS

FOR

State Contract No. T201504401

Federal Aid No.: ESTP-N011(31)

Contract Title: Elkton Road, MD Line to Casho Mill Road

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 D/ Class II Action. As such, a Categorical Exclusion has been prepared to evaluate potential adverse impacts resulting from construction of the proposed project (per 23 CFR 771.117 (d)(13)), and the following special provisions have been developed to mitigate and/or minimize these impacts.

PERMIT REQUIREMENTS:

The construction work that will occur to SR 2, Elkton Road from the MD line to Casho Mill Road requires permit approval from the 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. The permit coordination for this project is ongoing. Written authorization from the permitting agencies is required and paperwork for on-site posting is anticipated. As such, the construction work that will occur is authorized under the permits/exemptions listed below:

REQUIRED PERMITS AND APPROVAL STATUS:

- U.S. Army Corps of Engineers (COE) - Nationwide Permit (NWP) # 23 - **PENDING** – (*anticipated arrival date November 29, 2019*)
- Delaware Department of Natural Resources and Environmental Control (DNREC) – Subaqueous Lands Permit - **PENDING** – (*anticipated arrival date November 29, 2019*)
- DNREC Water Quality Certification (WQC) – Issued, project is not located in a Critical Resource Water
- DNREC Coastal Zone Management (CZM) – Issued, project is not located in a Critical Resource Water
- City of Newark - Public Works and Water Resources and the Planning Department Floodplain Permit - **PENDING** – (*anticipated arrival date November 29, 2019*)

SPECIFIC REQUIREMENTS:

Compliance with all requirements of the permits is the responsibility of the contractor, who will follow all special conditions or requirements as stated within those permits. The contractor will be subject to penalties, fines, and the risk of shut down as mandated by laws governing permitting agencies if such conditions and 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, are also the responsibility of the contractor. Noncompliance with these requirements may result in shut down of the project 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 the 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 or temporary fills in wetlands or subaqueous lands unless otherwise specified on project plans and approved by permitting agencies that govern them. It is the contractor's responsibility to coordinate and secure those additional permits/amendments in deviating from the plan.
5. Construction debris shall be kept 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. Refuse material resulting from routine maintenance of worker equipment and heavy machinery 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. Use of harmful chemical wash water to clean equipment or machinery is discouraged. If undertaken, the residue water and/or material must be collected or contained such that it will be disposed of properly. It shall not 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 is the contractor's responsibility to ensure that workers also follow this requirement. If applicable, as part of the restrictions, please note the timetables reflected in the contract for the in-stream/water work for endangered species protection.
9. 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 on sheet 183 in:
 - Note 3 on for Cultural Resources
 - Note 4 for Stream Restoration and Slope Riprap Treatment
 - Note 5 for Protection of Resources
2. 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.



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
 800 BAY ROAD
 P.O. Box 778
 DOVER, DELAWARE 19903

JENNIFER COHAN
 SECRETARY

RAILROAD STATEMENT

For

State Contract No.: T201504401

Federal Aid No.: ESTP-N011(22)

Project Title: Elkton Road, MD Line To Casho Mill Road

The following railroad companies maintain facilities within the contract limits:

- | | |
|--|---|
| <input type="checkbox"/> Amtrak | <input type="checkbox"/> Maryland & Delaware |
| <input type="checkbox"/> CSX | <input type="checkbox"/> Norfolk Southern |
| <input type="checkbox"/> Delaware Coast Line | <input type="checkbox"/> Wilmington & Western |
| <input type="checkbox"/> East Penn | <input checked="" type="checkbox"/> None |
| <input type="checkbox"/> Delmarva Central | |

DOT Inventory No.: N/A No. Trains/Day: N/A Passenger Trains (Y / N): N/A

In accordance with 23 CFR 635, herein is the railroad statement of coordination (check one):

- No Railroad involvement.

- Railroad Agreement unnecessary but railroad flagging required. The contractor shall follow requirements stated in the DeIDOT Maintenance of Railroad Traffic Item in the Special Provisions. Contractor shall coordinate railroad flagging with DeIDOT's Railroad Program Manager at (302) 760-2183.

- Railroad Agreement required. The necessary Railroad Agreement is pending. The Contractor cannot begin work until the Agreement is complete and fully executed. Railroad related work to be undertaken and completed as required for proper coordination with physical construction schedules. The Contractor shall follow requirements stated in the DeIDOT Maintenance of Railroad Traffic Item in the Special Provisions. Contractor shall coordinate railroad flagging with DeIDOT's Railroad Program Manager at (302) 760-2183.

Approved As To Form:



 Robert A. Perrine
 DeIDOT Railroad Program Manager

2May17

 DATE

BID PROPOSAL FORMS
CONTRACT T201504401.01
FEDERAL AID PROJECT ESTP-N011(31)

UNLESS OTHERWISE DIRECTED, SUBMIT ALL FOLLOWING PAGES TO:

DEPARTMENT OF TRANSPORTATION
BIDDERS ROOM
800 BAY ROAD
DOVER, DELAWARE 19901

Identify the following on the outside of the sealed envelope:

- Contract Number T201504401.01
- Name of Contractor

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 1
DATE:

CONTRACT ID: T201504401.01 PROJECT(S): ESTP-N011(31)

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
SECTION 0001 ROAD						
0010	201000 CLEARING AND GRUBBING	LUMP		LUMP		
0020	202000 EXCAVATION AND EMBANKMENT	CY	63933.000			
0030	207000 STRUCTURAL EXCAVATION	CY	8930.000			
0040	208000 FLOWABLE FILL	CY	16.000			
0050	209001 BORROW, TYPE A	CY	15366.000			
0060	209002 BORROW, TYPE B	CY	9215.000			
0070	209005 FURNISHING BORROW, TYPE C FOR PIPE AND UTILITY TRENCH BACKFILL	CY	3161.000			
0080	209006 BORROW, TYPE F	CY	11430.000			
0090	211000 REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LUMP		LUMP		

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 2
DATE:

CONTRACT ID: T201504401.01 PROJECT(S): ESTP-N011(31)

