STATE OF DELAWARE

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DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T201907402.01

FEDERAL AID PROJECT NO. NH-N059(44)

CFDA NO. 20.205

REHABILITATION OF I-95, 2ND STREET ON-RAMP IMPROVEMENTS

NEW CASTLE COUNTY

ADVERTISEMENT DATE: September 30, 2019

COMPLETION TIME: 397 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 29, 2019**

Contract No.T201907402.01
Federal Aid Project No. NH-N059(44)

REHABILITATION OF I-95, 2ND STREET ON-RAMP IMPROVEMENTS
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 removal of Bridges 1 -750 and 1 -758 and reconstruction of Bridge 1 -758 to accommodate a reconfigured on-ramp from 2nd Street to I-95 southbound. Other work includes adding left-turn lanes on Lancaster Avenue toward Adams Street and 2nd Street toward the on-ramp, 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 397 Calendar Days. The Contract Time includes an allowance for 71 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 November 5, 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 T201907402.01 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 DelDOT 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 **DelDOT** 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 DelDOT'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. 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.

12. NO FAULT INCENTIVE/LIQUIDATED DAMAGES are contained on the following pages.

Contract T201907402 Incentive/Disincentive

The contract drawings and notes provide a sequence of construction for this contract. Time is an essential element of this Contract. Several temporary traffic conditions shown on the Plans and listed below will result in significant congestion, delay, and/or operational constraints to the traveling public.

A. Liquidated Damages for I-95 Lane Closures

Interim Road User Cost (RUC) liquidated damages for delays in opening lanes along I-95 NB and SB will be enforced according to the below charts.

Table 1

	Northbound and Southbound I-95 (Monday through Friday)
	Contractor Damages for Failure to Reopen Lanes
Time All Lanes Reopened ("Verizon Time")	One Lane Closure
6:00 AM to 6:14 AM	$500
6:15 AM to 6:29 AM	$1,000
6:30 AM to 6:44 AM	$1,500
6:45 AM to 6:59 AM	$2,000
7:00 AM to 7:14 AM	$2,500
7:15 AM to 7:29 AM	$3,000
7:30 AM to 7:44 AM	$3,500
7:45 AM to 7:59 AM	$4,000
Not Open by 8:59 AM	$6,000

For every hour, or portion thereof, after 7:59 am, $2,000 (one lane closure) will be assessed up to a **day total of $30,000.00**.

Table 2

Number of Lanes closed	Contractor Damages for Failure to Reopen Lanes
One Lane Closure	+$500/15 Minutes

The Road User Cost (RUC) liquidated damages for the I-95 portion of this contract will be up to $30,000 per Calendar Day. Assessment of Road User Costs and Liquidated Damages will be made by change order. There is no limit on the number of days that RUC's can be assessed. The Engineer will be the sole approving authority as to when lane closures, lane width restrictions and shoulder width restrictions are complete after traffic is returned to the ultimate alignment. The Contractor will be assessed the Road User Costs for failure to open the roadway on time per the Contract.

<u>Calculation Examples for Assessment of RUC liquidated damages for I-95 Lane Closures</u>

- One lane closure of the southbound I-95 until 7:20 AM on a Tuesday:

  Per Table 1, a RUC liquidated damage of **$3,000** will be assessed.

  Full Closure RUC from 6:00 am to 7:20 am I-95 SB

6:00 AM to 6:14 AM	$5,00
6:15 AM to 6:29 AM	$1,000
6:30 AM to 6:44 AM	$1,500
6:45 AM to 6:59 AM	$2,000
7:00 AM to 7:14 AM	$2,500
7:15 AM to 7:20 AM	**$3,000**

B. The following is the lane closure hours for I-95 southbound scupper work:

The I-95 SB Left lane closure on Phase 1 - Detail 1 (CS-104 through CS-108) to perform the bridge scupper work is permitted between the hours of Friday at 10 PM through the immediately following Monday at 5 AM (i.e., weekend closure period). The weekend closure period is permitted for one weekend only. If the lane is not reopened by 5 AM on Monday morning, RUC liquidated damages will be assessed in accordance with Part A of these notices.

