

STATE OF DELAWARE

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DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T201507402.01

FEDERAL AID PROJECT NO. BHN-N347(03)

CFDA NO. 20.205

BR 1-714 ON N347 CHAPMAN ROAD OVER I-95

NEW CASTLE COUNTY

ADVERTISEMENT DATE: September 23, 2019

COMPLETION TIME: 565 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 October 22, 2019

**Contract No. T201507402.01
Federal Aid Project No. BHN-N347(03)**

**BR 1-714 ON N347 CHAPMAN ROAD OVER I-95
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 replacement of Bridge 1-714. The scope of work is to replace the existing bridge with two separate single span bridges over NB and SB I-95 with a wall supported embankment across the median of I-95. Additional work will include the construction of new roadway approaches to tie the new bridge into existing Chapman Road. ADA compliant sidewalks and curb ramps will be installed from Regal Boulevard to Alexis Drive, 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 565 Calendar Days. The Contract Time includes an allowance for 93 Weather Days. It is the Department's intent to issue a Notice to Proceed such that work starts on or about January 27, 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 22, 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 T201507402.01 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 DISINCENTIVES are contained on the following pages.

Contract T201507402 Disincentive

Sheets 103 through 125 of the contract drawings provide a sequence of construction to be followed for this contract. These sheets show traffic impacts that will cause significant congestion, delay, and/or operation constraints to the traveling public. As such, disincentives will be assessed for certain portions of the sequence of construction where the traffic impacts are the greatest. The amount of disincentives shall be deducted from any monies due to the Contractor, not as a penalty but as a liquidated damage assessed to recover the cost of inconvenience to the public, the added cost of engineering and supervision, and the other extra expenditures of public funds caused by the Contractor’s failure to complete work within the allotted time. Damages in excess of any monies due or retained percentage shall be paid to the Department by the Contractor.

A. Disincentives for Work on I-95

As detailed in the plans, installation of the new structural steel and demolition of the existing bridge superstructures will require nighttime closures of I-95. Complete closure of a direction of I-95 can only occur between 10 PM and 5 AM each night, Monday night to Friday morning with the following restrictions:

- Closures of I-95 for steel beam erection are permitted for three nights per direction (total of six nights).
- Closures of I-95 for removal of the existing bridge beams are permitted for three nights per direction (total of six nights).
- Closure of both northbound and southbound I-95 simultaneously is prohibited.

Failure to fully reopen to traffic all lanes of I-95 by 5 AM will result in the Contractor being assessed disincentive charges as shown in Table 1.

Table 1 – Full Closure Disincentives

Northbound and Southbound I-95 (Monday through Friday)	
Time All Lanes Reopened ("Verizon	Contractor Disincentives for Failure to Reopen
5:00 AM to	\$1,000
5:15 AM to	\$2,000
5:30 AM to	\$3,000
5:45 AM to	\$4,000
6:00 AM to	\$5,000
6:15 AM to	\$6,000
6:30 AM to	\$7,000
6:45 AM to	\$8,000
Not Open by	\$12,000
Each hour or portion thereof	+\$4,000 per hour

For work requiring lane closures on I-95, lane closures will be permitted as detailed on Sheet 103 of the plans. Failure to reopen lanes in accordance with the plans will result in the Contractor being assessed disincentive charges in the amount of \$500 per every 15 Minutes.

The maximum disincentive charge per Calendar Day for either case will be \$30,000.

B. Disincentives for Work on Chapman Road

As detailed in the plans, Chapman Road may be closed for certain construction activities from 8 PM to 5 AM. Failure to reopen both lanes of traffic by 5 AM will result in the Contractor being assessed disincentive charges of \$1,000 per hour. A partial hour will be considered a full hour. The maximum disincentive charge per Calendar Day for closure of Chapman Road will be \$10,000.

C. Updates and Other General Conditions

1. In order to minimize disruption and cost to the traveling public, the Contractor shall give his/her full attention to this project, such that all work will be completed as soon as possible after “Notice to Proceed”.
2. The disincentives specified above do not alter or replace the liquidated damages as specified in Standard Specification Subsection 108.08 “Failure to Complete on Time”. Once the Contract Completion Date has been reached, liquidated damages will be assessed on the Contract as a whole.
3. The completeness of the work shall be determined solely by the Engineer.
4. Calendar Day for the disincentive payment shall be defined as the 24 hour period starting at the time the associated lane or roadway is closed. For example, if I-95 NB is closed at 10:00 pm, one Calendar Day will be reached at 10:00 pm the following day for determining the disincentive charge.
5. As used herein:
 - (a) as to “fully reopen to traffic” shall mean that all Maintenance of Traffic devices required for the associated work are removed from the travel lanes and shoulders of I-95.

D. Calculation Examples for Assessment of Disincentives

1. Full closure of I-95 Northbound until 6:20 AM on a Tuesday:
Per Table 1, a RUC of \$6,000 will be assessed.

I-95 NB Full Closure from 5:00 am to 6:20 am

5:00 AM to 5:14 AM	\$1,000
5:15 AM to 5:29 AM	\$2,000
5:30 AM to 5:44 AM	\$3,000
5:45 AM to 5:59 AM	\$4,000
6:00 AM to 6:14 AM	\$5,000
6:15 AM to 6:20 AM	\$6,000

2. Lane closure of I-95 Northbound until 6:20 AM on a Tuesday:

Per table on Sheet 103 of the Plans. A single lane closure is permitted on I-95 NB until 6:00 AM on a Tuesday.

I-95 NB lane closure to 6:20 am

6:00 AM to 6:14 AM	\$500
6:15 AM to 6:20 AM	\$1,000

Contract No. T201507402.01
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).

* * * * *

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 8 % 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.

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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 www.fhwa.dot.gov/programadmin/contracts/1273/1273.pdf

- 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

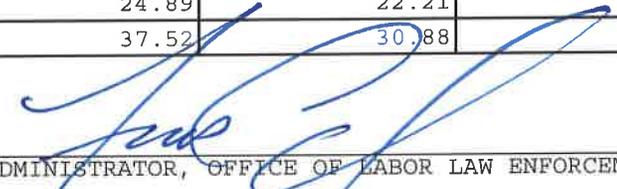
Mailing Address:
4425 North Market Street
3rd Floor
Wilmington, DE 19802

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: 09/05/2019

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: T201507402.01 BR 1-714 on N347 Chapman Road Over I-95 , 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

202507 – INCLINOMETERS

Description:

The work of this section includes furnishing, installing, initializing, protecting, and maintaining inclinometer casing and probes required to observe subsurface ground movements during construction at the locations provided on the plans.

No instrumentation installation shall take place before review by the Engineer of instrumentation submittals.

Purposes of the Geotechnical Instrumentation Program include but are not limited to:

- a. Providing pre-construction baseline data for comparison with construction and post-construction data.
- b. Providing a warning of conditions that may require remedial or precautionary measures in order to ensure the stability and safety of the work.
- c. To monitor the stability of the proposed roadway embankment construction.

Description of Instruments

1. Inclinometers consist of an inclinometer casing installed and grouted within vertical boreholes in the in-situ soil materials. A probe lowered within the casing is used to monitor horizontal displacements of soil occurring during and after construction.

Responsibilities of Contractor:

Responsibilities of Contractor shall include, but not be limited to, the following:

- a. Furnish all components of geotechnical instrumentation required by the Contract.
- b. Furnish probes and portable readout units.
- c. Install instruments specified as located on the Plans, listed in this specification or as directed by the Engineer.
- d. Taking initial readings of all installed instrumentation.
- e. Protect casings and instruments from damage and maintain instruments installed. Repair or replace damaged or inoperative instruments throughout the duration of the Contract, within 72 hours after the damage has been discovered and the Contractor informed.
- f. Maintain and calibrate probes and portable readout units following the recommendations of the equipment manufacturer.
- g. Perform and report the results of pre-installation and post installation acceptance tests.
- h. Provide any additional instrument, collect and interpret data from that instrumentation that the Contractor or Engineer deems necessary.
- i. Divert any machinery inducing disturbance during data collection.
- j. The Contractor shall provide and facilitate safe access to the Work at all times for the Engineer to collect data from all instruments, including any additional instruments installed by the Contractor as specified herein. Safe access shall include, but not be limited to, cessation of work activities, temporary relocation of obstructing materials and equipment, provision of ladders, fall protection, working platforms and hoisting services, and any other needs that, in the opinion of the Engineer, are necessary to ensure the safety of data collection personnel. The Contractor shall furnish two sets of safety equipment for use by the Engineer when required to collect data.
- k. Coordinate with the Engineer to verify consistency of collected data.

Qualification of Contractor's Instrumentation Personnel:

- a. Geotechnical instrumentation work involves highly specialized tasks. The Contractor's Geotechnical Instrumentation Engineer who is responsible for overseeing the procurement shall have the qualifications specified herein. The Geotechnical Instrumentation Engineer may be on the staff of the Contractor or may be on the staff of a specialist instrumentation subcontractor.
- b. The Contractor's instrumentation personnel shall include a superintendent who will be in responsible charge full-time on-site during the installation and initial readings of geotechnical instrumentation program. The superintendent shall have at least four years of direct field experience in installation and monitoring of the types of instrumentation specified herein and shall have supervised instrumentation programs of similar magnitude in similar subsurface conditions. The superintendent shall be on-site and supervise all instrument installations, pre-installation acceptance tests, post-installation acceptance tests, field calibrations, initial readings and data collection, reduction, processing, plotting, and reporting after the geotechnical instrumentation engineer has performed the first two of these tasks as specified herein.
- c. The Contractor's instrumentation personnel shall include a qualified Geotechnical Instrumentation Engineer who is a registered Professional Engineer in the State of Delaware, who has a minimum of Bachelor of Science degree in Civil Engineering, who has at least 4 years of experience in installation and monitoring of the types of instruments specified herein and in interpreting instrumentation data. The Geotechnical Instrumentation Engineer shall demonstrate previous successful experience on at least four instrumentation projects and experience with each types of geotechnical instrument specified herein. The Geotechnical Instrumentation Engineer shall:
 - 1. Supervise preparation, and review Contractor submittals related to geotechnical instrumentation.
 - 2. Be on site and supervise installations of each inclinometer.
 - 3. Conduct the pre-installation and post-installation acceptance tests for at least the first two inclinometers.
 - 4. Be on site until the completion and acceptance tests for at least the first two inclinometers.
 - 5. Be available on site to manage the repair and replacement of damaged instruments.
- d. The driller responsible for drilling instrumentation boreholes shall be on-site full-time during the drilling program and shall have at least four years of direct field experience in drilling boreholes for the types of instruments specified herein.
- e. The Contractor shall provide the Engineer, for his approval, a description of the applicable experience of such personnel. Approval of the personnel shall be received before commencing with the installation.
- f. Contractor's instrumentation personnel and surveyors, including the geotechnical instrumentation engineer, the superintendent, the driller, the field survey party chief, and all other field and office personnel shall be subject to the approval of the Engineer.

Calibration:

- a. A factory calibration shall be conducted on all instruments prior to shipment from the manufacturing location. Each factory calibration shall include a calibration curve with data points clearly indicated, and a tabulation of the data. Each instrument shall be marked with a unique identification number. Certification shall be provided to indicate that the test equipment used for this purpose is calibrated and maintained in accordance with the test equipment manufacturer's calibration requirements and that, where applicable, calibrations are traceable to the National Institute of Standards and Technology. A final quality assurance inspection shall be made by the Manufacturer prior to shipment with the results of the inspection recorded on a checklist. A copy of the completed checklist shall be included with each instrument in the shipment.
- b. Factory calibrations of inclinometers shall include comprehensive calibrations of the force balance accelerometers before assembly in the probe. A final calibration shall include measurements made at 10 degree intervals from minus 30 degrees to plus 30 degrees with

- c. respect to vertical, and a comprehensive repeatability check over a smaller zone near vertical. Contractor shall provide the manufacturer's warranty for each piece of equipment furnished for the monitoring program and such warranty shall be in place for the duration of the Contract.
- d. Calibration shall be performed no longer than 6-months before the initial reading.

Submittal:

- a. No instrumentation shall be delivered or installed on the site before review by the Engineer of the materials, products, and installation procedures.
- b. Within 15 workdays after Notice of Proceed, submit to the Engineer for review the resumes of the Geotechnical Instrumentation Engineer sufficient to define details of relevant site experience on projects of this type and magnitude. Documentation that supervisory personnel and technicians performing the instrumentation work are qualified.
- c. At least 20 workdays prior to commencing installation of the first inclinometer, submit to the Engineer for review the following items pertaining to that instrument type:
 - 1. Manufacturers' product installation data, including instruction manual and including any requests for consideration of substitutions, as specified herein, and warranty provisions. Manufacturer's catalog cuts, shop drawings, material specifications, installation and maintenance instructions, and other data pertinent to the work of this Section.
 - 2. Manufacturer's certifications that products, materials, and equipment furnished meet the specified requirements.
 - 3. Detailed step-by-step procedure for installation, together with a sample installation record sheet. Proposed schedule and procedures for instrumentation installation and performance of initial reading monitoring for the instruments. The procedures shall be bound and indexed. The installation procedures shall follow guidelines provided in the manufacturers' instruction manuals, and include, but not limited to:
 - i. The method to be used for cleaning the inside of casing or augers.
 - ii. Method and equipment for mixing and placing the grout.
 - iii. Grout Mix: Material specifications and mix design for grout required for deep benchmarks and inclinometer installations along with verification from a certified testing laboratory that this mix is in accordance with the requirements specified. The information shall include specifications for proposed grout mixes, including commercial names, proportions of admixtures and water, mixing sequence, mixing methods and duration, pumping methods and tremie pipe type, size and quantity.
 - iv. Drill casing or auger type and size.
 - v. Depth increments for backfilling boreholes with sand and granular bentonite.
 - vi. Method for overcoming buoyancy of instrumentation components during placement and grouting.
 - vii. Method of sealing joints in pipes and inclinometer casing to prevent ingress of grout.
 - viii. Method for conducting post-installation acceptance test.
 - ix. Method for protecting instruments from damage.
 - x. Methods applicable to all instruments for compression of instruments due to consolidation of the foundation without damaging the instrument.
 - 4. A flow chart indicating the proposed time sequence of instrument installation.
 - 5. Sample of the quality assurance checklist, pre-installation acceptance test record, installation record for each instrument type to be used to check instruments on receipt from the manufacturer.

- d. At least 20 workdays prior to installing each instrument, the Contractor shall submit to the Engineer for review, the location, installation schedule and monitoring schedule for that instrument.
- e. Within 5 workdays of receipt of each instrument at the site, submit to the Engineer a copy of factory calibration, manufacturer's test equipment certification, completed copy of quality assurance checklist, and warranty for each instrument and portable readout unit.
- f. Within 10 workdays of receipt of each instrument at the site, submit to the Engineer completed pre-installation acceptance test record form for that instrument.
- g. Within 5 workdays of installing each instrument, submit to the Engineer the installation record sheet for that instrument, including as-built instrument location as specified, and any field calibrations performed.
- h. Submit initialization data as specified herein.
- i. The Contractor shall submit to the Engineer updated as-built instrument location plans and work drawings as specified herein within 5 workdays of the completion of installation of each instrument. The work drawings shall include, but not limited to:

Instrumentation Layout and Installation Details: Within two days of installing each instrument, Contractor shall submit and installation record sheet including appropriate items from the following list.

- 1. Project name.
- 2. Contract name and number.
- 3. Instrument type and number including readout unit.
- 4. Planned location in horizontal position and elevation.
- 5. Planned orientation.
- 6. Planned lengths and volumes of backfill.
- 7. Personnel responsible for installation.
- 8. Plant and equipment used including diameter and depth of any drill casing or augers used.
- 9. Date and time of start and completion.
- 10. Spaces on record sheet for necessary measurements or readings required at hold-points during installation to ensure that all previous steps have been followed correctly including instrument readings made during installation.
- 11. A log of subsurface data indicating the elevations of strata changes encountered in the borehole. Soil strata nomenclature shall conform to ASTM D 2487.
- 12. Type of backfill used to fill instrumentation boreholes.
- 13. As-built location in horizontal position, top elevation, and bottom elevation.
- 14. As-built orientation.
- 15. As-built lengths and volumes of various backfill materials placed in the instrumentation borehole.
- 16. Result of post-installation acceptance test.
- 17. Weather conditions at the time of installation.
- 18. Notes of importance on the installation including problems encountered, delays, unusual features of the installation, and details of any events that may have a bearing on instrument behavior.

Control of Materials:

- a. The Engineer reserves the right to approve each of the materials to be used in fulfilling the requirements of instrumentation work. Approval of the materials to be used for instrumentation shall not relieve Contractor of the responsibility to provide instrumentation in accordance with these Special Provisions.
- b. The Engineer reserves the right to inspect, test, and approve the workmanship of the instrumentation equipment and materials.

Field Monitoring:

- a. The Engineer reserves the right to approve the method of installation and maintenance of monitoring devices. Approval of the method of installation and maintenance of monitoring devices shall not relieve Contractor of the responsibility to install and maintain the instruments in conformance with the Specifications.
- b. The Engineer shall be notified of monitoring devices that become damaged or inoperable within 12 hours of the time Contractor becomes aware of such conditions.

Scheduling of Work:

- a. The Geotechnical Instrumentation Engineer and the Engineer shall meet and jointly gather initial readings in accordance with the following schedule:
 1. Inclinometers for ground instrumentation shall be installed and formal initial readings agreed on at least 20 workdays prior to the start of any construction. Data from the ground instrumentation shall be obtained at least three times a week during the construction of the embankment and at least weekly thereafter.
- b. Variations in this schedule proposed by the Geotechnical Instrumentation Engineer require the prior review and acceptance by the Engineer.

Storage of Instruments:

All instrumentation materials, after receipt at the site and prior to installation, shall be stored in a secure facility in accordance with the manufacturers' recommendations. The requirements may include indoor, clean, dry, and temperature controlled storage space.

Materials:

- a. All materials shall be new.
- b. Whenever any product is specified by brand name and model number, such specifications shall be deemed to be used for the purpose of establishing a standard of quality and facilitating the description of the product desired. The term "or approved equal" shall be understood to indicate that the "approved equivalent" product is the same or better than the product named in the specifications in function, performance, reliability, quality, and general configuration. This procedure is not to be construed as eliminating from competition other suitable products of equal quality by other manufacturers. In such cases Contractor may submit complete comparative data to the Engineer for consideration of another product. Substitute products shall not be ordered, delivered to the site, or used in the work unless accepted in writing by the Engineer. The Engineer will be the sole judge of the suitability and equivalency of the substituted product.
- c. Any request from the Contractor for consideration of a substitution shall clearly state the proposed alternative, the nature of the deviation from the product specified and the reason for the deviation requested. The Contractor shall also provide documentation supporting the claim of "acceptable equivalent".
- d. The Contractor shall furnish specified readout units, together with associated calibration devices and software for making pre-installation and post-installation acceptance tests, for taking any required readings during installation, and for taking additional readings required by the Contractor during the course of the Work. Such readout units shall be identical to the specified readout units and shall be of sufficient quantity to meet the schedule needs of the project.
- e. The Contractor shall furnish all installation tools, materials, and miscellaneous instrumentation components necessary to install the required instrumentation in a fully functional state. The Contractor shall provide protection to each instrument to prevent damage by the elements, vandals and the Work activities. The Contractor shall submit

proposed protection methods and measures to be used for review and acceptance by the Engineer at least 30 workdays prior to the start of the installation. The Contractor shall maintain and repair all protection measures for the duration of the Contract.