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0100	211001 REMOVAL OF PORTLAND CEMENT CONCRETE PAVEMENT, CURB AND SIDEWALK	38294.000 SY				
0110	301001 GRADED AGGREGATE BASE COURSE, TYPE B	22773.000 CY				
0120	301002 GRADED AGGREGATE BASE COURSE, TYPE B, PATCHING	4128.000 CY				
0130	302002 DELAWARE NO. 3 STONE	468.000 TON				
0140	302005 DELAWARE NO. 57 STONE	81.000 TON				
0150	401005 SUPERPAVE TYPE C, PG 64-22 (CARBONATE STONE)	3072.000 TON				
0160	401014 SUPERPAVE TYPE B, PG 64-22	583.000 TON				
0170	401021 SUPERPAVE TYPE BCBC, PG 64-22	791.000 TON				
0180	401029 SUPERPAVE TYPE C, PG 64-22, PATCHING	217.000 TON				
0190	401030 SUPERPAVE TYPE B, PG 64-22, PATCHING	5131.000 TON				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0200	401031 SUPERPAVE TYPE BCBC, PG 64-22, PATCHING	1664.000 TON				
0210	401037 SUPERPAVE TYPE B, PG 64-22, WEDGE	495.000 TON				
0220	501006 PORTLAND CEMENT CONCRETE PAVEMENT, 12"	80384.000 SY				
0230	501503 PRECAST CONCRETE PAVEMENT PANELS	7176.000 SY				
0240	504001 CRACK AND JOINT SEALING LESS THAN 3/4 INCH WIDE	5000.000 LF				
0250	601000 CLEANING DRAINAGE PIPE, 15"-24" DIAMETER	142.000 LF				
0260	601001 CLEANING DRAINAGE PIPE, GREATER THAN 24" DIAMETER	310.000 LF				
0270	601011 REINFORCED CONCRETE PIPE, 15", CLASS III	2649.000 LF				
0280	601012 REINFORCED CONCRETE PIPE, 18", CLASS III	2867.000 LF				
0290	601013 REINFORCED CONCRETE PIPE, 21", CLASS III	202.000 LF				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0300	601014 REINFORCED CONCRETE PIPE, 24", CLASS III	LF 283.000				
0310	601019 REINFORCED CONCRETE PIPE, 42", CLASS III	LF 58.000				
0320	601021 REINFORCED CONCRETE PIPE, 54", CLASS III	LF 13.000				
0330	601032 REINFORCED CONCRETE PIPE, 15", CLASS IV	LF 538.000				
0340	601033 REINFORCED CONCRETE PIPE, 18", CLASS IV	LF 974.000				
0350	601034 REINFORCED CONCRETE PIPE, 21", CLASS IV	LF 114.000				
0360	601035 REINFORCED CONCRETE PIPE, 24", CLASS IV	LF 115.000				
0370	601053 REINFORCED CONCRETE PIPE, 15", CLASS V	LF 376.000				
0380	601054 REINFORCED CONCRETE PIPE, 18", CLASS V	LF 275.000				
0390	601055 REINFORCED CONCRETE PIPE, 21", CLASS V	LF 72.000				

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			DOLLARS	CTS	DOLLARS	CTS
0400	601056 REINFORCED CONCRETE PIPE, 24", CLASS V	28.000 LF				
0410	601101 REINFORCED CONCRETE ELLIPTICAL PIPE, 19" X 30", CLASS III	382.000 LF				
0420	601115 REINFORCED CONCRETE ELLIPTICAL PIPE, 14" X 23", CLASS IV	122.000 LF				
0430	601141 REINFORCED CONCRETE FLARED END SECTION, 15"	11.000 EACH				
0440	601142 REINFORCED CONCRETE FLARED END SECTION, 18"	15.000 EACH				
0450	601143 REINFORCED CONCRETE FLARED END SECTION, 21"	5.000 EACH				
0460	601144 REINFORCED CONCRETE FLARED END SECTION, 24"	5.000 EACH				
0470	601149 REINFORCED CONCRETE FLARED END SECTION, 42"	1.000 EACH				
0480	601171 REINFORCED CONCRETE FLARED END SECTION, 19" X 30"	2.000 EACH				
0490	601217 CORRUGATED POLYETHYLENE PIPE, TYPE S, 8"	1222.000 LF				

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			DOLLARS	CTS	DOLLARS	CTS
0500	601505 DRAINAGE SAFETY END STRUCTURE	EACH 17.000				
0510	602003 DRAINAGE INLET, 34" X 24"	EACH 22.000				
0520	602004 DRAINAGE INLET, 48" X 30"	EACH 37.000				
0530	602005 DRAINAGE INLET, 48" X 48"	EACH 32.000				
0540	602006 DRAINAGE INLET, 66" X 30"	EACH 1.000				
0550	602007 DRAINAGE INLET, 66" X 48"	EACH 1.000				
0560	602008 DRAINAGE INLET, 66" X 66"	EACH 2.000				
0570	602013 DRAINAGE INLET, SPECIAL	LUMP		LUMP		
0580	602030 MANHOLE, 48" X 30"	EACH 1.000				
0590	602031 MANHOLE, 48" X 48"	EACH 3.000				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0600	602100 REPLACE DRAINAGE INLET GRATE(S)	EACH 2.000				
0610	602130 ADJUSTING AND REPAIRING EXISTING DRAINAGE INLET	EACH 7.000				
0620	602131 ADJUSTING AND REPAIRING EXISTING DOUBLE DRAINAGE INLET	EACH 3.000				
0630	602132 ADJUSTING AND REPAIRING EXISTING MANHOLE	EACH 1.000				
0640	602505 PERSONAL SAFETY GRATE	EACH 4.000				
0650	604003 SHORING	LUMP		LUMP		
0660	606001 DRILLED SHAFT, 36"	LF 285.000				
0670	606502 DRILLED SHAFT IN ROCK, 30"	LF 72.000				
0680	610006 PORTLAND CEMENT CONCRETE MASONRY, APPROACH SLAB, CLASS A	CY 35.000				
0690	610008 PORTLAND CEMENT CONCRETE MASONRY, PARAPET, CLASS A	CY 15.000				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0700	610010 PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT FOOTING, CLASS B	104.000 CY				
0710	610011 PORTLAND CEMENT CONCRET MASONRY, ABUTMENT ABOVE FOOTING, CLA SS B	100.000 CY				
0720	610013 PORTLAND CEMENT CONCRETE MASONRY, PIER ABOVE FOOTING, CLASS B	13.000 CY				
0730	610017 PORTLAND CEMENT CONCRETE MASONRY, SUPERSTRUCTURE, CLASS D	120.000 CY				
0740	611001 BAR REINFORCEMENT, EPOXY COATED	33000.000 LB				
0750	615515 RIDE SHELTER INSTALLATION	1.000 EACH				
0760	615516 PREFABRICATED STEEL TRUSS BRIDGE	LUMP	LUMP			
0770	617515 HEADWALL	2.000 EACH				
0780	621500 TEMPORARY TIMBER MAT	LUMP	LUMP			
0790	626000 STEEL PEDESTRIAN RAILING	106.000 LF				