C. No Excuse Incentive/Liquidated Damages for Ramp Closures

Incentive or disincentive payments will be awarded or assessed based solely on whether or not the Contractor completes the work described below for the Ramp B Closure work within 255 Calendar Days.

The Contractor shall anticipate that impacts and delays may be caused by or arise from any number of events during the course of the Contract, including, but not limited to, work performed, work deleted, quantity overruns, change orders, supplemental agreements, Extra Work, delays, disruptions, differing site conditions, alterations of plans for character of work, utility conflicts, design changes, design defects or omissions, time extensions, right of way issues, permitting issues, actions of suppliers, actions of subcontractors or other contractors, actions of third parties, strikes, shop or working drawing approval, approval process delays, maintenance of traffic changes, expansion of physical limits of the project to make it functional, weather, weekends, holidays, suspension of the Contractor's operations, or other such events, forces or factors experienced in bridge and highway construction work. Such delays and events and their potential impact on performance by the Contractor are to be specifically contemplated and acknowledged by the parties entering into this Contract, and shall not be considered as a reason to extend the 255 Calendar-Day time period in which the Ramp B Closure work must be completed by the Contractor. Provided, however, that if a Catastrophic Event occurs, the schedule may be extended as set forth herein.

Regardless of whether or not the Contractor earns the No Excuse Incentive payment or is required to pay the No Excuse Liquidated Damages amount, any and all impacts and delays, including but not limited to, those identified above, shall be the sole responsibility of the Contractor, and the Contractor shall not be permitted to file a claim against the Department for any costs related to any impacts and delays, including, but not limited to, those identified above. Regardless of the amount earned by the Contractor in the calculation of the No Excuse Incentive Payment (including, but not limited to an amount of $0.00), or if the Contractor is charged the No Excuse Liquidated Damages Amount, all costs whatsoever incurred by the Contractor to accelerate its work to overcome or absorb such impacts and delays in an effort to complete the Ramp B Closure work prior to the expiration of the 255-Calendar-Day time period, regardless of whether the Contractor successfully does so or not, are the sole responsibility of the Contractor in every instance.

*Ramp B Closure Work***.** Beginning on the Calendar Day that the Contractor closes Ramp B, the Contractor must complete the Ramp B Closure work as defined below within 255 Calendar Days. The "Ramp B Closure" work consists of all the following work items:

1. Demolishing Ramp B.
2. Completion of all work on the plans indicated to be completed during Phase 2 associated with Ramp D including the associated widening of Bridge No 1-748S. This work also includes installation of all bridge expansion joint strip seals and bridge drainage system including scuppers and downspout piping.
3. Performance of all profiling, necessary corrective work, grooving, texturing, and application of sealants on all concrete bridge decks and concrete pavement sections.
4. Completion of all work on the plans indicated to be completed during Phases 1 and 2 associated with Lancaster Avenue, Martin Luther King Jr. Blvd, Adams Street, 2nd Street, and Jackson Street (the "City" streets).
5. Installed and fully operational permanent traffic signal equipment as shown on the Plans on the City street intersections.
6. Installation of permanent pavement markings as shown on the Plans on the ramp, approach roadways, and mainline.
7. Installation of permanent signs and sign structures as shown on the Plans on the ramp, approach roadways, and mainline.
8. Installed and fully operational roadway lighting as shown on the Plans on the ramp, approach roadways, and mainline.
9. Removal of all temporary traffic control devices.
10. Ramp D is fully open to traffic and operating in the proposed final condition. Temporary lane closures may be considered after Ramp D is fully reopened only for punch list items. Such lane closures shall only be implemented within the timeframes allowed by the Contract documents or by DelDOT's Traffic Section.

The Ramp B Closure work will not be considered complete until the permanent parapets on the bridges, permanent retaining walls, and permanent traffic barriers are in place, properly cured, and functioning. The use of temporary bolted down barrier or other temporary traffic barrier in lieu of permanent parapets on the bridges, retaining walls and permanent traffic barriers is not permitted.