- f. For each instrument type, provide an instruction manual which shall include the following:
1. A description of the purpose of the instrument.
 2. Theory of operation.
 3. Step-by-step procedures for:
 - i. Pre-installation acceptance test when instruments are received on site, to ensure the instruments are functioning correctly before installation.
 - ii. Calibration of readout units.
 4. A list of calibration equipment required, and recommended frequency of calibration.
 5. Step-by-step instrument installation procedure including materials, tools, spare parts and any borehole requirements, and post-installation acceptance tests.
 6. Maintenance procedure.
 7. Step-by-step data collection procedure.
 8. Data reduction, processing, and plotting procedures.
- g. Contractor shall provide products, materials, and equipment in conformance with the Plans and Special Provisions so as to fulfill the requirements of the instrumentation work.
- h. All measurements, dimensions and units shall be in U.S. Customary Units, for example, feet, inches, and pounds.
- i. Provide inclinometer casing, probe, cable, readout unit, and accessories as manufactured by Slope Indicator Company, or approved equivalent.
- j. Inclinometer casing shall be ABS plastic or acceptable equivalent with a minimum outside diameter of 2.75-inch and with adequate wall thickness to withstand external ground pressures but with flexibility enough to reflect horizontal ground movement. The casings shall have broached internal keyways equally spaced 90 degrees apart, with twist-tolerance better than one degree per 10-foot of length, and shall be compatible with other components of the inclinometer. Couplings shall be of the telescoping type to permit the casing to adjust to compression of the foundation.
- k. Probe shall be Slope Indicator Company Model No. 50302510, or approved equivalent. Probe shall be supplied in a carrying case. Probe shall be biaxial consisting of two force balance accelerometers mounted at 90 degrees, with a 2-foot wheelbase.
- l. The control cable shall Slope Indicator Company Model No. 50601010 or approved equivalent and shall be compatible with sensor and readout unit, 100 feet long, sheathed with neoprene or polyurethane, with vulcanized rubber markers, and an internal wire rope. Minimum cable outside diameter shall be 0.4 inch.
- m. Readout unit shall be Slope Indicator Company "Digitilt DataMate" Model No. 50310900, or approved equivalent. The time interval between recordings 2-foot apart in the casing shall be such that the reading stabilizes to within plus or minus one unit of display within eight seconds. The readout unit shall be compatible with inclinometer probe. Readout unit shall include a battery charger.
- n. Provide accessories, consisting of end caps, tools, and materials for attaching couplings and taking readings.
- o. Provide inclinometer software, DigiPro, as supplied by Slope Indicator Company, or GTILT Plus Version 1.46 or later, as supplied by Mitre Software Corporation, or approved equivalent.
- p. Cement grout shall be Type III Portland cement and water. Special grout Type B shall include cement, bentonite, and water, and shall have a 7-day unconfined compressive strength of not less than 300 psf and not more than 500 psf.
- q. Provide additional casing to extend the inclinometer up through any added fill.
- r. Surface protection shall have a diameter adequate to allow attachment of cable support assembly, or shall allow for an inclinometer casing extension while readings are being taken. The length of the inclinometer casing extension as installed shall not vary by more than 0.05 inches between sets of readings.

Construction:

Pre-Installation Acceptance Tests

- a. When instruments are received at the site, Contractor's instrumentation personnel shall perform pre-installation acceptance tests to ensure that the instruments and readout units are functioning correctly before installation. Pre-installation acceptance tests shall include relevant items from the following list:
 1. Examine factory calibration curve and tabulated data to verify completeness.
 2. Examine manufacturer's final quality assurance inspection checklist to verify completeness.
 3. Check cable length.
 4. Check tag numbers on instrument and cable.
 5. By comparing with procurement document, check that the model, dimensions, materials, etc. are correct.
 6. At point of connection to instrument bend cable back and forth while reading the instrument to verify connection integrity.
 7. Perform resistance and insulation testing in accordance with criteria provided by the instrument manufacturer using a gauge insulation or circuit tester that applies 2 volts or less for resistance testing and 15 volts or less for insulation testing.
 8. Verify that all components fit together in the correct configuration.
 9. Check all components for signs of damage in transit.
 10. Check that quantities received correspond to quantities ordered.

- b. During pre-installation acceptance testing of each instrument, the Contractor's instrumentation personnel shall complete a pre-installation acceptance test record form. The test record sheet shall include appropriate items from the following list:
 1. Project Name.
 2. Instrument type and number.
 3. Identification of any testing or readout equipment used during testing.
 4. Personnel responsible for testing.
 5. Date and time of test.
 6. Measurements and observations made during testing as specified herein.
 7. Test results, pass or fail.
 8. Notes on any environmental condition or test condition or observed anomaly that might affect subsequent use of instrument or data obtained from it.

- k. An instrument that fails the specified pre-installation acceptance test shall be repaired such that it passes a subsequent pre-installation acceptance test or shall be replaced by an identical instrument at no additional cost to the Department.

Installation

- a. The Geotechnical Instrumentation Engineer shall install instruments in accordance with the Contractor's detailed step-by-step procedures that were submitted as specified herein, and reviewed by the Engineer.
- b. All instrumentation shall be installed and furnished in accordance with the details shown on the Plans and requirements of the Specifications at the locations indicated in Table 1 or as directed by the Engineer.
- c. Installation procedures for inclinometer and deep bench marks shall be such that all steps in the procedure can be verified in a quality assurance program. Granular bentonite shall be placed in depth increments not exceeding 1 foot. Volumes of each increment of backfilling with sand and bentonite shall be small enough such that no bridging occurs, and the depth to the top of each increment shall be checked after placement with sounding hammer.

- d. Grout shall be placed using a tremie method with side discharge ports on the tremie pipe.
- e. Prior to installing any instrument through drill casing or augers, all material adhering to the inside of the casing or augers, and all cuttings, shall be removed thoroughly.
- f. Whenever withdrawing drill casing or augers during instrument installation in a borehole, care shall be taken to minimize the length of unsupported borehole and the rate of casing or auger withdrawal. Collapse of the borehole shall not be allowed to build up inside the casing or auger such that the instrument is lifted as the casing or auger is withdrawn. The casing or auger shall be withdrawn without rotation. The casing or auger may be omitted, if allowed by the Engineer, only where it can be shown that instrument installation without the casing or auger will not cause collapse of the borehole or in any way adversely affect instrument installation. If casing or augers are omitted, or the Engineer allows withdrawal of casing or augers prior to instrument installation, the following requirements shall apply. The instrument shall be installed in the borehole in a continuous operation, starting when instrumentation materials are first placed in the borehole, and shall not be interrupted prior to complete backfilling of the borehole to the ground surface. Partially completed instrument installations shall not be left in unsupported boreholes overnight without the prior written concurrence of the Engineer.
- g. The Contractor shall notify the Engineer at least 2 workdays prior to installing each instrument.
- h. Contractor's data will be accepted by the Engineer only if the data are obtained from instrumentation furnished, calibrated, tested, installed, and maintained as specified herein.
- i. As each instrument is installed, an installation record sheet shall be prepared, including appropriate items from the following list:
 - 1. Project Name.
 - 2. Contractor name and number.
 - 3. Instrument type and number, including readout unit.
 - 4. Planned location in horizontal position and elevation.
 - 5. Planned orientation.
 - 6. Planned lengths and volumes of backfills.
 - 7. Personnel responsible for installation.
 - 8. Plant and equipment used, including diameter and depth of any drill casing or auger used.
 - 9. Date and time of start and completion.
 - 10. Spaces on record sheet for necessary measurements or readings required at hold points during installation to ensure that all previous steps have been followed correctly, including instrument readings made during installation.
 - 11. Type of backfill used.
 - 12. As-built location in horizontal position and elevation including the elevation referenced to the Project Elevation Datum, together with the location of the point used for the elevation measurement.
 - 13. As-built orientation.
 - 14. As-built lengths and volumes of backfill.
 - 15. Results of post-installation acceptance test.
 - 16. Weather conditions at the time of installation.
 - 17. A space on record sheet for notes, including problems encountered, delays, unusual features of the installation, and details of any events that may have a bearing on instrument behavior.
- k. Any instrument that fails the specified post-installation acceptance test shall be replaced by an identical instrument at no additional cost to the Department.
- l. Instrumentation shall include maintaining instrumentation throughout the Contract.
- m. Damaged instrumentation shall be repaired or replaced at the expense of Contractor. The repair or replacement shall occur within one week of notification of damage by the Engineer, unless otherwise specified.
- n. The Contractor shall submit updated as-built instrument location plans to the Engineer. The

location plans shall be reproducible composite plans of all installed instruments plotted on 11-inch by 17-inch or 24-inch by 36-inch sheets at a scale of 1 inch = 30 feet. The first plans shall be submitted within 20 workdays after completion of the first instrument installation, regardless of instrument type. Update plans shall be submitted every 4 calendar weeks. Updated plans need not be submitted for periods during which no instruments have been installed.

- o. The Contractor shall label each instrument with the instrument number. Numbers shall be unique for the project. The label shall be permanent and visible without having to remove protective measures. The reference mark and orientation required for instruments shall be clearly marked on the instrument in a permanent manner.
- p. Inclinometer casings shall be installed at the locations and depths indicated in Table 1 or as directed by the Engineer, and according to the manufacturer's recommendations. The Engineer reserves the right to modify the locations, number, and depth of the instrument based on the materials encountered in the boreholes during installation. After installation, the casing groove spiral shall not exceed one degree per 10 feet of length, the orientation of the grooves at the top of the casing shall be within 10 degrees of the planned orientation, and no part of the casing shall deviate from vertical by more than 4 percent of the depth to that part.
- q. Correct casing groove orientation shall be maintained throughout installation. Once installed the casing cannot be rotated to align the grooves.
- r. Telescoping couplings should be installed in the fully extended position.
- s. After completion of installation, the as-built location in horizontal position shall be determined to an accuracy of ± 0.03 foot, and the elevation of the top of the inclinometer casing to an accuracy of ± 0.01 foot. The point selected to determine horizontal position shall be marked on the casing and indicated on the installation record sheet.
- t. Place protective cap on the bottom of the inclinometer casing and seal with ABS solvent cement to provide a waterproof seal.
- u. Assemble additional sections of inclinometer casing using appropriate couplings and lower them into the hole. Fully extend telescoping casing sections and ensure that seals are watertight.
- v. After completion of installation but before the grout has set, a post-installation acceptance test shall be performed to verify that there is no grout in the inclinometer casing, that groove orientation is correct, and that the inclinometer probe tracks correctly in all four orientations. After the grout has set, a check shall again be made to verify that the inclinometer probe tracks correctly in all four orientations.
- w. Install protective terminal box with locking cover over the top end of the inclinometer casing. Lock cover.
- x. Each inclinometer installation shall be marked with a survey stake 3 feet long and tied with flags to clearly show its location and to warn equipment operators and others of its location. Contractor shall maintain the stakes and flags during the entire period of this Contract, and replace those that are missing.
- y. Contractor is responsible for maintaining the inclinometers in working order during the period of this Contract. This includes raising and lowering inclinometer casing with preload fill. Sections shall be added and removed as necessary to maintain the top of the inclinometer casing at least 1 foot but no more than 5 feet above the surface of the fill. As each additional inclinometer casing is added, Contractor shall immediately lower the "dummy" probe into the inclinometer casing up to the bottom in two directions to ensure that the four grooves are free of obstructions over their entire length. Instruments damaged by Contractor's construction operation shall be repaired or replaced by Contractor at Contractor's expense, to the satisfaction of the Engineer.

Field Calibration and Maintenance

- a. The Geotechnical Instrumentation Engineer shall conduct regular field calibrations and maintenance of readout units used for the Contractor's monitoring program and regular maintenance of field terminals and accessible instrument components. Regular field calibrations shall be made at least every three months.

- b. On each day during which initial inclinometer readings are to be made by the Contractor, the Geotechnical Instrumentation Engineer shall verify inclinometer repeatability by lowering the inclinometer probe to a stable depth in one selected inclinometer casing, at a depth below the water table where verticality of the casing is within $\pm 0.5\%$ of vertical, wait for temperature stabilization, take readings on both box, rotate probe 180 degrees and repeat readings, and determine the algebraic differences for both the A-A and B-B axes. The standard deviation of this A-axis difference all the previous such A-axis differences shall not be greater than 0.0002 ft over a 2 ft interval. The standard deviation of the B-axis difference and all the previous such a-axis differences shall not be greater than 0.0006 ft over a 2 ft interval. If no installed inclinometer casing satisfied the specified criteria for verticality and stability, the Geotechnical Instrumentation Engineer shall construct a test length of inclinometer casing that satisfies these criteria and shall use the test length for field calibration.

Data Collection

- a. The Contractor's Geotechnical Instrumentation Engineer shall check the validity of formal initial readings, and shall sign agreement to such readings. No instrument will be accepted or paid for until formal initial readings are agreed upon as specified herein.
- b. Contractor's data and formal initial readings shall be recorded on field data records, which shall include at least the following:
 - 1. project name
 - 2. contract name and number
 - 3. instrument type
 - 4. date and time
 - 5. observer
 - 6. readout unit number
 - 7. instrument number
 - 8. readings
 - 9. remarks
 - 10. visual observations
 - 11. other casual data including weather, temperature, and construction activities.

Contractor's data shall be recorded in U.S. Customary Units, such as feet, inches, pounds.

- k. This definition of readings shall apply to all data obtained by the Contractor:
 - 1. An inclinometer reading is defined as a set of readings at 2-foot intervals throughout the casing, and a second set at 180 degrees to the first set. A formal initial inclinometer reading will be selected from three readings as defined above, involving six complete traverses along the casing. Each reading (one set plus one set at 180 degrees) other than the formal initial reading shall be a single reading. Check sums (sum of two readings at the same depth but 180 degrees apart) shall be examined in the field. Except where obvious imperfections in the casing have affected the check-sums, the standard deviation of A- and B-axis check-sums over a 2-foot interval shall not exceed 0.0005 foot and 0.0010 foot, respectively.
- k. The Contractor's geotechnical instrumentation personnel and the Engineer shall meet at least once per week following the start of instrument installation to examine data, resolve any incompatibilities, and discuss any issues associated with the monitoring programs. Procedures for resolving incompatibilities of data may include comparing measurement procedures, taking simultaneous readings and comparing results, and checking and comparing calibration procedures. These meetings may be onsite, offsite, or via the teleconference as directed by the Engineer.

1. Readings of each instrument shall be performed at least once per week starting after the initial reads described above and at least two weeks prior to starting of embankment construction, continuing at least twice weekly during the embankment construction and shall be at least once per week for 5 months after completion of the embankment.

Data Reductions, Processing, Plotting and Reporting

- a. All data submitted by the Contractor shall be of the following form:
 1. Raw and reduced data shall be on summary tables in printed tabular format on 8-1/2 inch x 11 inch sheets of paper.
 2. Inclinator data shall be provided in DigiPro format.
 3. Plots of inclinometer data shall be "cumulative change" data, showing absolute horizontal deformation versus depth, and "change" data showing incremental deflection versus depth, and shall be prepared on 8-1/2 inch x 11 inch sheets using DigiPro software. The top of the inclinometer casing (excluding any extension length added during data collection) shall be used as a datum for depth measurement. Multiple plots shall be on the same sheet to provide a time history, each labeled with the date. Each plot shall include the instrument numbers, station, and offset.
- b. By the end of the first work day in each week, the Contractor shall submit to the Engineer a description of the work performed during the previous week including:
 1. A summary of filling activities. This summary shall include a location plan and a description of where filling has occurred during the week, together with plots of the elevation of the top of the fill versus station, showing a plot for the current date and one each for the three previous weeks.
 2. A description and location of any construction activities other than excavation and filling, including any surcharge caused by temporary construction loads.
- c. If the Contractor collects data from an instrument that has been installed to replace a damaged instrument, the formal initial reading for the damaged instrument shall be used as an initial reading for the replacement instrument so that data are plotted continuously, without an offset at the time of damage. The time of damage and replacement shall be noted on the plot.

Damage to Instrumentation

- a. The Contractor shall protect all instruments and appurtenant fixtures, leads, connections, and other components of instrumentation systems from damage due to construction operations, weather, traffic, use, and vandalism.
- b. If an instrument is damaged or inoperative, the Contractor shall repair or replace the damaged or inoperative instrument within 3 workdays at no additional cost to the Department. The Contractor shall notify the Engineer at least 1 full workday prior to repairing or replacing a damaged or inoperative instrument. The Engineer will be the sole judge of whether repair or replacement is required. The Department holds the right to withhold progress payments in the event that the Contractor fails to repair or restore damaged or inoperative instrumentation within 3 workdays. The Engineer may impose a work stoppage in the vicinity of the damaged instrument until it is again operational, at no additional cost to the Department.

Interpretation of Data

- a. The Engineer shall interpret the data collected under this contract. The Contractor may independently interpret for its own purpose the data collected for the purpose of controlling the safety of the work.
- b. The following table provides Threshold and Limiting Values for selected instruments. These values shall be defined collectively as Response Values. The actions associated with these

Response Values are defined as well. Response Values may be adjusted by the Engineer as indicated by prevailing conditions or circumstance.

	RESPONSE VALUES	RESPONSE VALUES
INSTRUMENT	THRESHOLD VALUE	LIMITING VALUE
Inclinometer	Accumulated Lateral Deflection of 1.0 inches or Shear of 3%	Accumulated Lateral Deflection of 2.0 inches or Shear of 6%

- c. If a Threshold Value is reached the Contractor will:
 - a. Immediately notify the Engineer.
 - b. Meet with the Contractor to discuss response actions.
 - c. Provide response actions to be taken.
- d. If the Limiting Value is reached, the Contractor may also be required by the Engineer to initiate one or more of the following response actions in addition to those specified herein before:
 - a. Install additional instruments.
 - b. Modify construction procedures.
 - c. Prepare and implement a plan of action as discussed above.
- e. The Contractor shall take all necessary steps to avoid exceeding the Limiting Values. If limiting values are reached, the Contractor may be directed by the Engineer to suspend activities in the affected area and/or to undertake remedial actions to reduce readings to below Limiting Values.

Disposition of Instruments.

- 1. All instruments shall remain in place except those that may be removed or abandoned, as directed by the Engineer because of interference with the construction. When directed by the Engineer, remove and dispose of those portions of all instruments, including terminal boxes and covers, which are readily accessible. Grout all remaining open portions of the boreholes and inclinometer casings, backfill the area, patch pavement of surface, and restore to the Engineer’s satisfaction. Grout shall be cement grout consisting of Type III Portland cement and water. No instrumentation shall be demolished, abandoned, removed, or disposed of without prior approval of the Engineer.
- 2. All surfaces affected by installation of instruments shall be restored to the original condition prior to completion of the work.