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			DOLLARS	CTS	DOLLARS	CTS
0800	626010 ALUMINUM PEDESTRIAN RAILING	408.000 LF				
0810	628070 DRILLING HOLES AND INSTALLING DOWELS	90.000 EACH				
0820	701010 PORTLAND CEMENT CONCRETE CURB, TYPE 1-2	59.000 LF				
0830	701012 PORTLAND CEMENT CONCRETE CURB, TYPE 1-6	1477.000 LF				
0840	701013 PORTLAND CEMENT CONCRETE CURB, TYPE 1-8	62.000 LF				
0850	701014 PORTLAND CEMENT CONCRETE CURB, TYPE 2	3620.000 LF				
0860	701017 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 1-6	359.000 LF				
0870	701020 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 3-2	288.000 LF				
0880	701021 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 3-4	8752.000 LF				
0890	701022 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 3-6	106.000 LF				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0900	701023 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 3-8	203.000 LF				
0910	702000 TRIANGULAR CHANNELIZING ISLANDS	11135.000 SF				
0920	705001 PORTLAND CEMENT CONCRETE SIDEWALK, 4"	28258.000 SF				
0930	705002 PORTLAND CEMENT CONCRETE SIDEWALK, 6"	1475.000 SF				
0940	705005 PORTLAND CEMENT CONCRETE SIDEWALK, 8"	6758.000 SF				
0950	705007 SIDEWALK SURFACE DETECTABLE WARNING SYSTEM	1864.000 SF				
0960	705011 PEDESTRIAN CONNECTION	4028.000 SF				
0970	705500 PEDESTRIAN CONNECTION, MARYLAND	1944.000 SF				
0980	705528 TEMPORARY PEDESTRIAN CONNECTION	8.000 EACH				
0990	706000 MONUMENT	15.000 EACH				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1000	706500 RIGHT-OF-WAY MARKER, CAPPED REBAR	43.000 EACH				
1010	707001 RIPRAP, R-4	371.000 SY				
1020	707002 RIPRAP, R-5	358.000 SY				
1030	707500 CHANNEL BED FILL	233.000 CY				
1040	708001 GEOTEXTILES, STABILIZATION	556.000 SY				
1050	708002 GEOTEXTILES, SEPARATION	87570.000 SY				
1060	708003 GEOTEXTILES, RIPRAP	722.000 SY				
1070	709000 PERFORATED PIPE UNDERDRAINS, 4"	131.000 LF				
1080	709001 PERFORATED PIPE UNDERDRAINS, 6"	16636.000 LF				
1090	709011 UNDERDRAIN OUTLET PIPE, 6"	631.000 LF				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1100	709017 UNDERDRAIN OUTLET	32.000 EACH				
1110	710504 WATER SERVICES	LUMP	LUMP			
1120	711500 ADJUST AND REPAIR EXISTING SANITARY MANHOLE	14.000 EACH				
1130	711501 SANITARY SEWER SYSTEM	LUMP	LUMP			
1140	711505 HORIZONTAL DIRECTIONAL DRILLING FOR SANITARY SEWER	241.000 LF				
1150	720021 GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1125.000 LF				
1160	720557 BOLLARD, STEEL	6.000 EACH				
1170	721006 END ANCHORAGE 31	4.000 EACH				
1180	721009 GUARDRAIL TO BARRIER CONNECTION (EXIT TYPE 31)	2.000 EACH				
1190	721010 GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 1-31	3.000 EACH				

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			DOLLARS	CTS	DOLLARS	CTS
1200	723003 PORTLAND CEMENT CONCRETE SAFETY BARRIER, PERMANENT, SINGLE FACE, 42"	116.000 LF				
1210	724001 PERMANENT IMPACT ATTENUATOR, TYPE 1	4.000 EACH				
1220	727000 CHAIN LINK FENCE	310.000 LF				
1230	727006 TEMPORARY CONSTRUCTION FENCE	473.000 LF				
1240	760003 BIKE-FREINDLY RUMBLE STRIPS, CONCRETE	3445.000 LF				
1250	760007 RUMBLE STRIPS, CONCRETE	6987.000 LF				
1260	760010 PAVEMENT MILLING, BITUMINOUS CONCRETE PAVEMENT	17836.000 SYIN				
1270	760011 PAVEMENT MILLING, BITUMINOUS CONCRETE PAVEMENT, TAPER CUT	340.000 SYIN				
1280	760012 PAVEMENT MILLING, BITUMINOUS CONCRETE PAVEMENT, VARIABLE DEPTH	14949.000 SYIN				
1290	762000 SAW CUTTING, BITUMINOUS CONCRETE	10344.000 LF				