Definitions for Part C:

No Excuse Incentive. For every Calendar Day, up to thirty (30) Calendar Days, that the Ramp B Closure work described above is complete before the 255th Calendar Day, the Contractor will receive an incentive payment of Ten Thousand Dollars ($10,000.00) per Calendar Day. The maximum incentive payment will not exceed Three Hundred Thousand Dollars ($300,000.00).

No Excuse Liquidated Damages. If the Ramp B Closure work is not completed at the end of the 255th Calendar Day, the Contractor will be required to make a disincentive payment to the Department in the amount of Ten Thousand Dollars ($10,000.00) per Calendar Day that the Ramp B Closure work is not complete and continuing for each Calendar Day that the Ramp B Closure work remains not complete with no maximum on the total amount of disincentive payments that the Contractor shall be required to remit. The amount of the disincentive payment shall be deducted from any monies due 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 due to the Contractor's failure to complete the Ramp B Closure work in 255 Calendar Days. Any disincentive amount in excess of any monies due or retained percentage shall be paid to the Department by the Contractor. The disincentive payment described above may be assessed in addition to any other liquidated damages assessed as part of this contract.

Catastrophic Event. In the event that a catastrophic event results in a declared state of emergency by the state of Delaware, that directly and substantially affects the Contractor's operations on this Contract, the Contractor and the Department shall agree on the number of Calendar Days to extend the 255-Calendar-Day time period. In the event that the Contractor and Department cannot agree on the number of Calendar Days to extend the 255-Calendar-Day time period, the Department shall unilaterally determine the number of Calendar Days to extend the 255-Calendar-Day time period due solely to the impact of the catastrophic event. The Contractor shall have no right whatsoever to contest such determination, save and except the Contractor establishes that the number of Calendar Days determined by the Department were arbitrary or without any reasonable basis. Any and all disputes as to the number of Calendar days added in the event of a Catastrophic Event shall be decided by the Secretary of Transportation, or his or her designee, and such determination shall be final with no right of appeal.

D. Additional Notes

Liquidated damages from these notices shall be combined when multiple requirements are not met. For example, if Ramp D is closed beyond 255 calendar days and a lane closure on I-95 extends beyond the allowable closure time, liquidated damages from Part A and Part C will be added together and deducted from any monies due the Contractor as a cumulative liquidated damage.

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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 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. ***NEW***

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

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

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

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

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

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

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

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

Significant changes in the character of work: The engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project. Such changes in quantities and alterations shall not invalidate the contract nor release the surety, and the contractor agrees to perform the work as altered.

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

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

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

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

CONFLICT WITH FEDERAL STATUTES OR REGULATIONS:

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

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

FEDERAL LABOR AND EMPLOYMENT REQUIREMENTS

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

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

CONVICT PRODUCED MATERIALS:

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

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

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

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

TO REPORT BID RIGGING ACTIVITIES:

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

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

TO REPORT BID RIGGING ACTIVITIES
CALL 1-800-424-9071

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

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

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

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

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

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

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

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

REV. 11-3-80

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

1. As used in these specifications:

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

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

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

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

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

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

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

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

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

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

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

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

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

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

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

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

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

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

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

14. The Contractor shall designate a responsible official to monitor all employment-related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate

of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

* * * * *

TRAINING SPECIAL PROVISIONS

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

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

The number of trainees to be trained under the special provision will be **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, Kirbati, Juvalu, Nauru, Federated States of Micronesia, or Hong Kong;
(v) Subcontinent Asian Americans which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;
(vi) Women;
(vii) Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

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

Disadvantaged Business Enterprise 11 % 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 DelDOT. This clause covers both DBE and non-DBE subcontractors. As guidance, once a subcontractor has satisfactorily completed the physical work, and has given to the prime contractor a certified statement that all laborers, lower tier contractors, and materialmen who have furnished labor and materials to the subcontractor have been paid all monies due them, the prime contractor shall return retainage to the subcontractor within 15 calendar days.