Method of Measurement

The Inclinometer will be measured per Each satisfactorily installed and maintained as described in this specification or as directed by the Engineer. Drilling of holes, temporary casing, covers, and incidental items necessary for installation of the instruments and abandonment of instruments no longer required, including filling of holes with grout, and all readings and data reduction will not be measured separately for payment. These costs will be considered incidental to these items.

Method of Payment

Inclinometers shall be paid for Each, complete in place, which price shall be full compensation for all equipment, materials, tools, labor, all readings and data reduction, and necessary incidentals to complete the work.

6/20/19

202508 – TILTMETERS

Description:

The work of this section includes furnishing, installing, initializing, protecting, and maintaining tiltmeters required to observe structure movements during construction at the locations provided on the plans.

No instrumentation installation shall take place before review by the Engineer of instrumentation submittals.

Purposes of the Geotechnical Instrumentation Program include but are not limited to:

- a. Providing pre-construction baseline data for comparison with construction and post-construction data.
- b. Providing a warning of conditions that may require remedial or precautionary measures in order to ensure the stability and safety of the work.
- c. To monitor the stability and deformations of the proposed roadway embankment construction and adjacent structures.

Description of Instruments

- A. Tiltmeters consist of a DGSI MEMS Bi-axial tiltmeters installed on two bridge pier columns.
- B. Each tiltmeter shall have 10 meters of cable attached.
- C. Portable readout unit.

Responsibilities of Contractor:

Responsibilities of Contractor shall include, but not be limited to, the following:

- a. Furnish all components of geotechnical instrumentation required by the Contract.
- b. Furnish portable readout unit.
- c. Install instruments specified as located on the Plans, listed in this specification or as directed by the Engineer.
- d. Taking initial readings of all installed instrumentation.
- e. Protect instruments from damage and maintain instruments installed. Repair or replace damaged or inoperative instruments throughout the duration of the Contract, within 72 hours after the damage has been discovered and the Contractor informed.
- f. Maintain and calibrate portable readout units following the recommendations of the equipment manufacturer.
- g. Perform and report the results of pre-installation and post installation acceptance tests.
- h. Provide any additional instrument, collect and interpret data from that instrumentation that the Contractor or Engineer deems necessary.
- i. Divert any machinery inducing disturbance during data collection.
- j. The Contractor shall provide and facilitate safe access to the Work at all times for the Engineer to collect data from all instruments, including any additional instruments installed by the Contractor as specified herein. Safe access shall include, but not be limited to, cessation of work activities, temporary relocation of obstructing materials and equipment, provision of ladders, fall protection, working platforms and hoisting services, and any other needs that, in the opinion of the Engineer, are necessary to ensure the safety of data collection personnel. The Contractor shall furnish two sets of safety equipment for use by the Engineer when required to collect data.
- k. Coordinate with the Engineer to verify consistency of collected data.

Qualification of Contractor's Instrumentation Personnel:

- a. Geotechnical instrumentation work involves highly specialized tasks. The Contractor's Geotechnical Instrumentation Engineer who is responsible for overseeing the procurement shall have the qualifications specified herein. The Geotechnical Instrumentation Engineer may be on the staff of the Contractor or may be on the staff of a specialist instrumentation subcontractor.

- b. The Contractor's instrumentation personnel shall include a superintendent who will be in responsible charge full-time on-site during the installation and initial readings of geotechnical instrumentation program. The superintendent shall have at least four years of direct field experience in installation and monitoring of the types of instrumentation specified herein and shall have supervised instrumentation programs of similar magnitude in similar subsurface conditions. The superintendent shall be on-site and supervise all instrument installations, pre-installation acceptance tests, post-installation acceptance tests, field calibrations, initial readings and data collection, reduction, processing, plotting, and reporting after the geotechnical instrumentation engineer has performed the first two of these tasks as specified herein.
- c. The Contractor's instrumentation personnel shall include a qualified Geotechnical Instrumentation Engineer who is a registered Professional Engineer in the State of Delaware, who has a minimum of Bachelor of Science degree in Civil Engineering, who has at least 4 years of experience in installation and monitoring of the types of instruments specified herein and in interpreting instrumentation data. The Geotechnical Instrumentation Engineer shall demonstrate previous successful experience on at least four instrumentation projects and experience with each types of geotechnical instrument specified herein.
- d. The Contractor shall provide the Engineer, for his approval, a description of the applicable experience of such personnel. Approval of the personnel shall be received before commencing with the installation.
- e. Contractor's instrumentation personnel and surveyors, including the geotechnical instrumentation engineer, the superintendent, the driller, the field survey party chief, and all other field and office personnel shall be subject to the approval of the Engineer.

Calibration:

- a. A factory calibration shall be conducted on all instruments prior to shipment from the manufacturing location. Each factory calibration shall include a calibration curve with data points clearly indicated, and a tabulation of the data. Each instrument shall be marked with a unique identification number. Certification shall be provided to indicate that the test equipment used for this purpose is calibrated and maintained in accordance with the test equipment manufacturer's calibration requirements and that, where applicable, calibrations are traceable to the National Institute of Standards and Technology. A final quality assurance inspection shall be made by the Manufacturer prior to shipment with the results of the inspection recorded on a checklist. A copy of the completed checklist shall be included with each instrument in the shipment.
- b. Factory calibrations of tiltmeters shall include comprehensive calibrations before assembly in the probe.
- c. Contractor shall provide the manufacturer's warranty for each piece of equipment furnished for the monitoring program and such warranty shall be in place for the duration of the Contract.
- d. Calibration shall be performed no longer than 6-months before the initial reading.

Submittal:

- a. No instrumentation shall be delivered or installed on the site before review by the Engineer of the materials, products, and installation procedures.
- b. Within 15 workdays after Notice of Proceed, submit to the Engineer for review the resumes of the Geotechnical Instrumentation Engineer sufficient to define details of relevant site experience on projects of this type and magnitude. Documentation that supervisory personnel and technicians performing the instrumentation work are qualified.
- c. At least 20 workdays prior to commencing installation of the first tiltmeter, submit to the Engineer for review the following items pertaining to that instrument type:
 - 1. Manufacturers' product installation data, including instruction manual and including any requests for consideration of substitutions, as specified herein, and warranty provisions. Manufacturer's catalog cuts, shop drawings, material specifications,

- installation and maintenance instructions, and other data pertinent to the work of this Section.
2. Manufacturer's certifications that products, materials, and equipment furnished meet the specified requirements.
 3. Detailed step-by-step procedure for installation on pier column, together with a sample installation record sheet. Proposed schedule and procedures for instrumentation installation and performance of initial reading monitoring for the instruments. The procedures shall be bound and indexed.
 4. A flow chart indicating the proposed time sequence of instrument installation.
 5. Sample of the quality assurance checklist, pre-installation acceptance test record, installation record for each instrument type to be used to check instruments on receipt from the manufacturer.
- d. At least 20 workdays prior to installing each instrument, the Contractor shall submit to the Engineer for review, the location, installation schedule and monitoring schedule for that instrument.
 - e. Within 5 workdays of receipt of each instrument at the site, submit to the Engineer a copy of factory calibration, manufacturer's test equipment certification, completed copy of quality assurance checklist, and warranty for each instrument and portable readout unit.
 - f. Within 10 workdays of receipt of each instrument at the site, submit to the Engineer completed pre-installation acceptance test record form for that instrument.
 - g. Within 5 workdays of installing each instrument, submit to the Engineer the installation record sheet for that instrument, including as-built instrument location as specified, and any field calibrations performed.
 - h. Submit initialization data as specified herein.
 - i. The Contractor shall submit to the Engineer updated as-built instrument location plans and work drawings as specified herein within 5 workdays of the completion of installation of each instrument.
 - j. Submittal shall include:
 1. Result of post-installation acceptance test.
 2. Weather conditions at the time of installation.
 3. Notes of importance on the installation including problems encountered, delays, unusual features of the installation, and details of any events that may have a bearing on instrument behavior.

Control of Materials:

- a. The Engineer reserves the right to approve each of the materials to be used in fulfilling the requirements of instrumentation work. Approval of the materials to be used for instrumentation shall not relieve Contractor of the responsibility to provide instrumentation in accordance with these Special Provisions.
- b. The Engineer reserves the right to inspect, test, and approve the workmanship of the instrumentation equipment and materials.

Field Monitoring:

- a. The Engineer reserves the right to approve the method of installation and maintenance of monitoring devices. Approval of the method of installation and maintenance of monitoring devices shall not relieve Contractor of the responsibility to install and maintain the instruments in conformance with the Specifications.
- b. The Engineer shall be notified of monitoring devices that become damaged or inoperable within 12 hours of the time Contractor becomes aware of such conditions.

Scheduling of Work:

- a. The Geotechnical Instrumentation Engineer and the Engineer shall meet and jointly gather initial readings in accordance with the following schedule:
 - 1. Tiltmeters for structures shall be installed and formal initial readings agreed on at least 20 workdays prior to the start of any construction. Data from the ground instrumentation shall be obtained at least two times a week during the construction of the embankment and at least weekly thereafter.
- d. Variations in this schedule proposed by the Geotechnical Instrumentation Engineer require the prior review and acceptance by the Engineer.

Storage of Instruments:

All instrumentation materials, after receipt at the site and prior to installation, shall be stored in a secure facility in accordance with the manufacturers' recommendations. The requirements may include indoor, clean, dry, and temperature controlled storage space.

Materials:

- a. All materials shall be new.
- b. Whenever any product is specified by brand name and model number, such specifications shall be deemed to be used for the purpose of establishing a standard of quality and facilitating the description of the product desired. The term "or approved equal" shall be understood to indicate that the "approved equivalent" product is the same or better than the product named in the specifications in function, performance, reliability, quality, and general configuration. This procedure is not to be construed as eliminating from competition other suitable products of equal quality by other manufacturers. In such cases Contractor may submit complete comparative data to the Engineer for consideration of another product. Substitute products shall not be ordered, delivered to the site, or used in the work unless accepted in writing by the Engineer. The Engineer will be the sole judge of the suitability and equivalency of the substituted product.
- c. Any request from the Contractor for consideration of a substitution shall clearly state the proposed alternative, the nature of the deviation from the product specified and the reason for the deviation requested. The Contractor shall also provide documentation supporting the claim of "acceptable equivalent".
- d. The Contractor shall furnish specified readout units, together with associated calibration devices and software for making pre-installation and post-installation acceptance tests, for taking any required readings during installation, and for taking additional readings required by the Contractor during the course of the Work. Such readout units shall be identical to the specified readout units and shall be of sufficient quantity to meet the schedule needs of the project.
- e. The Contractor shall furnish all installation tools, materials, and miscellaneous instrumentation components necessary to install the required instrumentation in a fully functional state. The Contractor shall provide protection to each instrument to prevent damage by the elements, vandals and the Work activities. The Contractor shall submit proposed protection methods and measures to be used for review and acceptance by the Engineer at least 30 workdays prior to the start of the installation. The Contractor shall maintain and repair all protection measures for the duration of the Contract.
- f. For each instrument type, provide an instruction manual which shall include the following:
 - 1. A description of the purpose of the instrument.
 - 2. Theory of operation.
 - 3. Step-by-step procedures for:

- i. Pre-installation acceptance test when instruments are received on site, to ensure the instruments are functioning correctly before installation.
 - ii. Calibration of readout units.
 4. A list of calibration equipment required, and recommended frequency of calibration.
 5. Step-by-step instrument installation procedure including materials, tools, spare parts and any borehole requirements, and post-installation acceptance tests.
 6. Maintenance procedure.
 7. Step-by-step data collection procedure.
 8. Data reduction, processing, and plotting procedures.
- g. Contractor shall provide products, materials, and equipment in conformance with the Plans and Special Provisions so as to fulfill the requirements of the instrumentation work.
- h. All measurements, dimensions and units shall be in U.S. Customary Units, for example, feet, inches, and pounds.
- l. Provide tiltmeter readout unit, and accessories as manufactured by DGSI, or approved equivalent EL/MEMS Data Recorder 56813500. The EL/MEMS Data Recorder is a portable readout that displays and stores tilt readings in volts and temperature readings in degrees C. Includes software for transferring stored readings to a Windows PC.
 - i. Tiltmeter shall be DGSI MEMS Biaxial Serial Number 57803102 or acceptable equivalent.
 - j. Readout shall be DGSI readout or approved equivalent.
- k. The control cable shall be DGSI Serial No. 50613527 or approved equivalent and shall be compatible with sensor and readout unit, 30 feet long. Cable has seven 22-gauge tinned-copper conductors, shield, and polyurethane jacket.
 - l. All ancillary brackets, anchors, and epoxy grout shall be provided.
 - m. A terminal box shall be provided for each tiltmeter.

Construction:

Pre-Installation Acceptance Tests

- a. When instruments are received at the site, Contractor's instrumentation personnel shall perform pre-installation acceptance tests to ensure that the instruments and readout units are functioning correctly before installation. Pre-installation acceptance tests shall include relevant items from the following list:
 1. Examine factory calibration curve and tabulated data to verify completeness.
 2. Examine manufacturer's final quality assurance inspection checklist to verify completeness.
 3. Check cable length.
 4. Check tag numbers on instrument and cable.
 5. By comparing with procurement document, check that the model, dimensions, materials, etc. are correct.
 6. At point of connection to instrument bend cable back and forth while reading the instrument to verify connection integrity.
 7. Perform resistance and insulation testing in accordance with criteria provided by the instrument manufacturer using a gauge insulation or circuit tester that applies 2 volts or less for resistance testing and 15 volts or less for insulation testing.
 8. Verify that all components fit together in the correct configuration.
 9. Check all components for signs of damage in transit.
 10. Check that quantities received correspond to quantities ordered.
- d. During pre-installation acceptance testing of each instrument, the Contractor's instrumentation personnel shall complete a pre-installation acceptance test record form. The test record sheet shall include appropriate items from the following list:

1. Project Name.
 2. Instrument type and number.
 3. Identification of any testing or readout equipment used during testing.
 4. Personnel responsible for testing.
 5. Date and time of test.
 6. Measurements and observations made during testing as specified herein.
 7. Test results, pass or fail.
 8. Notes on any environmental condition or test condition or observed anomaly that might affect subsequent use of instrument or data obtained from it.
- k. An instrument that fails the specified pre-installation acceptance test shall be repaired such that it passes a subsequent pre-installation acceptance test or shall be replaced by an identical instrument at no additional cost to the Department.

Installation

- a. The Geotechnical Instrumentation Engineer shall install instruments in accordance with the Contractor' detailed step-by-step procedures that were submitted as specified herein, and reviewed by the Engineer.
 - b. All instrumentation shall be installed and furnished in accordance with the details shown on the Plans and requirements of the Specifications at the locations indicated in Table 1 or as directed by the Engineer.
 - c. The Contractor shall notify the Engineer at least 2 workdays prior to installing each instrument.
 - d. Contractor's data will be accepted by the Engineer only if the data are obtained from instrumentation furnished, calibrated, tested, installed, and maintained as specified herein.
 - e. As each instrument is installed, an installation record sheet shall be prepared, including appropriate items from the following list:
 1. Project Name.
 2. Contractor name and number.
 3. Instrument type and number, including readout unit.
 4. Planned location in horizontal position and elevation.
 5. Planned orientation.
 6. Personnel responsible for installation.
 7. Date and time of start and completion.
 8. Spaces on record sheet for necessary measurements or readings required at hold points during installation to ensure that all previous steps have been followed correctly, including instrument readings made during installation.
 9. As-built location in horizontal position and elevation including the elevation referenced to the Project Elevation Datum, together with the location of the point used for the elevation measurement.
 10. As-built orientation.
 11. Results of post-installation acceptance test.
 12. Weather conditions at the time of installation.
 13. A space on record sheet for notes, including problems encountered, delays, unusual features of the installation, and details of any events that may have a bearing on instrument behavior.
- k. Any instrument that fails the specified post-installation acceptance test shall be replaced by an identical instrument at no additional cost to the Department.
- l. Instrumentation shall include maintaining instrumentation throughout the Contract.
- m. Damaged instrumentation shall be repaired or replaced at the expense of Contractor. The repair or replacement shall occur within one week of notification of damage by the Engineer, unless otherwise specified.
- n. The Contractor shall submit updated as-built instrument location plans to the Engineer. The

location plans shall be reproducible composite plans of all installed instruments plotted on 11-inch by 17-inch or 24-inch by 36-inch sheets at a scale of 1 inch = 30 feet. The first plans shall be submitted within 20 workdays after completion of the first instrument installation, regardless of instrument type. Update plans shall be submitted every 4 calendar weeks. Updated plans need not be submitted for periods during which no instruments have been installed.

- o. The Contractor shall label each instrument with the instrument number. Numbers shall be unique for the project. The label shall be permanent and visible without having to remove protective measures. The reference mark and orientation required for instruments shall be clearly marked on the instrument in a permanent manner.

Data Collection

- a. The Contractor's Geotechnical Instrumentation Engineer shall check the validity of formal initial readings, and shall sign agreement to such readings. No instrument will be accepted or paid for until formal initial readings are agreed upon as specified herein.
- b. Contractor's data and formal initial readings shall be recorded on field data records, which shall include at least the following:
 - 1. project name
 - 2. contract name and number
 - 3. instrument type
 - 4. date and time
 - 5. observer
 - 6. readout unit number
 - 7. instrument number
 - 8. readings
 - 9. remarks
 - 10. visual observations
 - 11. other casual data including weather, temperature, and construction activities.

Contractor's data shall be recorded in U.S. Customary Units, such as feet, inches, pounds.

- k. The Contractor's geotechnical instrumentation personnel and the Engineer shall meet at least once per week following the start of instrument installation to examine data, resolve any incompatibilities, and discuss any issues associated with the monitoring programs. Procedures for resolving incompatibilities of data may include comparing measurement procedures, taking simultaneous readings and comparing results, and checking and comparing calibration procedures. These meetings may be onsite, offsite, or via the teleconference as directed by the Engineer.
- l. Readings of each instrument shall be performed by the Contractor's Geotechnical Instrumentation Engineer at least once per week starting after the initial reads described above and at least two weeks prior to starting of embankment construction, continuing at least twice weekly during the embankment construction and shall be at least once per week for 5 months after completion of the embankment.

Data Reductions, Processing, Plotting and Reporting

- a. All data submitted by the Contractor shall be of the following form:
 - 1. Raw and reduced data shall be on summary tables in printed tabular format on 8-1/2 inch x 11 inch sheets of paper.
 - 2. Tiltmeter data shall be provided in excel format.
- b. By the end of the first work day in each week, the Contractor shall submit to the Engineer a description of the work performed during the previous week including:
 - 1. A summary of filling activities. This summary shall include a location plan and a description of where filling has occurred during the week, together with plots of the elevation of the top of the fill versus station, showing a plot for the current date and one each for the three previous weeks.

2. A description and location of any construction activities other than excavation and filling, including any surcharge caused by temporary construction loads.
- c. If the Contractor collects data from an instrument that has been installed to replace a damaged instrument, the formal initial reading for the damaged instrument shall be used as an initial reading for the replacement instrument so that data are plotted continuously, without an offset at the time of damage. The time of damage and replacement shall be noted on the plot.