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			DOLLARS	CTS	DOLLARS	CTS
1300	762001 SAW CUTTING, CONCRETE, FULL DEPTH	3417.000 LF				
1310	763000 INITIAL EXPENSE/DE-MOBILIZATION	LUMP	LUMP			
1320	763501 CONSTRUCTION ENGINEERING	LUMP	LUMP			
1330	763503 TRAINEE	1040.000 HOUR	0.80000		832.00	
1340	763508 PROJECT CONTROL SYSTEM DEVELOPMENT PLAN	LUMP	LUMP			
1350	763509 CPM SCHEDULE UPDATES AND/OR REVISED UPDATES	30.000 EAMO				
1360	763598 FIELD OFFICE, SPECIAL I	30.000 EAMO				
1370	801000 MAINTENANCE OF TRAFFIC	LUMP	LUMP			
1380	801500 MAINTENANCE OF TRAFFIC, ALL INCLUSIVE	LUMP	LUMP			
1390	802003 ARROW PANELS TYPE C	1547.000 EADY				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1400	803001 FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	2413.000 EADY				
1410	804001 FURNISH AND MAINTAIN PORTABLE LIGHT ASSEMBLY (FLOOD LIGHTS)	2288.000 EADY				
1420	805001 PLASTIC DRUMS	498280.000 EADY				
1430	806001 TRAFFIC OFFICERS	518.000 HOUR	75.00000		38850.00	
1440	808001 FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE I	522.000 EADY				
1450	810001 TEMPORARY WARNING SIGNS AND PLAQUES	94365.000 EADY				
1460	811001 FLAGGER, NEW CASTLE COUNTY STATE	3975.000 HOUR				
1470	813001 TEMPORARY BARRICADES, TYPE III	293313.000 LFDY				
1480	813500 PEDESTRIAN CHANNELIZING BARRICADE SYSTEM	98075.000 LFDY				
1490	813503 TEMPORARY PEDESTRIAN PATHWAY	195.000 SY				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1500	817002 PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, ALKYD-THERMOPLASTIC	SF 5550.000				
1510	817008 BLACKOUT TAPE, 6"	LF 5000.000				
1520	817009 TEMPORARY MARKINGS, TAPE, 4"	LF 5615.000				
1530	817010 TEMPORARY MARKINGS, TAPE, WORDS/SYMBOLS	SF 115.000				
1540	817012 RETROREFLECTIVE PREFORMED PATTERNED MARKINGS, SYMBOL/LEGEND	SF 10061.000				
1550	817013 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	LF 218145.000				
1560	817014 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 10"	LF 1480.000				
1570	817015 PREFORMED RETROREFLECTIVE THERMOPLASTIC MARKINGS, BIKE SYMBOL	EACH 16.000				
1580	817017 PREFORMED RETROREFLECTIVE THERMOPLASTIC MARKINGS, HANDICAP SYMBOL	EACH 2.000				

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			DOLLARS	CTS	DOLLARS	CTS
1590	817018 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 3"	18860.000 LF				
1600	817019 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 5"	6710.000 LF				
1610	817022 RETROREFLECTIVE PREFORMED PATTERNED MARKINGS, 8"	335.000 LF				
1620	817024 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 9"	16225.000 LF				
1630	817025 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 14"	235.000 LF				
1640	817026 PAINTING OF WHITE OR YELLOW, 5" LINE	1185.000 LF				
1650	817027 RAISED/RECESSED PAVEMENT MARKER	222.000 EACH				
1660	817031 REMOVAL OF PAVEMENT STRIPING	19645.000 SF				
1670	817033 TEMPORARY MARKINGS, TAPE, 6"	781.000 LF				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1680	818001 SUPPLY OF FLAT SHEET ALUMINUM SIGN PANEL, TYPE IV, RETROREFLECTIVE SHEETING	SF 522.000				
1690	819011 GALVANIZED TELESCOPING STEEL SIGN POSTS, 12' X 2", COMPLETE W/ BASEPOSTS AND HARDWARE	EACH 207.000				
1700	819013 WOODEN SIGN POSTS, 4" X 6"	EACH 34.000				
1710	819016 INSTALLATION OF 4" DIAMETER HOLE, LESS THAN OR EQUAL TO 6" DEPTH	EACH 35.000				
1720	819018 INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON SINGLE SIGN POST	EACH 540.000				
1730	819019 INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON MULTIPLE SIGN POSTS	SF 280.000				
1740	820001 REINFORCED CONCRETE MASONRY SIGN FOUNDATION, W-6	EACH 2.000				
1750	820008 SUPPLY OF BREAKAWAY I-BEAM SIGN POSTS, W-6	LF 30.000				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1760	820017 INSTALLATION OF BREAKAWAY I-BEAM SIGN POSTS	2.000 EACH				
1770	820018 REMOVAL OF BREAKAWAY I-BEAM SIGN POSTS	2.000 EACH				
1780	820019 INSTALL SIGN PANEL ON BREAKAWAY I-BEAM SIGN SUPPORT	54.000 SF				
1790	820020 REMOVE SIGN PANEL ON BREAKAWAY I-BEAM SIGN SUPPORT	54.000 SF				
1800	825001 TUBULAR MARKERS	499.000 EACH				
1810	830001 CONDUIT JUNCTION WELL, TYPE 1, 20" X 20" PRECAST CONCRETE	68.000 EACH				
1820	830002 CONDUIT JUNCTION WELL, TYPE 4, 20" X 42-1/2" PRECAST CONCRETE	31.000 EACH				
1830	830003 CONDUIT JUNCTION WELL, TYPE 5, 24" X 16" PRECAST CONCRETE	3.000 EACH				
1840	830004 CONDUIT JUNCTION WELL, TYPE 7, 36" X 60" PRECAST POLYMER CONCRETE	9.000 EACH				
1850	831501 FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (OPEN CUT)	565.000 LF				

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			DOLLARS	CTS	DOLLARS	CTS
1860	831502 FURNISH AND INSTALL 3" SCHEDULE 80 PVC CONDUIT (OPEN CUT)	560.000 LF				
1870	831514 FURNISH AND INSTALL 2-1/2" SCHEDULE 80 PVC CONDUIT (TRENCH)	15.000 LF				
1880	831515 FURNISH AND INSTALL 3" SCHEDULE 80 PVC CONDUIT (TRENCH)	2140.000 LF				
1890	831516 FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (TRENCH)	8930.000 LF				
1900	831523 FURNISH AND INSTALL 2" GALVANIZED CONDUIT (TRENCH)	300.000 LF				
1910	831526 FURNISH AND INSTALL 4" GALVANIZED STEEL CONDUIT (TRENCH)	370.000 LF				
1920	831540 FURNISH AND INSTALL 3" GALVANIZED STEEL CONDUIT (ON STRUCTURE)	135.000 LF				
1930	831541 FURNISH AND INSTALL 4" GALVANIZED STEEL CONDUIT (ON STRUCTURE)	90.000 LF				
1940	831544 FURNISH AND IN STALL 3" HDPE SDR-13.5 CONDUIT (BORE)	105.000 LF				