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

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

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

8. In accordance with 49 CFR 26.53(f)(1), DelDOT requires that a prime contractor not terminate a DBE subcontractor without prior written consent from the DelDOT 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 DelDOT are not met, the contractor shall demonstrate good faith efforts to meet the DBE contract goals. The contractor shall demonstrate that the efforts made were those that a contractor actively and aggressively seeking to meet the goals established by DelDOT would make, given all relevant circumstances. Evidence of this good faith effort will be submitted with the bid at the time of the bid opening.

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

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

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

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

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

5. Reasons why certified DBEs are not available or not interested.
6. Efforts to effectively use the services of available disadvantaged community organizations; disadvantaged contractor's groups; local, state and federal DBE assistance offices; and other organizations that provide assistance in recruitment and placement of DBEs.

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

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

Administrative reconsideration:

Within five (5) days of being informed by DelDOT that it is not responsive because it has not documented sufficient good faith efforts, a bidder may request administrative reconsideration. Bidder should make this request in writing to the following reconsideration official: Director of 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
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X. Compliance with Governmentwide Suspension and Debarment Requirements
XI. Certification Regarding Use of Contract Funds for Lobbying

I. GENERAL

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

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

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

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

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

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

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

II. NONDISCRIMINATION

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

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as

amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

6. Training and Promotion:

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

   b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the

special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

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

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

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

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

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

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

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

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

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

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

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

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

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

    b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the

contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

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

    a. The records kept by the contractor shall document the following:

        (1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

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

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

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

III. NONSEGREGATED FACILITIES

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

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

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

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

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

1. Minimum wages

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

regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

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

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

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

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

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

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

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

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

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

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has

found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

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

3. Payrolls and basic records

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

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

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

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

maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

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

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

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

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

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

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

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

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

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

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

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

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

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

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

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

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

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

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

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

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

10. Certification of eligibility.

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

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

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

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

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

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

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

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

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

VI. SUBLETTING OR ASSIGNING THE CONTRACT

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

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price,

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

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

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

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

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

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

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

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

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

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

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

VII. SAFETY: ACCIDENT PREVENTION

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

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

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

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

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

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

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

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

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

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

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

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

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

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

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

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

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

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

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

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

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

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

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

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

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

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

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

   i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and

information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

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

* * * * *

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

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

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

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

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

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

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

2. Instructions for Certification - Lower Tier Participants:

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

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

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

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

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor).

"Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

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

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

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

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

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

* * * * *

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

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

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

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

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

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

   a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

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

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

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

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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 ithas 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 Part27;

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 l964,The AgeDiscrimination Act of 1975and Section 504 of the Rehabilitation Act of l973,by expanding the defrnition 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 DelDOT's understanding that the Davis-Bacon Act is not a preemptive statute in the broad sense, and does not preempt or displace State of Delaware prevailing wage requirements.

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

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: (302) 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: 09/11/2019 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: T201907402.01 Rehabilitation of I95 2nd street on Ramp Improvements , New Castle County

GENERAL DECISION: DE190005 01/04/2019 DE5

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 soliticitation 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

202518 - SETTLEMENT MONUMENT

Description:

Furnish, install, protect, and maintain settlement monuments conforming to the design and at the locations shown on the Plans or as directed by the Engineer.

Materials:

A. Settlement Monuments. Settlement monuments shall be three-dimensional fixable survey prisms capable of capturing settlement movement to an accuracy of 1/8".

Construction Methods:

A. Submittals.

1. Settlement Monitoring Plan. Submit for review prior to construction. The plan shall identify the planned location of settlement monuments, monument type, reference benchmarks, survey schedules and procedures, and reporting formats.
2. Monument Survey Report. Submit reports starting 1 week after the installation of the first settlement monument and submit with updated readings every week. The report shall include a plan with settlement monument locations and names that is updated with locations of new monument installations. Survey data included in each report shall be tabulated by monument name and shall include date surveyed, x, y, and z monument coordinates, cumulative settlement, current MSE wall height at monument location, and a brief description of ongoing work.