Damage to Instrumentation

- a. The Contractor shall protect all instruments and appurtenant fixtures, leads, connections, and other components of instrumentation systems from damage due to construction operations, weather, traffic, use, and vandalism.
- b. If an instrument is damaged or inoperative, the Contractor shall repair or replace the damaged or inoperative instrument within 3 workdays at no additional cost to the Department. The Contractor shall notify the Engineer at least 1 full workday prior to repairing or replacing a damaged or inoperative instrument. The Engineer will be the sole judge of whether repair or replacement is required. The Department holds the right to withhold progress payments in the event that the Contractor fails to repair or restore damaged or inoperative instrumentation within 3 workdays. The Engineer may impose a work stoppage in the vicinity of the damaged instrument until it is again operational, at no additional cost to the Department.

Interpretation of Data

- a. The Engineer shall interpret the data collected under this contract. The Contractor may independently interpret for its own purpose the data collected for the purpose of controlling the safety of the work.

Disposition of Instruments.

1. All instruments shall remain in place except those that may be removed or abandoned, as directed by the Engineer because of interference with the construction. When directed by the Engineer, remove and dispose of those portions of all instruments, including terminal boxes and covers, which are readily accessible. Grout all remaining open portions and restore to the Engineer's satisfaction. Grout shall be cement grout consisting of Type III Portland cement and water. No instrumentation shall be demolished, abandoned, removed, or disposed of without prior approval of the Engineer.
2. All surfaces affected by installation of instruments shall be restored to the original condition prior to completion of the work.

Method of Measurement

The Tiltmeters will be measured per Each satisfactorily installed and maintained as described in this specification or as directed by the Engineer. Incidental items necessary for installation of the instruments and abandonment of instruments no longer required, including filling of holes with grout, and all readings and data reduction will not be measured separately for payment. These costs will be considered incidental to these items.

Method of Payment

Tiltmeters shall be paid for Each, complete in place, which price shall be full compensation for all equipment, materials, tools, labor, all readings and data reduction, and necessary incidentals to complete the work.

6/20/19

202517– SETTLEMENT PLATFORM
202518 – SETTLEMENT MONUMENT

Description:

The work of this section includes furnishing, installing, protecting and maintaining settlement monuments (SM), settlement monitoring plates (SP), pipe extensions conforming to the design and at the locations shown on the Plans or as directed by the Department. All labor, materials, equipment and incidentals necessary to complete this work shall be considered part of this item required to provide devices to observe ground movement during and after construction. The Contractor shall perform the monitoring, recording and reporting of the settlement.

Submittals:

1. Qualifying Experience

The Contractor shall submit proof of three or more projects of similar size and complexity on which the firm and personnel assigned to the project have successfully installed similar instrumentation within the last three years. The Contractor shall present the following information for each project listed as a reference at or prior to any preconstruction meetings:

1. Project Name, Location, Project Description, and Completion Date.
 2. Surface and Subsurface Conditions.
 3. Type and number of instruments installed.
 4. Installation equipment and techniques utilized when applicable.
 5. Provide names, current phone numbers, and current business addresses for the owner/designer, geotechnical consultant, and contract manager.
2. Settlement surveying and monitoring plan for review prior to construction. The plan shall identify the detailed location of settlement monitoring points, reference benchmarks, survey schedules and procedures and reporting formats.
3. Description of the surveying equipment to be used.
4. Instrument Layout and Installation Details: Within two days after the installation of each settlement monument and settlement plate, the Contractor shall submit an installation record sheet including appropriate items from the following list.
- i. Project name.
 - ii. Contract name and number.
 - iii. Instrument type and number.
 - iv. Material sizes and compositions.
 - v. Planned location in horizontal position and elevation.
 - vi. Planned orientation.
 - vii. Personnel responsible for installation.
 - viii. Date and time of start and completion.
 - ix. Weather conditions at the time of installation.
 - x. Notes of importance on the installation including problems encountered, delays, unusual features of the installation, and details of any events that may have a bearing on instrument behavior.

Schedule for Installations and Readings:

The Contractor shall provide settlement monuments, settlement monitoring plates, and pipe extensions to monitor settlement of new fill embankments. The Contractor shall make regular readings of the settlement as indicated on the plans.

Settlement monitoring plates shall be installed as shown on the plans. Settlement monitoring plates shall be located by repeatable survey (locations and elevations) and referenced to permanent benchmarks. Locations of benchmarks are to be determined by the Contractor and approved by the Engineer, and shall be located outside the zone of influence of the construction activity. Settlement monitoring plates shall be placed level and the risers shall be plumb.

The approximate locations of each instrument to be installed by the Contractor are shown on the project plans and include the following types: settlement plates and settlement monuments. Other locations may need to be added as directed by the Engineer.

Protection of Instrumentation and Repair of Damage

- a. The Contractor shall protect all instruments and appurtenant fixtures, leads, connections, and other components of instrumentation systems from damage due to construction operations.
- b. If an instrument is damaged or made inoperative due to the Contractor's operations or the operation of subcontractors under the direction of the Contractor, the Contractor shall notify the Engineer immediately. The Engineer will be the sole judge of whether repair or replacement is required. For each instrument that is abandoned for these reasons, the Contractor shall replace that instrument at no additional cost to the Department.
- c. Should any instrument become damaged or inoperative through no fault of the Contractor, the damaged or inoperative instrument shall be repaired or replaced at the contract unit prices for that instrument.
- d. The Engineer will advise the Contractor immediately upon discovery of damage to instruments as to the necessary schedule for replacement and the times of required access. Damaged instruments shall be repaired or replaced within 24 hours of initial damage. The Contractor's construction operations in the area of a damaged instrument(s) may be halted during repair or replacement of each damaged instrument at the request of the Department.

Materials:

Settlement Plates

- a. Settlement plates are sub-surface displacement reference platforms placed on the prepared ground surface prior to embankment fill placement. Risers are extended from the settlement plate as the fill is placed. A casing is placed around the riser for protection. Settlement plates are monitored by optical survey methods to determine vertical displacements occurring during and after embankment construction.
- b. The base plate shall be made from steel conforming to the requirements of ASTM A36. The riser pipe and outer casing shall be steel pipe conforming to the requirements of ASTM A53, Grade B, standard weight. The casing and the risers shall be as shown on the plan. The casing pipe shall have a minimum wall thickness of 0.375 inches. The riser pipe shall be galvanized and have a minimum wall thickness of 0.25 inches. Couplings, pipe caps, etc. shall conform to the requirements of ASTM A865. Threaded pipes shall be used for riser and casing pipe extensions.
- c. Sand shall conform to the requirements of ASTM C33.

Settlement Monuments

- a. Settlement monuments to monitor embankment settlement may consist of a concrete block embedded 2-ft into the newly placed fill with a PK nail or a #4 bar driven a minimum 4-ft

into the embankment fill with a maximum ½ inch stickup above the ground surface. Settlement monuments are monitored by optical survey methods to determine vertical displacements occurring after embankment construction.

- b. Materials for the construction of the Settlement Monument shall conform to the applicable sections of Section 812 for the Concrete, Class C of the Standard Specifications.
- c. The Reinforcement Bar shall conform to Section 824 of the Standard Specifications.

Construction Methods:

1. Readings on the settlement platforms and settlement monuments shall be performed by the Contractor. The Contractor is fully responsible for establishing benchmarks, submittals, and furnishing, installing and maintaining the settlement platforms.
2. The settlement monuments shall be installed at locations indicated on the plans or as directed by the Department.
3. The settlement plates shall be installed as indicated on the plans after all clearing and grubbing and topsoil removal has been completed. The sand base shall be tamped to provide a firm, level, and unyielding bearing surface for the base plate. The riser pipe shall be marked in 1-foot increments and labeled at 5-foot increments to indicate the distances above the plate extending up through the embankment fill. Settlement plates shall be fabricated as shown on the plans.
4. The initial casing and riser pipes shall have a maximum length of 4 feet for each section. Spacers shall be provided between the riser pipe and the casing at a minimum of 4-foot intervals to ensure concentricity. The spacers shall not be directly attached to the riser pipe or otherwise installed that would impede the independent movement of the riser pipe.
5. As the height of fill above the settlement plate changes, the casing and riser pipes shall be increased or decreased in a maximum of 4-foot intervals to maintain the top of the riser pipe and casing above the embankment. As each additional length of pipe is added or removed, the pipe cap on the casing shall be immediately transferred to the top section on the settlement plate so as to prevent fill material from entering the casing. At other times, the cap shall only be removed to check settlement.
6. The casing pipe shall be marked by flags or other approved method to clearly show its location and to warn equipment operators and others of its location. The Contractor shall maintain the flags during the entire length of the Contract and replace those flags that are missing. At no time shall the settlement plate risers and casings extend higher than 5 feet above the ground surface elevation. Sections shall be added or removed as necessary during embankment construction to maintain the tops of the risers and casings at least 1-foot above the surface of the embankment.
7. The Contractor is responsible for maintaining the settlement plates in working order during the length of the Contract. Settlement Plates which are to be abandoned at the completion of the project shall have their riser pipes cut off two feet below roadway subgrade level and capped. If an instrument is damaged, moved, or disturbed due to causes other than settlement, the Contractor shall repair, reset, or replace the damaged instrument at no additional cost to the Department within three days after being damaged. The Engineer will be the sole judge of whether repair, resetting, or replacement is required. No additional fills shall be placed within fifty (50) feet of a damaged settlement platform until the damage has been corrected to the satisfaction of the Engineer. The Engineer may impose a work stoppage in the vicinity of the damaged instrument until it is again operational at no additional cost to the Department. Any repairs or replacements required will be at the Contractor's expense.
8. By the end of the first work day in each week, the Contractor shall submit to the Engineer a description of the work performed during the previous week. This description shall include at a minimum: a plan view location of the placed embankment, the volume of embankment placed, and in-situ density test results in accordance with Standard Specification sections 202 and 209.
9. The use of the settlement platforms for collecting data related to embankment foundation response will extend beyond the time of completion of the Contractor's embankment placement operations. The

Contractor shall be responsible for assuring that all platforms are in working order until the time of completion of the Contract.

10. Instrumentation shall be read as indicated on the plans.
11. For vertical deformation monitoring, runs shall be performed by a single run beginning and ending on two different benchmarks installed in accordance with NGS standards. Settlement monitoring points shall be used as turning points or as intermediate foresights from two different turning points, allowing elevations to be adjusted and eliminating significant observational errors. The maximum length of line of sight shall be 150 feet, and the imbalance between backsight and foresight shall not exceed 30 feet. Allowable level loop misclosure shall not exceed ± 0.033 times the square root of M feet (where M is the distance of the level run in miles) for a single run between two benchmarks. A formal initial reading on a settlement monitoring point will consist of the average of three elevations, from three independent level runs, which meet the closure specified herein. Elevations established subsequent to a formal initial reading shall be determined by a single run as specified herein. The least count (without estimation) of the rod and level combination shall read to 0.003 foot or less, such that the accuracy of an elevation measurement shall be ± 0.01 foot (at 95 percent level of confidence).
12. Data shall be recorded in U.S. survey feet or inches.
13. Instruments used for vertical deformation monitoring shall have a minimum accuracy of plus or minus 0.005 of a foot (standard deviation for 3300 feet of double run leveling) and a minimum setting accuracy of plus or minus 1.0 arc seconds. Leveling rods shall be non-telescopic in design (i.e. "Chicago" style leveling rod). A bull's eye bubble shall be used to plumb the leveling rod. The use of fiberglass rods will need approval of Engineer prior to use.
14. All data recorded by the Contractor shall be of the following form:
 - a. Raw and reduced data shall be on summary tables in printed tabular format on 8-1/2 inch x 11 inch sheets of paper.
 - b. Reduced data for up to six like instruments that are located in the same geographical area shall be plotted on the same graphical plot. Each plot shall be submitted on an 8-1/2 inch x 11 inch sheet or 11 inch by 17 inch sheet.
 - c. Plots of deformation data at Settlement Monitoring Plates shall show absolute vertical deformation versus time with height or elevation of fill placed at time of reading. Plots of settlement plate data shall show absolute vertical deformation versus time and shall show the height or elevation of fill placed at the time of reading. Deformation plots shall also be provided in electronic data file format.
 - d. Survey data reports prepared by the Contractor shall be signed and sealed by either a Professional Engineer or Professional Land Surveyor licensed in the State of Delaware.

Method of Measurement:

The number of Settlement Platforms measured will be the actual number of platforms set in place and/or maintained as shown on the Plans or as directed by the Engineer. No measurement for payment will be made for pipe extensions. The number of Settlement Monuments measured will be the actual number of monuments set in place and/or maintained as shown on the Plans or as directed by the Engineer.

Basis of Payment:

Settlement Platforms and Settlement Monuments will be paid for at the Contract unit price per Each, complete in place, which price shall be full compensation for all materials, tools, labor, and work incidental thereto including pipe extensions, steel plate, sand, couplings, spacers, welding, protection of the plate and pipe extensions during construction, all labor tools, equipment, and necessary incidentals to complete the work.

6/20/19

202560 - CONTAMINATED MATERIAL

Description:

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

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

Overview of Costs:

Potential contaminated solids may affect contractor's costs as follows;

Additional cost to normal excavation requirements:

- Cost of 8 mil plastic for placement under and over solid contaminated material,
- Maintaining the segregated contaminated solids staging area.

Reduced cost to normal excavation requirements:

- Not required to, or charged for, transport of contaminated material from site.
- Not required to, or charged for, disposal of contaminated soil.

Potential contaminated liquids will affect contractor's cost as follows;

Additional cost to normal excavation requirements:

- None

Reduced cost to normal excavation requirements:

- None

Construction Methods and Responsibilities:

Contractor's Responsibilities for potential contaminated solids:

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

After award of the Contract, the Contractor shall immediately be responsible for notifying the Department's HAZMAT Coordinator's office (760-2108) for scheduling coordination with the environmental representative. The contractor shall submit a proposed schedule of work to the Department for review and approval prior to any commencement of work on this site. The Contractor is required to perform to a high standard of workmanship to assure protection of workers, local water supplies, and the environment. The Contractor shall coordinate with the utility companies prior to excavation. The Department's environmental representative shall be present during all phases of work associated with the excavation and removal of potentially contaminated material. Payment will not be made for any work done when a Department approved Inspector or environmental representative is not present to provide environmental oversight.

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

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

Department's Responsibilities:

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

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

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

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

Method of Measurement:

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

Basis of Payment:

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

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

6/20/19

211550 - DEMOLITION OF EXISTING BRIDGE

Description:

This work shall consist of the protective shielding, demolition, and disposal of the existing bridge materials over I-95, designated as Delaware Department of Transportation Bridge No.1-714, in accordance with the limits as indicated on the Plans, as specified in these Special Provisions and as may be directed by the Engineer.

Schedule Requirements:

The demolition of the existing bridge shall commence in accordance with the construction phasing indicated on the Plans. The Contractor may not initiate the mobilization of equipment for the demolition of the existing bridge until written authorization is granted by the Engineer.

Submittal Requirements:

Prior to beginning any demolition activities and in accordance with Section 604.03.1, the Contractor shall prepare a working drawing submittal of the proposed means and methods to demolish the existing bridge. This submittal shall include the following:

- (1) An itemized listing of the equipment proposed for the bridge removal.
- (2) The location and/or staging area(s) of major equipment including cranes and haul trucks.
- (3) The Contractor's detailed proposed methods for removal of the existing bridge by mechanical/machine means. The use of controlled demolition (i.e., explosive) techniques is prohibited for the removal of the existing bridge. However, if the Contractor elects to pursue the use of controlled demolition, he will be responsible for obtaining all appropriate permits and/or approvals from the Department, US Army Corps of Engineers and the Delaware Department of Natural Resources and Environmental Control. The Department makes no guarantees that the use of controlled demolition can be used for the demolition of the existing bridge.
- (4) A schedule for the work including the duration of time. The schedule shall specifically address the start and duration of the demolition of all the piers.
- (5) Detail plans (and supporting calculations) of any sheeting and shoring required for the removal of the existing abutments or any other element. Any supporting calculations submitted as part of the demolition working drawing submittal shall be prepared by a Professional Engineer licensed in the State of Delaware with expertise in the design of excavation sheeting and shoring systems.
- (6) Proposed method(s) of disposal.

Materials:

Protective Shield(s) to be in accordance with Standard Specification 604.

Construction Methods:

The demolition of the existing bridge shall be completed in accordance with the Contractor's approved working drawing submittal as noted herein.

The excavation and removal of the existing bridge approach embankment (including pavement, guardrails and the concrete bridge slope protection) will be included under Item 211550 DEMOLITION OF EXISTING BRIDGE.

Areas excavated for the purposes of demolition shall be backfilled with material meeting the requirements of Borrow Type F back to the original ground line or the proposed ground line as stipulated on the Plans. Compaction shall meet the requirements of subsection 202.05 of the Specifications.

Method of Measurement:

The items Demolition of Existing Bridge will not be measured for payment.

Basis of Payment:

The item Demolition of Existing Bridge will be paid for at the Contract Lump Sum price. The payment will be full compensation for preparing, submitting and revising the required working drawings, furnishing and mobilizing the equipment necessary to complete the work as required, installation of protective shielding, demolition and disposal of the existing bridge, and for all material, labor, equipment, tools, and incidentals necessary to complete the work in accordance with the Plans and these Special Provisions.

Payment for backfilling excavations with Borrow Type F will be incidental to the Demolition of Existing Bridge item.

3/11/13

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

Existing Material	Structural Coefficient
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	=	<u>0.98</u>
			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	=	<u>0.98</u>
			2.52

602509 - ELECTRIC DUCTBANK AND MANHOLE SYSTEM

Description:

This work consists of furnishing, transporting and installing the electric ductbank and manhole system and accessories, including service risers, in accordance with the locations, details and notes on the Plans, and as directed by the Engineer. The work shall be performed in accordance with these Special Provisions, Delaware Standard Specifications, and the requirements of the Standards and Specifications of the Owner of the electric utility, Delmarva Power. In case of conflict between these Special Provisions, Delaware Standard Specifications, and the Standards and Specifications of the Owner of the Utility, the Standards and Specifications and all other requirements of the Owner of the utility shall prevail. The existing electric facilities shall be removed as specified on the Plans.

Submittals:

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 Owner.

Quality Assurance:

- A. Utility Compliance: Comply with local utility regulations and standards.
- B. NFPA Compliance: Equipment and components shall be designed, fabricated and installed in compliance with NFPA 70.
- C. UL and NEMA Compliance: Provide components that are listed and labeled by UL and comply with NEMA standards.
- D. Contractor shall utilize experienced personnel regularly engaged in this type of work using standard and generally accepted practices and procedures. Installation of spacers, conduit, fittings, and pull rope shall only be performed by a Delmarva- approved contractor.
- E. Deliver, store, protect and handle products in a manner to ensure installation of materials in new condition. Protect materials in on-site storage from weather.
- F. Accept conduit on-site and inspect for damage.
- G. Protect non-metallic conduit from entrance of debris, and provide appropriate covering to protect from sunlight.

Materials:

The Contractor shall be responsible for providing materials including conduit, fittings and all other appurtenances necessary to construct the proposed ductbank and manhole system as shown on the Plans excepting materials listed on the bridge crossing plans to be manufactured by American Utel which are to be picked up by the Contractor at the designated location and delivered to the project site for installation by the Contractor.