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			DOLLARS	CTS	DOLLARS	CTS
1950	831545 FURNISH AND INSTALL 4" HDPE SDR-13.5 CONDUIT (BORE)	6365.000 LF				
1960	831572 FURNISH AND INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2-1/2" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT	25.000 LF				
1970	831573 FURNISH AND INSTALL SECOND AND SUBSEQUENT ADDITIONAL 3" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT	100.000 LF				
1980	831574 FURNISH AND INSTALL SECOND AND SUBSEQUENT ADDITIONAL 4" SCHEDULE 80 PVC CONDUIT IN TRENCH OR OPEN CUT	380.000 LF				
1990	832006 FURNISH AND INSTALL 1-CONDUCTOR #2 AWG STRANDED COPPER, TYPE USE-2	690.000 LF				
2000	832007 FURNISH AND INSTALL 1-CONDUCTOR #4 AWG STRANDED COPPER, TYPE USE-2	180.000 LF				
2010	832008 FURNISH AND INSTALL 1-CONDUCTOR #6 STRANDED COPPER, TYPE USE-2	9955.000 LF				
2020	834001 POLE BASE, TYPE 3	2.000 EACH				

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			DOLLARS	CTS	DOLLARS	CTS
2030	834002 POLE BASE, TYPE 3A	EACH 6.000				
2040	834003 POLE BASE, TYPE 3B	EACH 8.000				
2050	834004 POLE BASE, TYPE 3C	EACH 4.000				
2060	834005 POLE BASE, TYPE 4A	EACH 29.000				
2070	834006 POLE BASE, TYPE 6	EACH 18.000				
2080	835002 CABINET BASE TYPE M	EACH 2.000				
2090	835003 CABINET BASE TYPE P	EACH 6.000				
2100	839003 REMOVAL OF WOOD POLE	EACH 3.000				
2110	842006 FURNISH AND INSTALL EMBEDDED METERED SERVICE PEDESTAL (100 AMP)	EACH 2.000				

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 23
DATE:

CONTRACT ID: T201504401.01 PROJECT(S): ESTP-N011(31)

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2120	846001 FURNISH AND INSTALL LOOP WIRE 1-CONDUCTOR #14 AWG ENCASED IN 1/4" FLEXIBLE TUBING IN A LOOP SAWCUT	LF 5380.000				
2130	846002 FURNISH AND INSTALL A 1-1/2 INCH GALVANIZED RIGID METAL CONDUIT DETECTOR SLEEVE WITH LOOP WIRE	LF 645.000				
2140	847004 LIGHTING CONTROL AND DISTRIBUTION ENCLOSURE (120/240;100 AMP)	EACH 2.000				
2150	850011 REMOVAL OF LUMINAIRE	EACH 4.000				
2160	850519 LED LUMINAIRE, SPECIAL FIXTURE	EACH 11.000				
2170	850521 LUMINAIRE (LED), 250 WATTS, HPS EQUIVALENT	EACH 34.000				
2180	851001 ALUMINUM LIGHTING STANDARD WITH SINGLE DAVIT ARM, 30' POLE	EACH 18.000				
2190	905001 SILT FENCE	LF 8216.000				
2200	905002 REINFORCED SILT FENCE	LF 2524.000				

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 24
DATE:

CONTRACT ID: T201504401.01 PROJECT(S): ESTP-N011(31)

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2210	905004 INLET SEDIMENT CONTROL, DRAINAGE INLET	140.000 EACH				
2220	905005 INLET SEDIMENT CONTROL, CURB INLET	84.000 EACH				
2230	905006 INLET SEDIMENT CONTROL, CULVERT INLET	1.000 EACH				
2240	905500 SUPER SILT FENCE	700.000 LF				
2250	906001 PORTABLE SEDIMENT TANK	2.000 EACH				
2260	907011 STONE CHECK DAM	5.000 TON				
2270	907012 TEMPORARY SLOPE DRAIN, 12"	120.000 LF				
2280	907017 COMPOST FILTER LOGS	1060.000 LF				
2290	908004 TOPSOIL, 6" DEPTH	12350.000 SY				
2300	908005 TOPSOIL, 12" DEPTH	278.000 SY				

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 25
DATE:

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All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2310	908010 TOPSOILING, 6" DEPTH	72125.000 SY				
2320	908014 PERMANENT GRASS SEEDING, DRY GROUND	91389.000 SY				
2330	908017 TEMPORARY GRASS SEEDING	99688.000 SY				
2340	908019 PERMANENT GRASS SEEDING, STREAMBANK	74.000 SY				
2350	908020 EROSION CONTROL BLANKET MULCH	11840.000 SY				
2360	908023 STABILIZED CONSTRUCTION ENTRANCE	1933.000 SY				
2370	908024 STABILIZED CONSTRUCTION ENTRANCE, TOPDRESSING	125.000 TON				
2380	909001 SANDBAG DIKE	170.000 CF				
2390	909004 TURBIDITY CURTAIN, FLOATING	30.000 LF				
2400	909006 STILLING WELL	2.000 CY				

DELAWARE DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF ITEMS

PAGE: 26
 DATE:

CONTRACT ID: T201504401.01 PROJECT(S): ESTP-N011(31)

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2410	910001 INFILTRATION STONE, NO. 3	CY 557.000				
2420	910002 INFILTRATION STONE, NO. 8	CY 1248.000				
2430	910006 OUTLET STRUCTURE	EACH 4.000				
2440	910009 INFILTRATION TRENCH	CY 450.000				
2450	910010 BIORETENTION AREA	CY 1607.000				
2460	910500 BIORETENTION SOIL MIX	CY 665.000				
	SECTION 0001 TOTAL					
	TOTAL BID					

CAN NOT BE
 USED FOR
 BIDDING

BREAKOUT SHEET INSTRUCTIONS

**BREAKOUT SHEET(S) MUST BE SUBMITTED EITHER WITH YOUR BID DOCUMENTS;
OR WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE BID DUE DATE BY THE
LOWEST APPARENT BIDDER.**

BREAKOUT SHEETS ARE TO BE SUBMITTED TO DELDOT'S CONTRACT ADMINISTRATION AS SHOWN BELOW. BREAKOUT SHEETS CANNOT BE CHANGED AFTER AWARD. THE DEPARTMENT WILL REVIEW THE FIGURES SUBMITTED ON THE BREAKOUT SHEET(S) TO ENSURE THEY MATCH THE RESPECTIVE LUMP SUM BID AMOUNT(S). MATHEMATICALLY INCORRECT BREAKOUT SHEETS WILL BE RETURNED FOR IMMEDIATE CORRECTION.