B. Schedule for Settlement Monument Installations and Readings.

1. The Contractor shall provide settlement monuments as directed on the Plans to monitor settlement of new mechanically stabilized earth (MSE) walls and/or existing structures. The Contractor shall make survey readings as directed on the Plans.

2. Settlement monuments shall be mounted on the exterior of the first MSE wall panel installed above the planned ground surface at the base of the MSE wall at wall stations described on the project drawings. At the time of installation, settlement monuments shall be oriented in the desired direction for survey readings throughout the duration of settlement monitoring. Settlement monuments shall be installed within 3 days of placing the MSE wall panel to which the monument will be anchored. Initial survey readings of monuments shall be performed within one day of installation.

3. Settlement monuments shall be installed at the locations described on the Plans and herein. Other locations may need to be added as directed by the Engineer. Settlement monuments 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.

C. Readings of settlement monuments shall be performed by the Contractor. The Contractor is fully responsible for establishing benchmarks, submittals, and furnishing, installing and maintaining the settlement monuments.

D. Settlement monuments shall be marked by flags or other approved method to clearly show location and to warn equipment operators and others of its location. The Contractor shall maintain the flags during the entire duration of the Contract and replace flags that are missing.

E. The use of the settlement monuments for collecting data related to embankment foundation response will extend beyond the time of completion of the Contractor's MSE wall construction operations. The Contractor is responsible for maintaining the settlement monuments in working order throughout the duration of the Contract. Settlement monuments shall be removed at the end of construction unless specified to remain by the Department.

F. If a settlement monument is damaged, moved, or disturbed the Contractor shall repair, reset, or replace the damaged monument 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 monument until the damage has been corrected to the satisfaction of the Engineer. The Engineer may impose a work stoppage near 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.

G. Data shall be recorded in U.S. survey feet or inches.

H. Survey methods shall be capable of capturing settlement movement to an accuracy of 1/8".

Method of Measurement:

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 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 data collection and reporting during construction, all labor tools, equipment, and necessary incidentals to complete the work.

05/06/2019

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 sublot basis. The size for each sublot shall be 100 to 500 tons and testing for the sub lots will be completed on a daily basis. For each sublot, the Engineer will evaluate one sample.

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

production. If the actual production is going to be 50 tons or greater over the anticipated sub lot production, a new sample location will be determined on a statistically random, unbiased basis based upon the new actual production. The Engineer will combine the evaluation and test results for all of the applicable sublots in order to evaluate each individual lot.

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

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

- AASHTO T312 - Preparing 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 target) + (single test tolerance) - (mean value)) / (standard deviation).
3. For each parameter, calculate the Lower Quality Index (QL):
   QL = ((mean value) - (JMF target) + (single test tolerance)) / (standard deviation).
4. For each parameter, locate the values for the Upper Payment Limit (PU) and the Lower Payment Limit (PL) from Table 3 - Quality Level Analysis by the Standard Deviation Method. (Use the column for "n" representing the number of sublots in the lot. Use the closest value on the table when the exact value is not listed).
5. Calculate the PWL for each parameter from the values located in the previous step:
   PWL = PU + PL - 100.
6. Calculate each parameter's contribution to the payment adjustment by multiplying its PWL by the weight factor shown in Table 2 for that parameter.
7. Add the calculated adjustments of all the parameters together to determine the Composite PWL for the lot.
8. From Table 4, locate the value of the Pay Adjustment Factor corresponding to the calculated PWL. When all properties of a single test are within the single test tolerance of Table 2, Pay Adjustment factors shall be determined by Column B. When any property of a single test is outside of the Single Test Tolerance parameters defined in Table 2, the Material Pay Adjustment factor shall be determined by Column C

9. For each lot, determine the final material price adjustment:

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

In lieu of being assessed a pay adjustment penalty, the Contractor may choose to remove and replace the material at no additional cost to the Department. When the PWL of any material parameter in Table 2 is below 60, the Engineer may require the removal and replacement of the material at no additional cost to the Department. Test results on removed material shall not be used in calculation of future PWL calculations for Mixture ID.