All the materials including conduit, 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 Owner of the utility. The Owner shall have the right to inspect and reject the materials, if the Owner's specifications requirements are not met. It is recommended that the Contractor should contact the Owner of the utility and get itself familiarized with the applicable requirements of the materials required under this contract before submitting his bid.

- A. Conduit, service risers, and Fittings: Non-metallic conduits shall be PVC schedule 40 meeting DelDOT Standard Specification Section 745. Fittings shall be from the same manufacturer as conduit, solvent type.

B. Fiberglass conduit as required for bridge crossings to be manufactured by American Utel and provided by Delmarva to include all fittings, appurtenances as shown on the plans. The Contractor shall pick-up these items at the designated location (401 Eagle Run Road, Newark, DE 19702, Contact Tom Smith), deliver them to the project site and then be responsible for installation.

C. Utility supports and hanger materials to be manufactured by American Utel and provided by Delmarva as required for bridge crossing as detailed on plans. The Contractor shall pick-up these items at the designated location (401 Eagle Run Road, Newark, DE 19702, Contact Tom Smith), deliver them to the project site and then be responsible for installation.

D. Structural steel channels, angles and bolts as required to support the utility duct bank on the bridge shall conform to the requirements of Item 615001. These items shall be detailed on the structural steel shop drawings for the bridge and fabricated by the same structural steel fabricator responsible for fabricating the bridge. The cost of these items shall be included in the breakout sheet and lump sum cost for Item 602509.

E. Marker tape shall be plastic, vinyl, or mylar, 6 inches wide, red for electrical power and orange for telecommunications and labeled to indicate the type of circuit buried below.

F. Non Metallic Spacers: Non metallic spacers shall be Carlon or equivalent and shall be sized according to the conduit being held.

G. Portland Cement Concrete required for the job shall be Class B, and shall conform to Section 812 of the Delaware Standard Specifications.

H. 2 way manhole with offset opening to be fabricated by A.C. Miller and provided by Delmarva. The Contractor shall pick-up these items at the designated location (401 Eagle Run Road, Newark, DE 19702, Contact Tom Smith), deliver them to the project site and then be responsible for installation. Sealing compound to be furnished by Delmarva.

- a. The anticipated weight of the manhole is 19,803 lbs.
- b. The manhole shall have outside dimensions of 17'-4" X 7'-4" x 8'-0" H and inside dimensions of 16'-0" X 6'-0" x 7'-0" H.
- c. Del. No. 57 Stone Base shall for bedding of the manhole shall be furnished and installed by the Contractor and shall conform to the requirements of Section 302 of the Delaware Standard Specifications.
- d. Reinforcement shall conform to the requirements of State of Delaware Standard Specifications Sections 603 and 604.

I. Dampproofing: Cold applied asphalt shall conform to the following when tested as specified in MSMT 423, Procedure A. The material shall not contain isocyanide or any derivative of cyanide.

TEST AND METHOD		SPECIFICATION LIMITS		
		GRADE I	GRADE II	GRADE III
R&B Softening Point T 53		104 - 143 F	145 - 170 F	172 - 200 F
Penetration, 0.10 mm, T49	32 F, 200 g, 60 sec	10 min	5 min	5 min
	77 F, 100 g, 5 sec	30 - 100	25 - 50	20 - 40
	115 F, 50 g, 5 sec	100 min	130 max	100 max
Permeability, g/cm ³ , max, MSMT 423		0.09	0.09	0.09
Flow test, mm, max, MSMT 423 20 15		---	20	15

Flexibility, 60 F, MSMT 423	No peeling or loss of adhesion
Imperviousness Test, MSMT 423	No pitting or discoloration
Sag test, MSMT	423 No movement

Grade I - Suitable for below ground and horizontal applications. 0
 Grade II - Suitable for below ground and above ground where surface temperatures do not exceed 120° F.
 Grade III - Suitable for below ground and above ground where surface temperatures exceed 120° F.

Special Requirements:

The Contractor's attention is directed to the following special requirements.

Installation of manholes, service riser, spacers, conduit, fittings, and pull rope shall only be performed by a Delmarva-approved contractor.

The Department and Engineer shall determine at what times and in what order the Contractor shall undertake work, of excavating, installing conduit, and installing and connecting manholes to ductbank.

No work shall be started by the Contractor until he has received permission from both the Engineer and the Department to proceed. The Contractor shall immediately notify both the Engineer and the Department of all delays.

Any and all emergency repairs required due to this project's construction during the period of this contract shall be the responsibility of the Contractor. The Owner will notify the Contractor by telecommunication and the Contractor shall be required to attend to the repair immediately. In the event the Owner is unable to contact the Contractor for immediate emergency repair work in a length of time as determined by the Owner, the Owner reserves the right to attend to any or all emergency repair work, and to submit the costs of repair directly to the Contractor for complete payment. All materials and work, or parts thereof, which are unsatisfactory as to any or all requirements of the Owner or the Engineer, and/or as specified herein, shall be removed and replaced or repaired in an acceptable manner by the Contractor at his own expense.

The Contractor shall guarantee that all workmanship, materials, and work performed under the contract, shall be in strict accordance with the Drawings, Specifications, and other Contract Documents. The Contractor shall 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 and provisions and requirements of the contract.

Construction Methods:

All work in connection with construction of electric ductbank and manhole system shall conform to the applicable requirements of the Standard Specifications of the Owner of the utility, except as modified by the Plans and these Special Provisions. In case of conflict, the Specifications of the Owner of the utility shall prevail.

The Contractor shall coordinate with the Utility Owner for material pickup for installation of ductbank bridge crossing as shown on plans developed by American Utel. Contractor is to refer to these plans for requirements for installation of ductbank system for bridge crossing.

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 Sections 208 and 210 of the State of Delaware Standard Specifications.

Excavation and Trenching -

Excavation shall be performed in accordance with Section 208 - Excavation and Backfill for Pipe Trenches, except as amended herein. The bottom of the trench shall be cut true and even for the full length. The trenches for electric ductbanks shall be excavated to the depths detailed on the Plans or to the minimum standard depth

where not specified on the Plans, provided they are coordinated with proposed crossing facilities to minimize impacts to proposed and existing facilities. Trench width shall be as shown on plans.

No separate payment will be made for excavation. Backfill shall be paid in accordance with Section 209 of the Standard Specifications.

The Engineer and the Owner shall have the right to limit the amount of trench opened in advance of conduit laid, and the amount of conduit laid in advance of encasing in concrete and backfilling. They shall be empowered at any time to require the refilling of open trenches over completed conduit lines, 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 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 own expense and shall not again open said trench until he is ready to complete the work therein.

Where rock is encountered and blasting is required for trenching, all rock excavation work shall be performed in accordance with Subsection 107.11 of the Standard Specifications and as modified; and the trench shall be excavated an additional six inches (6") below grade. After the excavation is completed, a bed six inches (6") in depth of Borrow Type C shall be placed in the bottom of the trench, leveled off and thoroughly tamped. In absence of item for Rock Excavation under this contract, a fixed price of \$135.00 per cubic yard shall be paid for rock excavation.

Installation of Conduit and Fittings -

The laying and jointing of conduit shall be in accordance with the requirements of the Owner's Specifications. All conduit and fittings shall be thoroughly cleaned before laying, and shall be kept clean until acceptance of the work. No conduit may be installed except under the supervision of the Owner's inspector.

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

Conduit and fittings shall be carefully handled and lowered into the trench. Special care shall be taken to make sure all conduits are well bedded on a solid foundation. Any defects due to settlement shall be made good by the Contractor at his expense.

Conduit sections between manhole or terminal points shall be laid in basically horizontal layers within the limitations imposed by the trench. Configurations will be as specified by the drawings. Conduit shall not contain traps between manholes where water may accumulate and shall slope downward toward manholes.

Bends or curves shall be kept to a minimum radius of thirty feet unless preformed factory-fabricated sweeps or bends are used, which shall have a maximum angle of 45 degrees.

Standard size ducts as specified by the drawings, shall be used. Standard couplings or joints for the types of conduit being installed shall be used. Joints or couplings shall be staggered. Bring conduit to the shoulder of the fittings and fasten securely using cement recommended by the manufacturer.

Wipe non metallic conduit dry and clean before joining, apply full even coat of cement to entire area inserted in fitting and allow to cure for 20 minutes, minimum.

Where required, conduit shall be saw cut, with all cut ends perpendicular to conduit centerline, smooth and free of burrs and fins.

Prior to concrete encasement, ducts shall be secured with nonmetallic straps or cable ties to nonmetallic duct spacers at intervals not exceeding five feet. Duct spacers shall be sized for the ducts being held, and shall provide the minimum spacing between ducts required for concrete flow. Duct spacers shall be anchored to the ground using nonmetallic bands and stakes to prevent movement during concrete placement. Contractor shall not place concrete until conduits have been inspected by Delmarva Electric representative.

Ducts entering manholes shall be terminated with the bell ends set flush with the inside face of manhole walls and in accordance with Delmarva Electric standards and details. Install temporary plugs to protect installed conduit from entrance of liquids and debris. Contractor shall be responsible for the concreting-in or mortaring-in of the bell ends and is incidental to the item being installed. Place concrete on 6" minimum bed of Delaware No. 57 stone as specified by the drawings, provide a minimum of 3 inches of concrete cover at bottom and 4 inches of concrete cover on sides and top of conduit duct bank. If necessary to split conduit duct bank because of obstructions, each part will be treated as a separate duct bank with concrete envelope as required.

All conduit shown on drawings for use by Delmarva Electric shall be mandreled using a device 1/2" inch smaller than the duct inside diameter, or foam carrier for plastic/fiberglass duct, swabbed and observed by Delmarva Electric representative before acceptance. Duct through which mandrel will not pass shall be re-laid as directed by Delmarva Electric and re-tested to Delmarva Electric satisfaction, all for which additional compensation will not be allowed. Leave polypull rope or equivalent, secured at each end, in all completed ducts.

The customer shall pull a mandrel (1/2" smaller in diameter than the conduit and 6" long) through each duct prior to DPL cable installation, followed by a pulling line (1800 lb. mule line), which shall remain in each duct. The mandrel testing and installation of a pulling line is incidental to the conduit being installed.

Conduit shown to be terminated above ground or at poles shall be coupled to a 48 inch, 90 degree PVC Schedule 40 bend and capped or plugged. Clean conduit and leave polypull rope as specified.

A marker tape indicating the specific utility shall be buried approximately 12 inches above the duct banks for the entire length of the duct run.

No conduit 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, unless all requirements as to the minimum length of open trench and promptness of refilling are observed.

Backfill of pipe trench may not be started before such time that the concrete has cured three days or as determined by the Engineer.

Manhole Installation -

The excavation depth and width will be governed by the top of manhole as shown on the contract drawings and the size of manhole to be installed. Excavate and remove to depths shown on drawings, coordinate excavation as necessary to support the delivery and placement of manhole. Provide sheeting and shoring of the excavation and any adjacencies as required.

Provide sufficient labor to set the manhole sections including 36" Delmarva frame and cover on a 12" bed of Delaware No. 57 stone and placing sealing compound furnished by the supplier in the joints between sections as they are set. Upon completion of setting the manholes, dampproof the sections, furnish and install ladder and ground wire as required by the utility owner.

Method of Measurement:

The measurement of payment shall be for the installation of the materials listed in the breakout sheet in accordance with the units indicated, installed in place, complete and accepted.

Basis of Payment:

The quantity of Electric Ductbank and Manhole System will be paid for at the Contract lump sum. Price and payment shall constitute full compensation for trench excavation, disposal of unsuitable materials, furnishing, transporting and installing the materials and for all labor, equipment, tools and necessary incidentals to achieve and accept Electric Ductbank and Manhole System.

No separate payment shall be made for salvaging, abandoning or removing and disposing of existing electric facilities and cost for such required work shall be incidental to the respective sizes for installing electric ductbank.

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 602509, 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.

8/29/2019

604503 - TEMPORARY PROTECTIVE SHIELD

Description:

This work consists of furnishing all materials and installing a temporary protective shield at the locations described and in conformance with the details and notes on the Plans, as described in these Special Provisions, and/or as directed by the Engineer.

Materials:

Provide materials in accordance with Section 604.02 of the DelDOT Standard Specifications and of the dimensions designated.

Construction:

In order to protect vehicular traffic against damage from falling material, debris, and other operations, after the erection of the girders and upon completion of the deck, the Contractor shall furnish and erect temporary protective structures under the work area in accordance with Section 604.03.4 of the Standard Specifications and as follows:

1. The shields shall be supplemented with such additional suitable enclosures of tarpaulins or wire mesh as may be necessary in order to insure against the dropping of materials, tools, equipment, and other objects below the level of the shield. Vertical temporary protective shields shall be erected to prevent debris from entering the roadway and to protect motorists in travelling lane(s) adjacent to the work area(s).
2. Broken concrete and other debris shall not be allowed to accumulate on the shields, but shall be removed promptly. The shields shall not be used for storing or stockpiling construction materials.
3. Timber shall have an allowable flexure stress of 1600 psi (11 MPa) and the shield must be designed for 100 lb/sq. ft. (5 kPa) live load and 60 mph (100 km/hr) wind load.
4. All plywood shall be new and shall be not less than 3/4" (19 mm) thick.
5. Bolts, nuts, washers, structural steel, etc. shall conform to Section 601 of the Standard Specifications.
6. The flooring and siding of the shield shall have no cracks or openings through which material particles may fall.
7. The Contractor shall submit shop drawings and design calculations for the shields, including erection plans, to the Engineer for approval, prior to the start of the work. The entire submittal shall be signed and sealed by a Professional Engineer registered in the State of Delaware prior to submitting to the department.
8. All connections of the protective structures to the steel work of existing bridge shall be made by means of clamps or other approved devices. The drilling of holes in the existing steel work, or welding thereto, will not be permitted.
9. Unless otherwise noted on the Plans, the minimum underclearance over roadways (pavement and shoulder) shall be as follows:
16.5? (5.03 m) for interstate and other controlled access highways
10. No portion of the temporary shield (including connection devices) shall encroach on under clearances.
11. After protective shield has served its purpose, and approval has been given by the

Engineer, the Contractor shall remove and dispose of the temporary protective shield away from the site to the satisfaction of the Engineer.

Method of Measurement:

The quantity of temporary protective shields will not be measured.

Basis of Payment:

The quantity of temporary protective shield will be paid for at the Contract lump sum price. Price and payment will constitute full compensation for preparing and revising the required shop drawings, furnishing all materials and performing the work as detailed and noted on the Plans, for removal and disposal of the protective shield materials, and for all labor, tools, equipment, and incidentals necessary to complete the work.

3/11/13

605505 – FURNISH STEEL PIPE PILES, 20”
605506 – INSTALL STEEL PIPE PILES, 20”
605507 – FURNISH STEEL PIPE INDICATOR OR TEST PILES, 20”
605508 – INSTALL STEEL PIPE INDICATOR OR TEST PILES, 20”

Description:

Furnish and install foundation piles of the type and dimensions designated, including cutting off or building up foundation piles when required

Materials:

Provide materials in accordance with Section 605.02 of the DeIDOT Standard Specifications and of the dimensions designated.

Construction

Construct in accordance with Section 605.03 of the DeIDOT Standard Specifications.

Method of Measurement:

The method of measurement is in accordance with Section 605.04 of the DeIDOT Standard Specifications.

Basis of Payment:

The Department will pay in accordance with Section 605.05 of the DeIDOT Standard Specifications and for the accepted quantities at the Contract Unit Prices as follows:

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
605505	FURNISH STEEL PIPE PILES, 20”	LF
605506	INSTALL STEEL PIPE PILES, 20”	LF
605507	FURNISH STEEL PIPE INDICATOR OR TEST PILES, 20”	LF
605508	INSTALL STEEL PIPE INDICATOR OR TEST PILES, 20”	LF

6/20/19

727557 - CANTILEVER SLIDE GATE, 45'

Description:

This work consists of furnishing and installing all materials for a cantilever gate on a motorized operator unit of the size noted and in accordance with the location, notes and details on the Plans, these Special Provisions and Standard Specifications.

The Contractor will install the cantilever slide gate on a motorized gate operator on a concrete pad. Conduit from the power source to the gate operator and wiring from the power source to the gate operator will be furnished and installed by the Contractor.

Prior to beginning construction on Item 727557, a coordination meeting shall be held to include DelDOT Maintenance representative(s), the Cantilever Slide Gate Installer, and the Contractor installing the service conduit and wiring.

Submittals - The Contractor shall submit to the Engineer for approval the manufacturer's product data, specifications, installation instructions and maintenance instructions for all materials.

Materials:

All gate material components shall be compatible with the make and model of the gate operator: Chamberlain Liftmaster; Model SL585UL-101-21-G3.

Gate Frame - The gate shall be a Cantilever Slide Gate that, when used in tandem, will fit the openings as shown on the Plans and attach to proposed Right of Way fencing at locations shown on the plans. Cantilever overhangs for the specified openings shall be per the manufacturer's recommendation. Cantilever overhang frames shall have brace rods per the manufacturer's recommendations, but not less than 10mm (3/8 in.) diameter.

The top and end gate frames shall be constructed of 2 in. square aluminum tubing, alloy 6063-T6, welded at all corners so as to form a rigid one piece unit. The bottom rail shall be a 4 in. x 2 in. aluminum tube as shown on the plans. Intermediate post uprights in the gate shall also be 2 in. square aluminum.

Swivel type zinc die cast trucks with sealed lubricant ball bearing wheels, minimum 2 in. in diameter with side rolling wheels, shall be provided to insure alignment of the truck in track. Total weight of gate system shall not exceed 1,200 lb.

All gate hangers, latches, brackets, guide assemblies and stops shall be malleable iron or steel and galvanized after fabrication. A latch shall be provided that can be activated on-site from both sides of the gate.

Gate posts shall be 4 in. outside diameter schedule 40 galvanized steel posts. Posts shall be set in Class B concrete as shown on the details and as specified by the manufacturer.

Guide wheel assemblies shall be provided for each supporting post. Each assembly shall consist of two rubber wheels attached to the post so that the bottom horizontal member shall roll between the wheels. Wheels shall be adjustable to maintain plumb gate frames and proper alignment.

The cantilever sliding gate and overhang frames shall have barbed wire installed at the top. The barbed wire shall be galvanized steel conforming to the requirements of ASTM A-121 and shall consist of three strand 12 ½ gage (2.51 mm) wire with tightly wrapped, sharp, four point barbs formed of 14 gage (2.03 mm) wire spaced evenly at not more than 5 in intervals. Galvanizing shall be Class 3.

Concrete for setting post shall meet Class B concrete of Section 812 of the Standard Specifications.

The gate fabric shall be 2 in. mesh consisting of 9 gage galvanized steel wire or 9 gage aluminum coated steel wire as specified in Standard Specification 825.02 (c).

The cantilever sliding gate manufacturer shall warrant the cantilever sliding gate and the truck assembly on which it rolls against failure from normal use for a minimum period of three (3) years from the date of

acceptance by DelDOT. "Failure" shall be defined as any defect in manufacturing and/or assembly that prevents the gate from operating in a normal manner.