BREAKOUT SHEETS MAY BE SUBMITTED;

VIA E-MAIL TO: DOT-ASK@STATE.DE.US
SUBJECT: **T201504401.01** Breakout Sheet

OR MAILED TO: DELDOT
CONTRACT ADMINISTRATION
PO BOX 778, DOVER, DE 19903

'BREAKOUT SHEET' AND THE PROJECT NUMBER
MUST APPEAR ON THE ENVELOPE.

BREAKOUT SHEET - 1
ITEM 710504 – WATER SERVICES

CONTRACT NO. T201504401.01

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
1	245	LF	DUCTILE IRON PIPE CLASS 52, CEMENT LINED, 6"	\$	\$
2	172	LF	DUCTILE IRON PIPE CLASS 52, CEMENT LINED, 8"	\$	\$
3	2,006	LF	DUCTILE IRON PIPE CLASS 52, CEMENT LINED, 12"	\$	\$
4	153	LF	1.5" POLYETHYLENE SERVICE LINE, CLASS 160	\$	\$
5	146	LF	DIRECTIONAL DRILL 2" POLYETHYLENE CASING PIPE, CLASS 160	\$	\$
6	145	LF	JACK AND BORE, 12"X3/8" STEEL CASING PIPE	\$	\$
7	149	LF	JACK AND BORE, 16"X3/8" STEEL CASING PIPE	\$	\$
8	273	LF	JACK AND BORE, 20"X3/8" STEEL CASING PIPE	\$	\$
9	79	LF	ENCASE PROPOSED 12" WATER MAIN IN CONCRETE	\$	\$
10	5	EA	GATE VALVE, 6" WITH C.I. BOX AND COVER	\$	\$
11	1	EA	GATE VALVE, 8" WITH C.I. BOX AND COVER	\$	\$
12	5	EA	GATE VALVE, 12" WITH C.I. BOX AND COVER	\$	\$

**BREAKOUT SHEET - 1
ITEM 710504 – WATER SERVICES**

CONTRACT NO. T201504401.01

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
13	1	EA	INSERTION VALVE, 12" WITH C.I. BOX AND COVER	\$	\$
14	2	EA	FIRE HYDRANT, HYDRANT TEE 12"X6", GATE VALVE, 6" WITH C.I. BOX AND COVER	\$	\$
15	1	EA	BLOW OFF ASSEMBLY, 2". TO BE CONVERTED TO 2" SERVICE	\$	\$
16	1	EA	CURB STOP, 1.5"	\$	\$
17	2	EA	BENDS 45 DEGREES, 1.5"	\$	\$
18	2	EA	BENDS 11 ¼ DEGREES, 6"	\$	\$
19	4	EA	BENDS 45 DEGREES, 6"	\$	\$
20	1	EA	BENDS 90 DEGREES, 6"	\$	\$
21	2	EA	BENDS 45 DEGREES, 8"	\$	\$
22	10	EA	BENDS 11 ¼ DEGREES, 12"	\$	\$
23	4	EA	BENDS 22 ½ DEGREES, 12"	\$	\$
24	30	EA	BENDS 45 DEGREES, 12"	\$	\$
25	3	EA	BENDS 90 DEGREES, 12"	\$	\$
26	1	EA	1.5" SERVICE TAP ON 12" WATER MAIN	\$	\$
27	1	EA	2" SERVICE TAP ON 12" WATER MAIN	\$	\$

**BREAKOUT SHEET - 1
ITEM 710504 – WATER SERVICES**

CONTRACT NO. T201504401.01

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
28	4	EA	TEE, 12”X6”	\$	\$
29	1	EA	TEE, 12”X8”	\$	\$
30	2	EA	TEE, 12”X12”	\$	\$
31	1	EA	8”x8” WET TAP WITH 8” GATE VALVE WITH C.I. BOX AND COVER	\$	\$
32	3	EA	12”x12” WET TAP WITH 12” GATE VALVE WITH C.I. BOX AND COVER	\$	\$
33	1	EA	M.J. END CAP, 8” WITH 2” SERVICE CONNECTION TAP	\$	\$
34	3	EA	M.J. PIPE CAP, 6”	\$	\$
35	8	EA	M.J. PIPE CAP, 12”	\$	\$
36	1	EA	M.J. PIPE PLUG, 12”	\$	\$
37	4	EA	M.J. SLEEVE, 6”	\$	\$
38	4	EA	M.J. SLEEVE, 12”	\$	\$
39	1	EA	SLEEVE, 1.5”	\$	\$
40	1	EA	2”x1.5” Reducer	\$	\$
41	1	EA	Adjust Water Services	\$	\$
42	12	EA	Adjust Water Valve Boxes	\$	\$

BREAKOUT SHEET - 1
ITEM 710504 – WATER SERVICES

CONTRACT NO. T201504401.01

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
43	5	EA	Adjust/Relocate Fire Hydrants (Up to 15 LF Extension)	\$	\$

TOTAL ITEM NUMBER 710504 – WATER SERVICES \$ _____
(LUMP SUM BID PRICE FOR ITEM 710504– WATER SERVICES)

CAN NOT BE
USED FOR
BIDDING

BREAKOUT SHEET - 2

CONTRACT NO. T201504401.01

Item Number 711002 –SANITARY SEWER SYSTEM

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
1	1990	L.F.	4" Class 52 DIP	\$	\$
2	5	L.F.	8" Class 52 DIP	\$	\$
3	85	L.F.	1.5" IPS HDPE DR-11	\$	\$
4	241	L.F.	4" IPS HDPE DR-11	\$	\$
5	241	L.F.	8" IPS HDPE DR-11	\$	\$
6	636	EA	8" SDR-26 PVC	\$	\$
7	9	EA	48" Round Manhole (FM Clean-Out)	\$	\$
8	1	EA	48" Round Manhole (Air Release)	\$	\$
9	1	EA	84"x36" Junction Chamber	\$	\$
10	3	EA	48" Round Manhole	\$	\$
11	3	EA	4" M.J. Sleeve	\$	\$
12	1	EA	4" Bend, 90 Degrees	\$	\$
13	4	EA	4" M.J. Pipe Cap	\$	\$
15	11	EA	4" Bend, 11.25 Degrees	\$	\$
16	12	EA	4" Bend, 45 Degrees	\$	\$