Gate Operator - The Gate shall be compatible with the proposed gate Operator and Gate Access System.

At a minimum, it shall be UL listed and equipped with a one horsepower, 220 volt, single phase motor with a 70 VA transformer. The motor shall be a single direction, high starting torque type and shall be internally protected against, and with a manual reset, for overload protection. The Gate Operator shall have a minimum three (3) gallon per minute capacity hydraulic pump. Motor contactor shall meet NEMA size "O" specifications. Limit switches shall be rated at NEMA 4/13 and be readily adjustable with modular construction.

The Gate Operator shall have open override circuitry to provide complete control of the gate (from external controls) while closing. An internal timer shall limit the run time of the operator to a maximum of 90 seconds in any one direction to protect the gate operating system. Reversal of the gate from an open condition or by a safety device shall be delayed by 1.5 seconds to prevent shock load damage to the gate operating system. The Gate Operator shall be supplied with an internal relay capable of receiving a 24 Volt, 1,000 Ohm, D.C. signal for control movements of the gate and have full system capabilities so additional control systems can easily be added in the field. The Gate Operator shall also be supplied with an internal adjustable timer capable of delaying the closing of the gate up to 90 seconds after a closing signal has been received. The Gate Operator control circuit shall have the built-in capability of providing a signal output if the gate does not reach the full close position within 90 seconds of activation. The Gate Operator shall have a power disconnect switch at the control box for safety.

Gate speed shall be 18 inches per second. A drive rail shall be supplied capable of being attached to the cantilever gate bottom frame. The Gate Operator shall be placed on a concrete pad constructed by the Contractor. The location of the concrete pad adjacent to the cantilever gate shall be to the specifications of the Gate Operator manufacturer. Gate Operator housing shall be 14 gage, galvanized steel.

The Contractor shall supply two color coded wiring diagrams for the Gate Operator at each location, including all internal adaptations and field connections.

Anchor bolts to mount the Gate Operator to the concrete pad shall be furnished and installed as shown on the plans.

Gate Access System - The existing keypad access system for the gate operator shall be reset by the Contractor for use with the new gate equipment. The contractor will coordinate with a representative from DelDOT Maintenance for location and placement of the relocated keypad access system.

All necessary materials, including conduit, wiring, foundation, and mounting assembly for a fully functional keypad access system will be furnished and installed by the Contractor as incidental to this item.

Electrical Service:

Electrical connections between the power source, the Gate Operator, and the Cantilever gate shall be per manufacturer recommendations and provided by the Contractor or paid under their respective pay items as identified on the plans.

Construction Methods:

All materials shall be installed in accordance with these specifications, the manufacturer's recommendations, notes and/or details on the plans and/or as directed by the Engineer.

Method of Measurement:

The quantity of cantilever slide gates will be measured as the number fabricated, installed, and accepted.

Basis of Payment:

The quantity of cantilever slide gates will be paid for at the Contract unit price per each. Price and payment for each unit will constitute full compensation for furnishing and placing all materials as described in this Specification and as shown on the Contract Plans, and for all labor, equipment, including but not limited to

the cantilever slide gate, gate locking mechanism, anchors to the proposed fence (where applicable), barbed wire, motorized gate operator, concrete pad and anchor bolts, electrical connections, warranty, and all incidentals necessary to complete the work.

6/26/2019

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 $[3\text{mm}+2\text{ppmxD}]$ 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 DelDOT 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. DelDOT 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 singlewide modular office and adjacent parking area. 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" Item. The field office shall be available for use by the Department continuously throughout the duration of the project.

Construction and Equipment:

The field office shall be new and have a minimum floor space of 600 square feet with minimum exterior dimensions of 50'-0" length by 12'-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. 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 2500 square feet and having a minimum of 10 functional parking spaces striped for full size cars. 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" 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, Type I Special" Item.

The field office shall have full carpeting, kitchenette facilities, and interior and exterior paneling, lighting, and plumbing fixtures. The field office shall have a minimum of two (2) exterior doors, each door having a passage and a deadbolt lock. These door locks shall be keyed and at least 2 complete sets of keys shall be supplied to the Engineer's representatives. The exterior doors 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, soft rubber hose per connection.

The field office shall be provided with sufficient natural and artificial light and shall be adequately heated and cooled to provide comfortable working conditions.

The field office shall have satisfactory lighting, electrical outlets, heating equipment, 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 power and shall be UL Classification 10-B:C(min.) and shall be suitable for Types A:B:C fires. A commercial or industrial type first aid and safety kit suitable for project conditions and hazards (including snakebite) shall be provided and maintained to full capacity on a monthly basis.

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. When separate facilities for men and women are not available or required, a sign with the wording "Rest Room" (letter heights 1" minimum) shall be placed over the doorway and an adequate positive locking system shall be provided on the inside of the doorway to insure privacy. The facility(s) shall be maintained by the Contractor to be clean and in good working condition and shall be stocked by the Contractor with adequate lavatory and sanitary supplies at all times during the period of the Contract.

The Contractor shall be responsible for performing or for making arrangements for all necessary telephone connections and/or for their maintenance; for providing a new telephone equipment system, for payment of all connections and the new telephone system equipment and its installation; and for final disconnection of the telephones.

The field office telephone system shall have a total of 5 lines consisting of 2 direct single lines with call forward busy feature, 2 dedicated computer use line with broadband connection for either DSL or cable, and 1 dedicated facsimile line and have 5 key sets consisting of 1 master key set having privacy feature, and 4 four-button key sets having privacy feature (1 set which may be for wall mounting), all for the official and exclusive use of the Engineer and other representatives of the Department. 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. Monthly billings for the field office telephone system shall be received and paid by the Contractor. A copy of each bill shall be forwarded to the Project Resident for reimbursement on the subsequent contract pay estimate. The reimbursement will be for the amount of the bill only and shall not include any additional mark-up or profit.

For all other utilities, the Contractor shall be responsible for performing or for making arrangements for all necessary utility connections and/or for their maintenance; for payment of all utility connections, installations, service fees and bills; and for final disconnection of utilities.

The field office interior shall be furnished by the Contractor. The Contractor shall provide new and maintain the following office furnishings, all which are to be approved by the Engineer prior to installation in the field office. Placement of these furnishings shall be as directed by the Engineer. 6 full size office desks each with filing drawer and fully adjustable ergonomic design swivel chair with armrests and five leg base having wheel casters, 1 computer station with acoustical panels having minimum 60 NRC rating for privacy screen and fully adjustable ergonomic design swivel chair with armrests and five leg base having wheel casters, 1 large conference table for a minimum of 12 people with surrounding chairs with armrests, 2 folding tables minimum 6'-0" by 3'-0" each with ergonomic design straight back chair with armrests, 1 work table, 1 supply cabinet, 2 rough plan racks, 2 legal size filing cabinets with 4 drawers, 2 legal size fire-resistant filing cabinets with lock and key with 4 drawers and meeting fire underwriters' approval for not less than one hour test, 2 book shelves minimum 3'- 6" by 4'- 6", 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, all which are to be approved by the Engineer prior to installation in the field office. The required equipment will enable the Department to synchronize project record keeping and office functions. The equipment shall be delivered in working and useable condition:

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

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 desktop model, compact facsimile machine with automatic paper cutter, 10-sheet feeder, halftones with 16 levels of gray, 50-number auto dialing, answering machine hook-up, large LCD readout, date and time stamp, and advanced telephone features;

1 DVD camcorder with on-screen programming, full-range auto focus, high-speed shutter, high-resolution, bookmark search, time-lapse recording, rechargeable batteries and charger, tripod, and protective carrying case;

1 integrated color monitor and DVD/VHS cassette recorder having minimum 20" screen, automatic on/play/rewind/stop, remote, full range speaker, and digital auto tracking;

1 micro cassette recorder, having fast playback, voice-activated system, three-digit tape counter, silent auto-stop and pause, two tape speeds, one-touch and follow-up, built-in condenser microphone, cue and review, and rechargeable with combination battery charger/AC adapter;

1 telephone answering machine having all-digital recording, 14 minute message capacity, selectable message time, voice prompt assistance, day/time stamp, call screening, two-digit LED message indicator, toll saver, power failure memory back-up, and message interrupt from any station; and

2 digital cameras with minimum 1/2.7" 4.0 mega pixel, 3X optical / 6X precision digital zoom, 12-bit DXP A/D conversion, 2.5" 123K pixel LCD display, 5-mode program AE and each with dual media slots, SXGA/XGA/VGA image resolution, E-mail mode. Also intelligent flash with red-eye protection, MPEG movie mode, clip motion, light metering, TEXT mode (GIF), playback zoom and resize, white balance, lithium battery system and in-camera picture effects, memory stick/card (minimum 256MB) capability, and storage case.

Consumables as required to manage the business of the project shall be provided for all office equipment for the length of the Contract. These consumables shall be furnished on request and shall include but not be limited to paper, tapes, ribbons, rolls, toner, cleaning kits, microcassette tapes and batteries, answering machine cassettes, camera batteries and memory sticks and/or discs, DVD and CD R/RW media, etc.

Maintenance of all office equipment 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.

Included in the unit price bid per month for the Field Office on this project will be two (2) 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 two (2) Microcomputer Systems shall consist of:

Central Processing Unit (CPU) – Lap Top

Pentium M processor, 740 (1.7 GHz) or better with integrated USB 2.0 and IEEE 1394 ports (firewire) and wireless networking included,

Minimum 1.0 GB RAM with expansion capability to at least 3.0 GB and clock/calendar card equivalent, and

Microsoft "Windows® XP Professional" operating system;

Memory (Storage)

CD/DVD +/- RW with double layer write capability, and 100GB hard drive minimum, integrated Ethernet 10/100, and internal modem. Included software shall support double layer media writing and automatic backup of data;

Monitor (Cathode Ray Tube)

Monitor for docking station and docking station - Super Video Graphics Adapter (SVGA) minimum. 19" minimum diagonal visual area flat panel with .26 dot pitch capable of multiple frequency 256 color graphics and at least 1024 pixel resolution. Swivel base with low radiation and eyestrain protection, brightness and contrast control and

Laptop - shall have 15.4" display minimum;

Color Graphics Card

Card must be SVGA AGP interface with 64 MB onboard video memory having maximum resolution of at least 1280x720 with at least 16 bit color and video control hardware and software;

Keyboard

Keyboard shall be ergonomic, enhanced layout minimum with keyboard interface cable;

Printers

LaserJet HP 2550N network capable printer or latest model with 64 MB minimum total memory having up to 600 dpi resolution and using HPL6 printer language with all necessary software and cables for proper operation; and a HP Desk Jet color printer or latest model

with photo quality print capability and with all necessary software, equipment, and cables for general operation as well as connection and sharing on a local network;

Scanner

A HP6100 color scanner with HP5770 ScanJet ADF (or equivalent brand) with all necessary software, equipment, and cables for general operation as well as connection and sharing 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® XP Professional". The required applications software follows and is to be latest version unless noted:

office suite - "Microsoft® Office XP Professional",
antivirus - "McAfee® Total Protection for Small Business",
software supporting creation of DVD +/- R/RW disks (supporting double layer media writing) and DVDR and DVDRW disks using DVDRW drive, for example: Ahead Nero, Roxio DVD/CD Creator, or some equivalent product. Note: software commonly included as part of the standard CDRW upgrade/standalone package is acceptable if included with the unit;

Related Equipment

Wireless networking hub/router (802.11g or better) with all associated hardware (adapters, cables, etc) and soft to enable wireless networking and internet connection sharing for all office computers and printers,

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

An optical mouse with proper driving software having complete Microsoft emulation,

An internal 56/28.8/14.4 fax modem with MNP5 error checking and complete Hayes emulation having high-speed 14.4 fax capability and regular data transmission between 2400 and 56 baud, with the latest version proper driving software,

Necessary cables for proper operation,

An uninterruptible power supply (UPS) units for protection from power loss or fluctuation, minimum of 6 outlets, adequate to provide a minimum of 30 minutes backup power for an orderly shut down of the computer system with software and connections for automatic system shutdown,

24 bit Sound Blaster compatible PCI soundcard with quality desktop speakers,

A combination surge, spike, and noise protection device with receptacles for all peripherals (may be in combination with the UPS power supply),

A wrist rest suitable for use with the furnished keyboard,

Cleaning kits for disk drives,

An anti-glare filter with grounding wire suitable for use with the furnished monitor, and

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

Maintenance and Service

Maintenance of all specified equipment and components shall be provided for by a validated service agreement for the length of the Contract. Maintenance (upgrades, replacement, full technical support) for each software application shall be provided for by validated maintenance agreement for the length of the Contract. These agreements shall allow an authorized project person to deal directly with the service organization to request repair or the maintenance organization to request assistance; and

Supplies

Consumables as required to manage the business of the project shall be provided for the Microcomputer Systems for the length of the Contract. These consumables shall be furnished on request and include but not be limited to 3-1/2" double sided high density micro floppy diskettes, compatible diskettes for provided digital cameras and memory stick media, DVDR and DVDRW media compatible supporting operational minimum to maximum speed of the DVD/RW drive unit, cut sheet paper and labels compatible with the printers, hardware and screen cleaners, and toner cartridges.

Maintenance of the field office including its 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 and the 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 these offices or the parking area.

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

The field office shall be ready for use not later than thirty (30) calendar days after the date of the fully executed Contract and before construction operations begin.

3/3/08

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 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. 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.

5/17/17

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

831513 - FURNISH AND INSTALL 2" SCHEDULE 80 PVC CONDUIT (TRENCH)
831516 - FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (TRENCH)
831521 - FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)
831542 - FURNISH AND INSTALL 2" HDPE SDR-13.5 CONDUIT (BORE)
831545 - FURNISH AND INSTALL 4" HDPE SDR-13.5 CONDUIT (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", 2-1/2", 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

842501 - FURNISH & INSTALL ELECTRICAL UTILITY SERVICE EQUIPMENT 120/240 (100 AMP)

842502 - FURNISH & INSTALL ELECTRICAL UTILITY SERVICE EQUIPMENT 120/240 (200 AMP)

Description:

This work is comprised of furnishing and installing Traffic Signals, ITS Devices and Lighting service pedestals and safety switches in accordance with the Contract Documents and as directed by the Engineer. Electrical service equipment consists of the equipment necessary to connect a utility company service to a traffic signal or ITS device controller cabinet, traffic monitoring station cabinet, or other traffic control device cabinet or lighting control cabinet. Provide electrical service equipment at the phasing and amperage specified in the Contract Documents. This work includes coordinating the connection with the local utility company. While the 100 Amp Service may be specified for both Traffic and Highway Lighting, the 200 Amp Service is typically specified for Highway Lighting Only.

Materials:

- Service Pedestal and safety switch
- Ground Rod & Wire
- Cables and wire (including three #8 THHN, one red, one black and one white)
- Conduit & Fittings, Galvanized Steel
- Hex Bolts & Washers, Stainless Steel
- Square Tube Steel Posts
- Portland Cement Concrete, Class B
- Galvanizing
- Aluminum Pedestal Board/Panel
- 24" x 30" Minimum Size Circuit Breaker Box (To be determined by serviceable needs)

All materials provided shall be in accordance with the applicable sections of the Department's 2016 Standard Specifications

Construction Methods:

All work shall be performed in compliance with NEC, NFPA, and NESC Standards and with utility company minimum requirements. The electric service pedestal shall be installed as shown in the Contract Document Details. The contractor shall locate line side safety switch and meter adjacent to service drop location, fuse and size line side safety switch to service. The load side safety switch should not be fused. Safety switch should be marked with weatherproof stamp. Switch should be labeled "Signal", "Camera", "Repeater", "VMS", "Detector" "RWIS" or "Lighting", denoting the device it serves. All conduits and hardware connections should be tightened with the appropriate wrenches or tools.

The ground resistance of each rod must be measured before connecting the rod to the grounding conductor. If the measured resistance exceeds 25 ohms, exothermically weld a 10-ft. extension to the top of the first rod and drive to its full depth. Measure the earth resistance again. If it still exceeds 25 ohms, contact the engineer for instruction.

Service Pedestal Installation

Area for service pedestal should be excavated. Where a pole base is to be placed in existing concrete pavement such as a sidewalk, the concrete should be saw cut in a square pattern or be removed to the nearest joint. Install conduit using a conduit adapter to connect sweeps to underground conduit and conduit leading to the safety switch and meter. An appropriate length of 2-inch galvanized conduit (threaded and reamed on both ends) should be installed on the end of the 90 degree sweeps at the base of the pedestal so that the end of the conduit will be 3 feet above the finished grade of the area.

Install square tube steel posts per Contract Document Details in 12-inch X 12-inch X 36-inch concrete footings. 3-Inch clearance should be provided on the base of footing. Backfill around the conduit and concrete footings and dispose of excess or unsuitable materials to grade of the bottom of concrete footings. Backfill may be placed after the first 24 hours. Backfill should be as provided in the contract documents.

Remove all excess material. Suitable Material may be used elsewhere on the Project as directed by the Engineer. Set square tube steel posts and determine the finished length of the tubular steel posts by adding the total height of the meter and safety switch to 5 feet. Install ground rod in accordance with the contract documents. The ground resistance of each rod must be measured before connecting the rod to the grounding conductor. If the measured resistance exceeds 25 ohms, exothermically weld a 10-ft. extension to the top of the first rod and drive to its full depth. Measure the earth resistance again. If it still exceeds 25 ohms, contact the engineer for instruction.

Attach pedestal aluminum board/panel to square tube steel posts using six (three for each post) 5/16" x2-1/2" long Grade 5 stainless steel hex bolts, flat washers and nylon lock nuts. Attach meter socket to the board/panel with four 5/16" x 3/4" stainless steel hex bolts and nylon lock nuts. Attach the circuit breaker box to the board/panel with four 5/16" x 3/4" stainless steel hex bolts and nylon lock nuts.

The contractor shall arrange inspection by a Delaware licensed electrical inspection agency or contractor's licensed staff) for all lighting system work including but not limited to service, branch circuits, junction wells, underground conduit, all grounding and bonding and any electrical work performed on the project. The contractor shall submit certification for the chosen Delaware licensed electrical inspection agency or contractor's staff to the Project Engineer for approval prior to starting work.

Method of Measurement:

The quantity of electric services will be measured as the actual number of complete electric services installed, complete in place tested and accepted.

Basis of Payment:

The quantity of electric services installed will be paid at the Contract Unit Price per each electric service of the size and type specified, installed, complete in place, tested and accepted. Price and payment constitutes full compensation for all materials, including all enclosures, panel boards, ground rods, circuit breakers, internal wiring, wiring devices, wiring up to 10 feet each underground from the service pedestal to the utility pole and up to 50 feet each vertical (up the service pedestal and up the utility pole combined and including all required coils), concrete collar, meter sockets, meter, shunts, cover plates, wiring, square tubing, back panel and for all labor, tools, inspection by Delaware licensed electrical agency, and incidentals necessary to complete the Item as specified and as directed by the Engineer.