BREAKOUT SHEET - 2

CONTRACT NO. T201504401.01

Item Number 711002 –SANITARY SEWER SYSTEM

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
17	4	EA	4" Bend, 22.5 Degrees	\$	\$
18	2	EA	1.5" Bend, 45 Degrees	\$	\$
19	1	EA	1.5" M.J. Pipe Cap	\$	\$
20	1	EA	1.5" M.J. Sleeve	\$	\$
21	1	EA	2" M.J. Pipe Cap	\$	\$
22	1	EA	2" M.J. Sleeve	\$	\$
23	1	EA	4"X1.5" Reducer	\$	\$
24	1	EA	4"X2" Reducer	\$	\$
25	1	EA	4"X8" DIP Class 52 Reducer	\$	\$
26	2	EA	4"X4" Tee	\$	\$
27	2	EA	4" HDPE to DIP Transition Coupling	\$	\$
28	1	EA	8" M.J. Pipe Cap	\$	\$
29	8	EA	Raise Existing Manhole	\$	\$
30	1	EA	Connect Proposed Sewer To Existing Manhole	\$	\$

BREAKOUT SHEET - 2		CONTRACT NO. T201504401.01			
Item Number 711002 –SANITARY SEWER SYSTEM					
ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
TOTAL ITEM NUMBER 711002 – SANITARY SEWER SYSTEM \$ _____ (LUMP SUM BID PRICE FOR ITEM 711002 – SANITARY SEWER SYSTEM)					

CAN NOT BE
 USED FOR
 BIDDING

BREAKOUT SHEET - 3		CONTRACT NO. T201504401.01			
Item Number 711505 – HDD FOR SANITARY SEWER					
ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
1	241	L.F.	Directional Drill HDPE DR-11 Casing Pipe and Force Main	\$	\$
TOTAL ITEM NUMBER 711505 – HDD FOR SANITARY SEWER \$ (LUMP SUM BID PRICE FOR ITEM 711505 – HDD FOR SANITARY SEWER)					

CAN NOT BE
 USED FOR
 BIDDING

BREAKOUT SHEET - 4

CONTRACT NO. T201504401.01

Item Number 801500 – MAINTENANCE OF TRAFFIC, ALL INCLUSIVE

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
1	1	LS	110100 -CLEARING & GRUBBING	\$	\$
2	1285	LF	114216 -5 INCH YELLOW EPOXY PAVEMENT MARKINGS	\$	\$
3	5980	LF	114221 -5 INCH WHITE EPOXY PAVEMENT MARKINGS	\$	\$
4	55	SF	114251 -PAVEMENT MARKING PAINT LEGENDS AND SYMBOLS	\$	\$
5	105	LF	114246 -24 INCH WHITE PAVEMENT LINE MARKINGS	\$	\$
6	13390	LF	114280 -REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH	\$	\$
7	55	SF	114286 -REMOVAL OF EXISTING PAVEMENT LETTERS, SYMBOLS, ARROW, AND NUMBERS	\$	\$
8	1	LS	120500 -MAINTENANCE OF TRAFFIC	\$	\$
9	270	UD	120610 -ARROW PANEL	\$	\$
10	4055	EA	120635 -SIGNS FOR MAINTENANCE OF TRAFFIC, RENTAL PER DAY	\$	\$
11	20	EA	120743 -TYPE III BARRICADE FOR MAINTENANCE OF TRAFFIC	\$	\$
12	100	HR	120747 -FLAGGER	\$	\$
13	17030	EA	120835 -DRUMS, RENTAL PER DAY	\$	\$
14	35	UD	120860 -PORTABLE VARIABLE MESSAGE SIGN	\$	\$

BREAKOUT SHEET - 4

CONTRACT NO. T201504401.01

Item Number 801500 – MAINTENANCE OF TRAFFIC, ALL INCLUSIVE

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
15	1	LS	130840 -CONSTRUCTION STAKEOUT	\$	\$
16	900	CY	201030 -CLASS 1 EXCAVATION	\$	\$
17	310	CY	201031 -CLASS 1A EXCAVATION	\$	\$
18	22	CY	210010 -REMOVAL OF EXISTING CURB (ANY TYPE)	\$	\$
19	50	LF	210019 -SAW CUTS	\$	\$
20	268	CY	210025 -REMOVAL OF EXISTING PAVEMENT	\$	\$
21	7	CY	210026 -REMOVAL OF EXISTING SIDEWALK	\$	\$
22	310	CY	202050 -SELECT BORROW (REFILL FOR CLASS 1A)	\$	\$
23	3	CY	203030 -TEST PIT EXCAVATION	\$	\$
24	79	TON	504530 -SUPERPAVE ASPHALT MIX 12.5MM FOR SURFACE, PG 64S-22, LEVEL 2	\$	\$
25	278	TON	504560 -SUPERPAVE ASPHALT MIX 19.0MM FOR BASE, PG 64S-22, LEVEL 2	\$	\$
26	695	SY	520113 -6 INCH GRADED AGGREGATE BASE COURSE	\$	\$
27	2970	LF	549401 -5 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	\$	\$
28	1510	LF	549403 -5 INCH YELLOW THERMOPLASTIC PAVEMENT MARKINGS	\$	\$

BREAKOUT SHEET - 4

CONTRACT NO. T201504401.01

Item Number 801500 – MAINTENANCE OF TRAFFIC, ALL INCLUSIVE

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
29	180	LF	549405 -10 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	\$	\$
30	15	SF	549425 -PAVEMENT MARKING PAINT LEGENDS AND SYMBOLS	\$	\$
31	485	LF	549609 -12 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES	\$	\$
32	115	LF	549617 -24 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES	\$	\$
33	74	LF	634131 -STANDARD TYPE C CURB 8 INCH X 11 INCH MINIMUM	\$	\$
34	107	LF	634204 -TYPE A CURB ANY HEIGHT OR DEPTH	\$	\$
35	14	LF	634301 -STANDARD TYPE A COMBINATION CURB AND GUTTER 12 INCH GUTTER PAN 8 INCH MINIMUM DEPTH	\$	\$
36	20	LF	634316 -STANDARD TYPE B COMBINATION CURB AND GUTTER 12 INCH GUTTER PAN 8 INCH MINIMUM DEPTH	\$	\$
37	363	LF	634331 -STANDARD TYPE C COMBINATION CURB AND GUTTER 12 INCH GUTTER PAN 8 INCH MINIMUM DEPTH	\$	\$
38	20	LF	634344 -STANDARD TYPE D COMBINATION CURB AND GUTTER 12 INCH GUTTER PAN 8 INCH MINIMUM DEPTH	\$	\$
39	510	LF	634500 -MIX 6 CONC SLOT BACKFILL	\$	\$
40	690	SF	655105 -5 INCH CONCRETE SIDEWALK	\$	\$