4/17/2018



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION

800 BAY ROAD
P.O. Box 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

UTILITY STATEMENT

August 23, 2019

STATE CONTRACT # T201507402

P6 # 15-01347

F.A.P. # BHN-N347(04)

BR 1-714 ON N347 CHAPMAN ROAD OVER I-95

NEW CASTLE COUNTY

The following utility companies may own and/or maintain facilities within the project limits:

Comcast Cablevision
Delmarva Power Electric Distribution
Delmarva Power – Gas
Delmarva Power Communications (Windstream)
Delmarva Power Transmission
New Castle County Dept. of Special Services
Suez Water Delaware Inc.
Verizon Delaware LLC

The following is a breakdown of the Utilities involved, adjustments and/or relocations as required:

COMCAST CABLEVISION

Comcast has underground facilities within the project limits. Comcast does not have aerial facilities within the project limits.

Existing Comcast Facilities:

- Comcast maintains underground facilities along Alexis Drive entering into the project limits at Sta. 10+00 left (west) of the construction alignment to the pedestal next to Utility Pole #44781-40514 at Sta. 11+95.
- From Sta. 11+95, the line travels down below grade at the pole and crosses Alexis Drive at Sta. 11+79 to the right of the construction alignment.
- Sta. 38+60 (Alexis Dr. Sta. 11+79) the underground line continue east left (south) of the construction alignment of Chapman Road and continues past of the project limits.

There are no anticipated impacts to these facilities and No additional Comcast involvement is anticipated.

Comcast's estimate is based upon information contained in DelDOT's Semi-Final Plans for contract T201507402, received on 12/14/2018, and all data available as of this date. Changes in the project scope or in the projects current construction may cause these facilities to be relocated/adjustment.

No existing Comcast facilities can be taken out of service.

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

DELMARVA POWER ELECTRIC

Delmarva Power maintains aerial and underground facilities within the project limits.

Delmarva Power maintains the following aerial facilities within the project limits:

1. The aerial 3 phase 12kV lines on Chapman Road located on the utility poles entering into the project at STA 21+00 to Pole #44682-40524 at STA 27+20 right (south side) of the construction alignment.
2. The aerial 3 phase 12kV line on Chapman Road located on utility poles starting on the east side of I-95 at STA 33+96 R96' to extend past the project limits on the right (south side) of the construction alignment.

Delmarva Power maintains a 3 phase – electric duct system under the bridge on hangers under the sidewalk deck the following underground facilities within the project limits:

1. An underground electric line at Sta. 21+48 comes down Pole #44628-40526 and crosses Chapman road to Regal Blvd.
2. 1 – 3phase 12kv underground electric line at Sta.27+20 R67' (existing Sta. 24+50 RT25') comes down pole #44682/40524 runs east along the east bound lane of Chapman Road to manhole 466 at Sta. 27+75 R63' (existing Sta. 25+05 RT15') of the construction alignment.
3. From Sta. 27+75 R63' MH466, the buried/underground facilities enters duct bank system to travel eastward across I-95 to manhole 467 at Sta. 34+21 R67' (Sta. 31+50 RT15') of the construction alignment.
4. From manhole 467 at Sta. 34+21 R67' the underground facilities runs Eastward to Pole #44756/40516 Sta. 35+46 R97' (Sta. 32+80 RT45') of the construction alignment and connects to Delmarva's 12kv Aerial Facilities past the project limits.
5. From STA 33+96, there is an underground DelDOT private service from Pole #44743-40516 that travels west and crosses I-95 to the median.

Anticipated Delmarva Power Aerial Relocations:

Delmarva Power will perform the following work:

1. Sta.27+15 R67'; Install new pole, guywire, anchor, and transfer cable to new pole.
2. Sta. 27+20 R67'; Remove pole #44682/40524, guywire, and anchor;
3. Sta. 35+56 R97'; Install new pole and transfer cable to new pole.
4. Sta. 35+46 R97'; Remove pole 44756/40516.

Delmarva Power will require twenty-one (21) calendar days to complete the above relocation work. Delmarva will leave the project site until Delmarva Power Telecom has made their transfers to the new poles.

Delmarva will return to pull the poles once notification from the project engineer has given approximately twenty-one (21) days advance notice.

Anticipated Delmarva Power Underground Relocations:

Prior to Delmarva Power's work to begin, the State's contractor will install the conduits, manholes, pull ropes, and junction boxes for Delmarva Power Electric to install the proposed electric facilities as outlined in the State's contract documents and shown on the construction plans.

The conduit and mounting equipment from approximately Sta. 29+22 to Sta. 30+80 and Sta. 32+71 to Sta. 34+05 shall be provided by Delmarva Power and picked up at the Delmarva Power yard by the State's contractor and installed by the State's contractor. Refer to the special provisions and construction plans for further information.

Upon the completion of the conduit, conduit encased in concrete, manholes, and Bridge hanger system installation by the State's contractor and all installations are inspected and found acceptable by a DPL representative, the DPL relocation work will begin. If Delmarva finds any unacceptable installations by State's contractor DPL reserves the right to have Contractor remove and reinstall to proper DPL standards at the State's contractors expense.

Delmarva Power will perform the following work:

1. Delmarva Power will pull the new 3phase 12kv underground cables through the conduits to the manhole Sta. 27+15 to Sta. 28+55 R12' (right) of the construction alignment. Then run up the pole on the south side to tie into the aerial facilities.
2. Delmarva Power will pull the new 3phase 12kv underground cables through the conduits attached to the bridge structure from manhole Sta. 28+66 R12' to Sta. 34+66 R12' (right) of the construction alignment.
3. Delmarva Power will pull the new 3phase 12kv underground cables through the conduits to the manhole Sta. 34+66 to Sta. 35+56 R97' (right) of the construction alignment. Then run up the pole on the south side to tie into the aerial facilities.

Delmarva Power will require **seventy (71) calendar days** to the above relocation work.

4. The old cables will be removed from the current duct structure by Delmarva forces once the State Engineer give advance notice.

Delmarva Power will require **twenty-one (28) calendar days** to the above relocation work.

Delmarva Power will require a total of one hundred and twenty (120) calendar days to complete the proposed work in **Phase 4** of the project construction phasing following twenty-eight (28) calendar days advance notice of completion of clearing and grubbing, cuts and fills made, staking of rights of way, completion of the conduits installation, and completion of the Utility Pre-Construction Meeting for this contract and the procurement of easements by DelDOT and receipt of "NTP".

Delmarva Power will complete this work in during the project construction.

Delmarva Power's estimate is based upon information contained in DelDOT's Semi-Final Plans for contract T2015007402, received on 06/24/2019, and all data available as of this date. Changes in the project scope or in the projects current construction phasing may revise the number of working days required.

For exact location of electric facilities, please contact Miss Utility at (800) 282-8555.

16 Del. C. § 7405B requires notification to and mutually agreeable measures from the public utility from any person intending to carry on any function, activity, work or operation within dangerous proximity of any high voltage overhead lines. All contractors/other utilities must also maintain a distance of 10'-0" from all aerial energized lines.

No existing electric facilities can be taken out of service.

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

DELMARVA POWER GAS

Delmarva Power maintains the following gas facilities within the project limits:

- A 6" Steel gas main entering into the project limits at STA 21+00. The gas main is located in the grass area at varying distances off the edge of the roadway. It ends at the test station at STA 25+10 right of the construction line.
- A 4" plastic gas main is located along Alexis Drive entering into the project limits at STA 10+00 right (east) of the construction alignment. The gas main continues along the right side of the construction alignment to the intersection approximately STA 11+85 (Chapman Road STA 38+60).
- At STA 11+79, the 4" plastic gas main crosses Alexis Drive and stubs 45 feet left (west) side of the construction alignment.
- STA 38+60 (Alexis Dr. STA 11+85) the 4" plastic gas main continue east left (south) of the construction alignment of Chapman Road and continues past of the project limits.

Delmarva Power's gas facilities within area of proposed fence line:

- Delmarva Power Gas has an existing 4" plastic gas main that crosses the proposed fence line at approximately Sta. 23+97 R29' of the construction alignment. The State's contractor shall contact Miss Utility and use caution when installing the fence posts and not place the posts over the existing gas main.

There are no anticipated impacts to these gas facilities. Delmarva Power's review is based upon information contained in DelDOT's Final Plans for contract T201507402, received on 06/25/2019, and all data available as of this date. Changes in the project scope or in the projects current construction phasing may revise the number of working days required.

No additional Delmarva Power involvement is anticipated.

No existing gas facilities can be taken out of service.

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

DELMARVA POWER Communications (WINDSTREAM)

Delmarva Power Communications maintains aerial and underground facilities within the project limits.

Delmarva Power Communications maintains the following aerial facilities within the project limits:

1. Delmarva Power Communications' has aerial a 96 and 288 fiber cables on Chapman Road located on the utility poles entering into the project at STA 21+00 to Pole #44682-40524 at STA 27+20 right (south side) of the construction alignment.

2. Delmarva Power Communications' has aerial a 48 fiber cable attached to the Delmarva Power Transmission pole line adjacent to I-95 including crossing Chapman Road at Sta. 26+15.
3. The aerial fiber line on Chapman Road located on utility poles starting on the east side of I-95 at STA 35+46 R97' to extend past the project limits on the right (south side) of the construction alignment.

Delmarva Power Communications maintains the following underground facilities within the project limits:

1. Delmarva Power Communications maintains a 48 fiber cable from the Delmarva Power Transmission pole at Sta. 24+75 R94' to pole #??662-?052? at Sta. 25+05 R49'.
2. Delmarva Power Communications maintains a 48 fiber cable from pole #??662-?052? at Sta. 25+05 R49' to pole #44678-40520 at Sta. 26+73 R97'.
3. Delmarva Power Communications maintains a 48 fiber cable from pole #44678-40520 at Sta. 26+73 R97' to pole #44682-40524 at Sta. 27+19 R67'.
4. Delmarva Power Communications maintains a 48 fiber cable from pole #44678-40520 at Sta. 26+73 R97' to pole #44682-40524 at Sta. 27+19 R67'.
6. Delmarva Power Communications maintains a 36, 96, and 288 fiber cable from pole #44682-40524 at Sta. 27+19 R67' to crosses to the manhole at Sta. 27+75 R63' and enters into Delmarva Power's 3-6" duct system to travel across I-95 to the manhole at Sta. 34+21 R66' of the construction alignment.
7. From Sta. 34+21, the underground lines continue to Pole #44756-40516 at Sta. 35+46 R97' then extends east past the project limits aerially.

Anticipated Delmarva Power Communications Aerial Relocations:

Delmarva Power Communications will perform the following work:

1. Sta. 27+15 R67'; transfer aerial cables to new pole;
2. Sta. 35+56 R97'; transfer aerial cables to new pole.

Anticipated Delmarva Power Communications Underground Relocations:

Prior to Delmarva Power Communications work to begin, the State's contractor will install the conduits, manholes, pull ropes, and junction boxes for Delmarva Power Communications to install the proposed fiber optic cables.

Delmarva Power Communications will perform the following work:

1. Delmarva Power Communications shall into the blow in 2 – 288 fiber optic cables into 2 - 4" conduits between the new manholes.
2. Delmarva Power Communications shall into the blow in 2 – 288 fiber optic cables into 2 - 4" conduits from the new manholes to the new Delmarva Power poles.

Delmarva Power will require twenty-one (21) calendar days to complete the proposed work in **Phase 4** of the project construction phasing following thirty (30) calendar days advance notice of completion of clearing and grubbing, cuts and fills made, staking of rights of way and completion of the Utility Pre-Construction Meeting for this contract and the procurement of easements by DelDOT and receipt of "NTP".

Delmarva Power's estimate is based upon information contained in DelDOT's Semi-Final Plans for contract T2015007402, **received on 06/24/2019**, and all data available as of this date. Changes in the project scope or in the projects current construction phasing may revise the number of working days required.

DELMARVA POWER TRANSMISSION

Delmarva Power Transmission maintains a high voltage aerial power line that runs parallel with the I-95 crossing Chapman Road approximately STA 25+50 to STA 28+00. These facilities will remain in place and active during the duration of this contract.

Delmarva Power Transmission Proposed Work to be Performed:

Delmarva Power Transmission will install visual indicators on the lowest conductor, before the project begins and will remove them after the project is complete. The Contractor is advised to use caution when working in the vicinity of this facility and to maintain a minimum of 25 feet from all Delmarva Power Transmission lines and structures (poles).

NO CONSTRUCTION EQUIPMENT CAN BE WITHIN 25 FEET OF THESE TRANSMISSION LINES.

There are no anticipated impacts to these transmission facilities. Delmarva Power's review is based upon information contained in DelDOT's Semi-Final Plans for contract T201507402, received on 12/14/2018, and all data available as of this date. Changes in the project scope or in the projects current construction phasing may revise the number of working days required.

No additional Delmarva Power involvement is anticipated.

For exact location of electric facilities, please contact Miss Utility at (800) 282-8555.

No existing gas facilities can be taken out of service.

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

NEW CASTLE COUNTY DEPT. OF SPECIAL SERVICES

New Castle County Department of Special Services owns and maintains sanitary sewer facilities within the limits of the project with no apparent conflicts.

NCC does not anticipate impacts to their existing facilities as required by the engineer. Any relocations/adjustments to any existing underground facilities shall be arranged, if necessary, with the owners and performed by the state's contractor during the construction of the highway project. The time to complete any additional relocations/adjustments will depend on the nature of the work.

VERIZON OF DELAWARE LLC

Verizon of Delaware Inc. maintains the following aerial facilities within the project limits:

1. Verizon maintains aerial facilities on the South side of Chapman Road from Pole #44628/40526 at station 21+40 R44 and extends West past the project limits.
2. Verizon maintains aerial facilities on the North side of Chapman Road from Pole #S/4-

68/SPC-S/4C/3 at station 23+35 L92 and extends East past the project limits.

3. Verizon maintains aerial facilities on the South side of Chapman Road from Pole #44756/40516 at station 35+44 R96 and extends East past the project limits.

Verizon of Delaware Inc. maintains the following underground facilities within the project limits:

1. Verizon maintains buried/underground facilities crossing Chapman Road from Pole #44628/40526 at station 21+40 R44 extending North to Pole #S/4-68/SPC-S/4C/3 at station 23+35 L92.
2. Verizon maintains buried/underground facilities from Pole # S/4-68/SPC-S/4C/3 at station 23+35 L92 extending North past the project limits.
3. Verizon maintains buried/underground facilities on the West side of Alexis Drive from Pole #44781/40514 at station 10+27 L28 extending South past the project limits.
4. Verizon maintains buried/underground facilities on the East side of Alexis Drive from Pole #44795/40513 at station 10+27 R94 extending South past the project limits.
5. Verizon maintains buried/underground facilities along E. 2nd Street from Manhole #9350 as station 43+10 Right 5 extending Northwest to Manhole 9379 at station 42+40 Right 29.

Anticipated Verizon Aerial Relocations:

1. Verizon will relocate to the new Delmarva Power Electric pole at Sta. 35+56 R97' of the construction alignment.

Verizon of Delaware Inc. will complete these changes. These relocations/adjustments are expected to take place approximately fourteen (14) calendar days to complete in **Phase 4** of the project construction phasing following a minimum of thirty (30) calendar days advance notice from the State's contractor or State's Engineer that work shall begin after Delmarva Power Electric Distribution and Delmarva Power Communications has completed their work.

Verizon's underground facilities within area of proposed fence line:

1. Verizon does not anticipate relocating the underground ducts that cross Chapman Road at Sta. 23+35 L92 extending North past the project limits. The proposed fence line will be installed over the 2 underground ducts. The State's contractor shall contact Miss Utility and use caution when installing the fence posts and not place the posts over the existing ducts.

Verizon's review is based upon information contained in DelDOT's Semi-Final Plans for contract T201507402, received on 12/14/2018, and all data available as of this date. Changes in the project scope or in the projects current construction phasing may revise the number of working days required.

No existing Verizon facilities can be taken out of service.

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

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.**

Wayne Tyler	Artesian Water Company	wtyler@artesianwater.com	302-453-7153
Matt Murray	Americomm/Comcast	mattm@americomm-llc.com	717-713-7586
Steve McAlister	Delmarva Power Communications	Steven.McAlister@exeloncorp.com	302-454-4194
Scott Vari	Delmarva Power Communications	Scott.Vari@pepcoholdings.com	(302) 454-5978
Angel Collazo	Delmarva Power – Elec.	angel.collazo@delmarva.com	302-454-4370
Laszlo Keszler	Delmarva Power Gas	laszlo.keszler@delmarva.com	302-429-3036
Chris Potter	Delmarva Power Transmission	chris.potter@exeloncorp.com	302-454-4855
Dave Clark	NCC Dept. of Spec. Serv.	dcclark@nccde.org	302-395-5705
John Licht	Suez Water of Delaware	john.licht@suez-na.com	302-252-3036
George Zang	Verizon Delaware, LLC	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 DelDOT 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.**

DIVISION OF TRANSPORTATION SOLUTIONS

Deborah L. Kukulich

Utilities Section, DelDOT
Deborah.Kukulich@delaware.gov

August 23, 2019
Date

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
PO BOX 778
DOVER, DELAWARE 19903**

CERTIFICATE OF RIGHT-OF-WAY STATUS

STATE PROJECT NO. T201507402

F.A.P. NO. BHN-N347(03)

BR 1-714 ON CHAPMAN ROAD OVER I-95

NEW CASTLE COUNTY

Certificate of Right-of-Way Status – 100%

Level 1

As required by 23 CFR, Part 635, and other pertinent Federal and State regulations or laws, the following certifications are hereby made in reference to this highway project:

All project construction or work shall be performed within existing rights of way and permanent easements; and

All necessary real property interests, including control of access rights when pertinent, were acquired as part of previous highway projects, and include legal and physical possession; and,

This project does not cause any persons to be displaced as defined in 49 CFR, Part 24; and,

The State has the right to remove, salvage, or demolish any improvements or personal property that may be located within project limits.

RIGHT OF WAY SECTION



**James Pappas
Acting Chief of Right of Way**

April 9, 2019



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

June 27, 2019

ENVIRONMENTAL REQUIREMENTS

FOR

State Contract No. T201507402
Federal Aid No.: BRN-N347(04)

Contract Title: BR 1-714 on N347 Chapman Road over I-95

In accordance with the procedural provisions for implementing the National Environmental Policy Act of 1969, as amended, the referenced project has been processed through the Department's Environmental Review Procedures and has been classified as a Level C/ Class II Action.

Due to the nature of the proposed construction activities, permits are not required for this project. However, the following construction requirements and special provisions have been developed to minimize and mitigate impact to the surrounding environs. These requirements by DelDOT not specified within the contract, but listed below, are the responsibility of the contractor and are subject to risk of shut down at the contractor's expense if not followed.

GENERAL REQUIREMENTS:

1. All construction debris, excavated material, brush, rocks, and refuse incidental to such work shall be placed either on shore above the influence of flood waters or on some suitable dumping ground.
2. That effort shall be made to keep construction debris from entering adjacent waterways or wetlands. Any debris that enters those areas shall be removed immediately.
3. The disposal of trees, brush, and other debris in any stream corridor, wetland, surface water, or drainage area is prohibited.