BREAKOUT SHEET - 4

CONTRACT NO. T201504401.01

Item Number 801500 – MAINTENANCE OF TRAFFIC, ALL INCLUSIVE

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
41	80	SF	655120 -DETECTABLE WARNING SURFACE FOR CURB RAMPS	\$	\$
42	250	SY	704365 -PLACING FURNISHED TOPSOIL 6 INCH DEPTH	\$	\$
43	250	SY	705500 -TURFGRASS ESTABLISHMENT	\$	\$
44	2	CY	801004 -CONCRETE FOR SIGNAL FOUNDATION	\$	\$
45	1	EA	802145 -ADJUST EXISTING HANDHOLE	\$	\$
46	300	LF	802501 -NO. 6 AWG STRANDED BARE COPPER GROUND WIRE	\$	\$
47	220	LF	805118 -4 INCH SCHEDULE 80 RIGID PVC CONDUIT - BORED	\$	\$
48	125	LF	805135 -3 INCH SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED	\$	\$
49	3	EA	811001 -FURNISH AND INSTALL ELECTRICAL HANDHOLE		
50	5	EA	818004 -10 FOOT BREAKAWAY PEDESTAL POLE	\$	\$
51	2	EA	837001 -GROUND ROD - 3/4 INCH DIAMETER X 10 FOOT LENGTH	\$	\$
52	4	EA	860285 -16 INCH LED COUNTDOWN PEDESTRIAN SIGNAL HEAD	\$	\$
53	1	EA	860292 -CUT, CLEAN, GALVANIZE AND CAP TRAFFIC SIGNAL STRUCTURE	\$	\$

BREAKOUT SHEET - 4**CONTRACT NO. T201504401.01****Item Number 801500 – MAINTENANCE OF TRAFFIC, ALL INCLUSIVE**

ITEM NO.	APPROX. QTY.	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
54	800	LF	861105 -ELECTRICAL CABLE 2-CONDUCTOR (NO. 14 AWG)	\$	\$
55	710	LF	861107 -ELECTRICAL CABLE 5-CONDUCTOR (NO. 14 AWG)	\$	\$
56	5	EA	865210 -AUDIBLE/TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS	\$	\$
57	1	EA	865300 -2-WIRE APS CENTRAL CONTROL UNIT	\$	\$
58	80	HR	873155 -MARYLAND STATE POLICE WITH VEHICLE	\$	\$

TOTAL ITEM NUMBER 801500 – MAINTENANCE OF TRAFFIC, ALL INCLUSIVE \$ _____
(LUMP SUM BID PRICE FOR ITEM 801500 – MAINTENANCE OF TRAFFIC, ALL INCLUSIVE)

**USED FOR
BIDDING**

"ATTENTION"

TO BIDDERS

BREAKOUT SHEET(S) MUST BE SUBMITTED EITHER WITH YOUR BID DOCUMENTS; OR WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE BID DUE DATE BY THE LOWEST APPARENT BIDDER.

BREAKOUT SHEETS ARE TO BE SUBMITTED TO DELDOT'S CONTRACT ADMINISTRATION AS SHOWN BELOW. BREAKOUT SHEETS CANNOT BE CHANGED AFTER AWARD. THE DEPARTMENT WILL REVIEW THE FIGURES SUBMITTED ON THE BREAKOUT SHEET(S) TO ENSURE THEY MATCH THE RESPECTIVE LUMP SUM BID AMOUNT(S). MATHEMATICALLY INCORRECT BREAKOUT SHEETS WILL BE RETURNED FOR IMMEDIATE CORRECTION.

BREAKOUT SHEETS MAY BE SUBMITTED:

VIA E-MAIL TO: DOT-ASK@STATE.DE.US
SUBJECT: **T201504401.01** Breakout Sheet

OR MAILED TO: DELDOT
CONTRACT ADMINISTRATION
PO BOX 778, DOVER, DE 19903

'BREAKOUT SHEET' AND THE PROJECT NUMBER
MUST APPEAR ON THE ENVELOPE.



**AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite, including subcontractors, that complies with this regulation:

Contractor Name: _____

Contractor Address: _____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED, NOTARIZED, AND RETURNED WITH YOUR BID.

(This form is required from the prime contractor only, not required from subcontractors)

CERTIFICATION

Contract No. T201504401.01
Federal Aid Project No. ESTP-N011(31)

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 DeIDOT are advised that the prime contractor and subcontractors are required to submit to DeIDOT 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 DeIDOT prior 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 prosecution or administrative sanctions.

(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.

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.

I/We acknowledge receipt and incorporation of addenda to this proposal as follows:

No.	Date								
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

BIDDERS MUST ACKNOWLEDGE RECEIPT OF ALL ADDENDA

MUST INSERT DATE OF FINAL QUESTIONS AND ANSWERS ON WEBSITE: _____ 

Agreement to Accept Retainage

"Bidder acknowledges that if its Performance-Based Rating as defined in 29 Del.C. §6962 and section 2408 of Title 2 of Delaware's Administrative Code is below the required minimum threshold, as a condition to bid, Bidder acknowledges, consents and agrees to the Department withholding retainage of up to 5% from the monies due at the time of each progress payment under the contract." NEW

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.
T201504401.01, to be paid to the **State** for the use and benefit of its Department of Transportation ("**DeIDOT**")
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 **DeIDOT** 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 **DeIDOT**, 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__).

SEALED, AND DELIVERED IN THE
presence of

Name of Bidder (Organization)

Corporate
Seal

By: _____
Authorized Signature

Attest _____

Title

Name of Surety

Witness: _____

By: _____

Title