4. DeIDOT 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.: T201507402

Federal Aid No.: BRN-N347(04)

Project Title: Bridge 1-714 on N347 Chapman Road over I-95

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 DelDOT Maintenance of Railroad Traffic Item in the Special Provisions. Contractor shall coordinate railroad flagging with DelDOT'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 DelDOT Maintenance of Railroad Traffic Item in the Special Provisions. Contractor shall coordinate railroad flagging with DelDOT's Railroad Program Manager at (302) 760-2183.

Approved As To Form:



 Robert A. Perrine
 DelDOT Railroad Program Manager

11Dec18

 DATE

BID PROPOSAL FORMS
CONTRACT T201507402.01
FEDERAL AID PROJECT BHN-N347(03)

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 T201507402.01
- Name of Contractor

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 1
DATE:

CONTRACT ID: T201507402.01 PROJECT(S): BHN-N347(03)

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS

SECTION 0001 CONSTRUCTION OF NEW BRIDGE OFF ALIGNMENT

0010	201000 CLEARING AND GRUBBING	LUMP		LUMP		
0020	202000 EXCAVATION AND EMBANKMENT	CY	9500.000			
0030	202507 INCLINOMETERS	EACH	4.000			
0040	202508 TILTMETERS	EACH	2.000			
0050	202517 SETTLEMENT PLATFORM	EACH	5.000			
0060	202518 SETTLEMENT MONUMENT	EACH	10.000			
0070	207000 STRUCTURAL EXCAVATION	CY	1444.000			
0080	209001 BORROW, TYPE A	CY	1135.000			
0090	209004 BORROW, TYPE C	CY	178.000			

DELAWARE DEPARTMENT OF TRANSPORTATION
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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0100	209005 FURNISHING BORROW, TYPE C FOR PIPE AND UTILITY TRENCH BACKFILL	CY 124.000				
0110	209006 BORROW, TYPE F	CY 23173.000				
0120	211000 REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LUMP	LUMP			
0130	211550 DEMOLITION OF EXISTING BRIDGE	LUMP	LUMP			
0140	301001 GRADED AGGREGATE BASE COURSE, TYPE B	CY 2347.000				
0150	301002 GRADED AGGREGATE BASE COURSE, TYPE B, PATCHING	CY 147.000				
0160	302002 DELAWARE NO. 3 STONE	TON 82.000				
0170	401015 SUPERPAVE TYPE B, PG 70-22	TON 1580.000				
0180	401021 SUPERPAVE TYPE BCBC, PG 64-22	TON 3155.000				
0190	401029 SUPERPAVE TYPE C, PG 64-22, PATCHING	TON 130.000				

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			DOLLARS	CTS	DOLLARS	CTS
0200	401030 SUPERPAVE TYPE B, PG 64-22, PATCHING	114.000 TON				
0210	401031 SUPERPAVE TYPE BCBC, PG 64-22, PATCHING	227.000 TON				
0220	401045 SUPERPAVE TYPE C, PG 70-22 (NON-CARBONATE STONE)	1588.000 TON				
0230	601000 CLEANING DRAINAGE PIPE, 15"-24" DIAMETER	434.000 LF				
0240	601001 CLEANING DRAINAGE PIPE, GREATER THAN 24" DIAMETER	171.000 LF				
0250	601032 REINFORCED CONCRETE PIPE, 15", CLASS IV	45.000 LF				
0260	601033 REINFORCED CONCRETE PIPE, 18", CLASS IV	497.000 LF				
0270	601053 REINFORCED CONCRETE PIPE, 15", CLASS V	116.000 LF				
0280	601054 REINFORCED CONCRETE PIPE, 18", CLASS V	324.000 LF				
0290	601056 REINFORCED CONCRETE PIPE, 24", CLASS V	532.000 LF				

DELAWARE DEPARTMENT OF TRANSPORTATION
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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0300	601141 REINFORCED CONCRETE FLARED END SECTION, 15"	2.000 EACH				
0310	601142 REINFORCED CONCRETE FLARED END SECTION, 18"	9.000 EACH				
0320	601144 REINFORCED CONCRETE FLARED END SECTION, 24"	4.000 EACH				
0330	601170 REINFORCED CONCRETE FLARED END SECTION, 14" X 23"	1.000 EACH				
0340	601261 GALVANIZED CORRUGATED STEEL PIPE, 15", 16GAGE, 2-2/3" X 1/2" CORRUGATION	35.000 LF				
0350	602003 DRAINAGE INLET, 34" X 24"	8.000 EACH				
0360	602004 DRAINAGE INLET, 48" X 30"	10.000 EACH				
0370	602005 DRAINAGE INLET, 48" X 48"	2.000 EACH				
0380	602030 MANHOLE, 48" X 30"	1.000 EACH				
0390	602509 ELECTRIC DUCTBANK AND MANHOLE SYSTEM	LUMP		LUMP		

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			DOLLARS	CTS	DOLLARS	CTS
0400	604000 JACKING BRIDGE	LUMP	LUMP			
0410	604003 SHORING	LUMP	LUMP			
0420	604503 TEMPORARY PROTECTIVE SHIELD	LUMP	LUMP			
0430	605201 DYNAMIC PILE TESTING BY CONTRACTOR	EACH	8.000			
0440	605505 FURNISH STEEL PIPE PILES, 20"	LF	5280.000			
0450	605506 INSTALL STEEL PIPE PILES, 20"	LF	5280.000			
0460	605507 FURNISH STEEL PIPE INDICATOR OR TEST PILES, 20"	LF	800.000			
0470	605508 INSTALL STEEL PIPE INDICATOR OR TEST PILES, 20"	LF	800.000			
0480	606003 DRILLED SHAFT, 48"	LF	23.000			
0490	607001 MECHANICALLY STABILIZED EARTH WALLS	LUMP	LUMP			

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0500	610002 PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT ABOVE FOOTING, CLASS A	CY 180.000				
0510	610008 PORTLAND CEMENT CONCRETE MASONRY, PARAPET, CLASS A	CY 420.000				
0520	610017 PORTLAND CEMENT CONCRETE MASONRY, SUPERSTRUCTURE, CLASS D	CY 680.000				
0530	610018 PORTLAND CEMENT CONCRETE MASONRY, APPROACH SLAB, CLASS D	CY 550.000				
0540	611001 BAR REINFORCEMENT, EPOXY COATED	LB 402970.000				
0550	613001 SILICONE-BASED ACRYLIC CONCRETE SEALER	SF 10800.000				
0560	613003 HIGH MOLECULAR WEIGHT METHACRYLATE CONCRETE SEALER	SF 23860.000				
0570	615001 STEEL STRUCTURES	LUMP		LUMP		
0580	617000 STEEL SIGN STRUCTURE, TUBULAR ARCH, CANTILEVER	LUMP		LUMP		
0590	623000 ELASTOMERIC BEARINGS	EACH 28.000				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0600	624000 PREFABRICATED EXPANSION JOINT SYSTEM, 3"	330.000 LF				
0610	626011 ALUMINUM HAND RAILING, TYPE 1	1100.000 LF				
0620	701013 PORTLAND CEMENT CONCRETE CURB, TYPE 1-8	147.000 LF				
0630	701014 PORTLAND CEMENT CONCRETE CURB, TYPE 2	1405.000 LF				
0640	701018 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 1-8	1369.000 LF				
0650	701019 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 2	136.000 LF				
0660	705001 PORTLAND CEMENT CONCRETE SIDEWALK, 4"	10199.000 SF				
0670	705002 PORTLAND CEMENT CONCRETE SIDEWALK, 6"	400.000 SF				
0680	705007 SIDEWALK SURFACE DETECTABLE WARNING SYSTEM	50.000 SF				
0690	705008 PEDESTRIAN CONNECTION, TYPE 1	150.000 SF				
0700	707001 RIPRAP, R-4	215.000 SY				

DELAWARE DEPARTMENT OF TRANSPORTATION
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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0710	708003 GEOTEXTILES, RIPRAP	304.000 SY				
0720	720021 GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	2182.000 LF				
0730	720024 GUARDRAIL OVER CULVERTS, TYPE 1-31	2.000 EACH				
0740	721001 GUARDRAIL END TREATMENT, TYPE 1-31, TEST LEVEL 3	8.000 EACH				
0750	721006 END ANCHORAGE 31	5.000 EACH				
0760	721007 ENTRANCE SPECIAL END ANCHORAGE	1.000 EACH				
0770	721010 GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 1-31	6.000 EACH				
0780	727000 CHAIN LINK FENCE	1305.000 LF				
0790	727008 BRIDGE SAFETY FENCE, TYPE 2	900.000 LF				
0800	727557 CANTILEVER SLIDE GATE, 45'	1.000 EACH				

DELAWARE DEPARTMENT OF TRANSPORTATION
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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0810	760012 PAVEMENT MILLING, BITUMINOUS CONCRETE PAVEMENT, VARIABLE DEPTH	6523.000 SYIN				
0820	762000 SAW CUTTING, BITUMINOUS CONCRETE	3469.000 LF				
0830	762001 SAW CUTTING, CONCRETE, FULL DEPTH	18.000 LF				
0840	763000 INITIAL EXPENSE/DE-MOBILIZATION	LUMP	LUMP			
0850	763501 CONSTRUCTION ENGINEERING	LUMP	LUMP			
0860	763503 TRAINEE	1040.000 HOUR	0.80000		832.00	
0870	763508 PROJECT CONTROL SYSTEM DEVELOPMENT PLAN	LUMP	LUMP			
0880	763509 CPM SCHEDULE UPDATES AND/OR REVISED UPDATES	18.000 EAMO				
0890	763598 FIELD OFFICE, SPECIAL I	18.000 EAMO				
0900	801000 MAINTENANCE OF TRAFFIC	LUMP	LUMP			

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0910	802003 ARROW PANELS TYPE C	638.000 EADY				
0920	803001 FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	392.000 EADY				
0930	804001 FURNISH AND MAINTAIN PORTABLE LIGHT ASSEMBLY (FLOOD LIGHTS)	3210.000 EADY				
0940	805001 PLASTIC DRUMS	84947.000 EADY				
0950	806001 TRAFFIC OFFICERS	700.000 HOUR	75.00000		52500.00	
0960	807001 FURNISH AND INSTALL TEMPORARY PORTLAND CEMENT CONCRETE SAFETY BARRIER, UNPINNED	1487.000 LF				
0970	807002 FURNISH AND INSTALL TEMPORARY PORTLAND CEMENT CONCRETE SAFETY BARRIER, PINNED IN BITUMINOUS PAVEMENT	2293.000 LF				
0980	807005 RELOCATE TEMPORARY PORTLAND CEMENT CONCRETE SAFETY BARRIER, PINNED IN BITUMINOUS PAVEMENT	922.000 LF				

DELAWARE DEPARTMENT OF TRANSPORTATION
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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0990	808002 FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	1157.000 EADY				
1000	809001 INSTALL TEMPORARY IMPACT ATTENUATOR	8.000 EACH				
1010	809005 FURNISH TEMPORARY IMPACT ATTENUATOR - NON-GATING, REDIRECTIVE, TEST LEVEL 3	8.000 EACH				
1020	810001 TEMPORARY WARNING SIGNS AND PLAQUES	38203.000 EADY				
1030	811007 FLAGGER, NEW CASTLE COUNTY, FEDERAL	2112.000 HOUR				
1040	811016 FLAGGER, NEW CASTLE COUNTY, FEDERAL, OVERTIME	423.000 HOUR				
1050	813001 TEMPORARY BARRICADES, TYPE III	13528.000 LFDY				
1060	813500 PEDESTRIAN CHANNELIZING BARRICADE SYSTEM	83504.000 LFDY				
1070	813503 TEMPORARY PEDESTRIAN PATHWAY	88.000 SY				
1080	817002 PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, ALKYD-THERMOPLASTIC	1051.000 SF				

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1090	817003 TEMPORARY MARKINGS, PAINT, 4"	1781.000 LF				
1100	817004 TEMPORARY MARKINGS, PAINT, SYMBOL/LEGEND	77.000 SF				
1110	817013 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	29539.000 LF				
1120	817014 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 10"	630.000 LF				
1130	817015 PREFORMED RETROREFLECTIVE THERMOPLASTIC MARKINGS, BIKE SYMBOL	7.000 EACH				
1140	817018 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 3"	900.000 LF				
1150	817027 RAISED/RECESSED PAVEMENT MARKER	53.000 EACH				
1160	817031 REMOVAL OF PAVEMENT STRIPING	11380.000 SF				
1170	819016 INSTALLATION OF 4" DIAMETER HOLE, LESS THAN OR EQUAL TO 6" DEPTH	2.000 EACH				

DELAWARE DEPARTMENT OF TRANSPORTATION
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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1180	819018 INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON SINGLE SIGN POST	EACH 56.000				
1190	819019 INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON MULTIPLE SIGN POSTS	SF 18.000				
1200	830001 CONDUIT JUNCTION WELL, TYPE 1, 20" X 20" PRECAST CONCRETE	EACH 2.000				
1210	830002 CONDUIT JUNCTION WELL, TYPE 4, 20" X 42-1/2" PRECAST CONCRETE	EACH 5.000				
1220	830004 CONDUIT JUNCTION WELL, TYPE 7, 36" X 60" PRECAST POLYMER CONCRETE	EACH 2.000				
1230	831513 FURNISH AND INSTALL 2" SCHEDULE 80 PVC CONDUIT (TRENCH)	LF 205.000				
1240	831516 FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (TRENCH)	LF 825.000				
1250	831521 FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)	LF 615.000				
1260	831542 FURNISH AND INSTALL 2" HDPE SDR-13.5 CONDUIT (BORE)	LF 200.000				

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 14
DATE:

CONTRACT ID: T201507402.01 PROJECT(S): BHN-N347(03)

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1270	831545 FURNISH AND INSTALL 4" HDPE SDR-13.5 CONDUIT (BORE)	220.000 LF				
1280	832003 FURISH AND INSTALL 1-CONDUCTOR #2/0 AWG STRANDED COPPER, TYPE USE-2	840.000 LF				
1290	832006 FURNISH AND INSTALL 1-CONDUCTOR #2 AWG STRANDED COPPER, TYPE USE-2	420.000 LF				
1300	832029 FURNISH AND INSTALL #8/2 WIRE UF W/GROUND	205.000 LF				
1310	835003 CABINET BASE TYPE P	1.000 EACH				
1320	842501 FURNISH AND INSTALL ELECTRIC UTILITY SERVICE EQUIPMENT 120/240 (100 AMP)	2.000 EACH				
1330	905001 SILT FENCE	2870.000 LF				
1340	905004 INLET SEDIMENT CONTROL, DRAINAGE INLET	14.000 EACH				
1350	905005 INLET SEDIMENT CONTROL, CURB INLET	6.000 EACH				
1360	906002 DEWATERING BAG	10.000 EACH				

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 15
DATE:

CONTRACT ID: T201507402.01 PROJECT(S): BHN-N347(03)

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1370	907013 TEMPORARY SLOPE DRAIN, 18"	50.000 LF				
1380	907017 COMPOST FILTER LOGS	415.000 LF				
1390	908004 TOPSOIL, 6" DEPTH	18215.000 SY				
1400	908014 PERMANENT GRASS SEEDING, DRY GROUND	51450.000 SY				
1410	908015 PERMANENT GRASS SEEDING, STORMWATER	5780.000 SY				
1420	908017 TEMPORARY GRASS SEEDING	179260.000 SY				
1430	908020 EROSION CONTROL BLANKET MULCH	28620.000 SY				
1440	908021 TURF REINFORCEMENT MATTING, TYPE 1	60.000 SY				
1450	908023 STABILIZED CONSTRUCTION ENTRANCE	560.000 SY				
1460	910006 OUTLET STRUCTURE	2.000 EACH				

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 16
DATE:

CONTRACT ID: T201507402.01 PROJECT(S): BHN-N347(03)

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1470	910010 BIORETENTION AREA	155.000 CY				
	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: **T201507402.01** 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 -
Item 602509 – ELECTRIC DUCTBANK AND MANHOLE SYSTEM**

CONTRACT NO. T201507402

ITEM NO.	APPROX QTY	UOM	DESCRIPTION	UNIT PRICE	AMOUNT
1	1656	LF	PVC CONDUIT, 6"		
2	48	EA	FITTINGS 6" (BENDS, CAPS, ETC)		
3	1656	LF	PVC CONDUIT 4"		
4	48	EA	FITTINGS 4" (BENDS, CAPS, ETC)		
5	85	EA	SPACERS		
6	552	LF	MULE TAPE – 1800 LB		
7	60	CY	CLASS B CONCRETE		
8	78	TON	DEL. NO 57 STONE		
9	160	EA	¾" DIA. ASTM A325 Type 3 FASTENER SET		
10	20	EA	CONDUIT SUPPORT AASHTO M270, Grade 50W (ASTM A709, Grade 50W) MC10X33.6X 7'-9 3/8" LONG		
11	40	EA	CONDUIT SUPPORT AASHTO M270, Grade 50W (ASTM A709, Grade 50W) L6X4X1/2 X 0'-8" LONG		
12	1	LS	Pick up from DelMarva Power,(401 Eagle Run Road Newark, DE 19702, Contact Tom Smith for pick up) and install fiberglass duct system as per contract plans.		
13	1	LS	Pick up from DelMarva Power,(401 Eagle Run Road Newark, DE 19702, Contact Tom Smith for pick up) and install, including F&C, excavation and support of excavation, 2 way manhole with offset opening as per contract plans.		

TOTAL ITEM 602509 – ELECTRIC DUCTBANK AND MANHOLE SYSTEM \$ _____

(LUMP SUM BID PRICE FOR ITEM 602509 – Electric Ductbank and Manhole System)

"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.

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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. T201507402.01
Federal Aid Project No. BHN-N347(03)

The undersigned bidder, _____
whose address is _____
and telephone number is _____ hereby certifies the following:

I/We have carefully examined the location of the proposed work, the proposed plans and specifications, and will be bound, upon award of this contract by the Department of Transportation, to execute in accordance with such award, a contract with necessary surety bond, of which contract this proposal and said plans and specifications shall be a part, to provide all necessary machinery, tools, labor and other means of construction, and to do all the work and to furnish all the materials necessary to perform and complete the said contract within the time and as required in accordance with the requirements of the Department of Transportation, and at the unit prices for the various items as listed on the preceding pages.

Bidder's Certification Statement [US DOT Suspension and Debarment Regulation (49 CFR 29)]:

NOTICE: All contractors who hold prime contracts (Federal Aid) with DelDOT are advised that the prime contractor and subcontractors are required to submit to DelDOT a signed and notary attested copy of the Bidder Certification Statement for each and every subcontract that will be utilized by the prime contractor. This Certification **must** be filed with DelDOT prior to written approval being granted for each and every subcontractor. Copies of the Certification Form are available from the appropriate District Construction Office.

Under penalty of perjury under the laws of the United States, that I/We, or any person associated therewith in the capacity of (owner, partner, director, officer, principal, investigator, project director, manager, auditor, or any position involving the administration federal funds):

- a. am/are not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency;
- b. have not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past 3 years;
- c. do not have a proposed debarment pending; and,
- d. have not been indicted, convicted, or had a civil judgement rendered against (it) by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted, indicate below to whom it applies, initiating agency, and dates of action. Providing false information may result in criminal 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. T201507402.01, 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