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

When a sample is outside of the allowable single test tolerance for any Materials criteria in Table 2, that sample will be isolated. For payment purposes, the test result of the out of acceptable tolerance sample will be combined with the two previous acceptable samples of the same JMF and analyzed per this specification. The material that is considered out of the acceptable tolerance will only include the material within the represented sub-lot (i.e., a maximum of 500 tons). If the previous acceptable test result is from the previous production day, only the material produced on the second production day will be considered out of tolerance. All future sub lots will not include the isolated test. The pay factors for the out of tolerance sample lot will be calculated using column C of table 4.

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

Table 3 – Quality Level Analysis by the Standard Deviation Method

PU or PL	QU and QL for "n" Samples						
	n = 3	n = 4	n = 5	n = 6	n = 7	n = 8	n = 9
100	1.16	1.50	1.79	2.03	2.23	2.39	2.53
99	-	1.47	1.67	1.80	1.89	1.95	2.00
98	1.15	1.44	1.60	1.70	1.76	1.81	1.84
97	-	1.41	1.54	1.62	1.67	1.70	1.72
96	1.14	1.38	1.49	1.55	1.59	1.61	1.63
95	-	1.35	1.44	1.49	1.52	1.54	1.55
94	1.13	1.32	1.39	1.43	1.46	1.47	1.48
93	-	1.29	1.35	1.38	1.40	1.41	1.42
92	1.12	1.26	1.31	1.33	1.35	1.36	1.36
91	1.11	1.23	1.27	1.29	1.30	1.30	1.31
90	1.10	1.20	1.23	1.24	1.25	1.25	1.26
89	1.09	1.17	1.19	1.20	1.20	1.21	1.21
88	1.07	1.14	1.15	1.16	1.16	1.16	1.17
87	1.06	1.11	1.12	1.12	1.12	1.12	1.12

86	1.04	1.08	1.08	1.08	1.08	1.08	1.08
85	1.03	1.05	1.05	1.04	1.04	1.04	1.04
84	1.01	1.02	1.01	1.01	1.00	1.00	1.00
83	1.00	0.99	0.98	0.97	0.97	0.96	0.96
82	0.97	0.96	0.95	0.94	0.93	0.93	0.93
81	0.96	0.93	0.91	0.90	0.90	0.89	0.89
80	0.93	0.90	0.88	0.87	0.86	0.86	0.86
79	0.91	0.87	0.85	0.84	0.83	0.82	0.82
78	0.89	0.84	0.82	0.80	0.80	0.79	0.79
77	0.87	0.81	0.78	0.77	0.76	0.76	0.76
76	0.84	0.78	0.75	0.74	0.73	0.73	0.72
75	0.82	0.75	0.72	0.71	0.70	0.70	0.69
74	0.79	0.72	0.69	0.68	0.67	0.66	0.66
73	0.75	0.69	0.66	0.65	0.64	0.63	0.63
72	0.74	0.66	0.63	0.62	0.61	0.60	0.60
71	0.71	0.63	0.60	0.59	0.58	0.57	0.57
70	0.68	0.60	0.57	0.56	0.55	0.55	0.54
69	0.65	0.57	0.54	0.53	0.52	0.52	0.51
68	0.62	0.54	0.51	0.50	0.49	0.49	0.48
67	0.59	0.51	0.47	0.47	0.46	0.46	0.46
66	0.56	0.48	0.45	0.44	0.44	0.43	0.43
65	0.52	0.45	0.43	0.41	0.41	0.40	0.40
64	0.49	0.42	0.40	0.39	0.38	0.38	0.37
63	0.46	0.39	0.37	0.36	0.35	0.35	0.35
62	0.43	0.36	0.34	0.33	0.32	0.32	0.32

Table 3 – Quality Level Analysis by the Standard Deviation Method

PU or PL	QU and QL for "n" Samples						
	n = 3	n = 4	n = 5	n = 6	n = 7	n = 8	n = 9
61	0.39	0.33	0.31	0.30	0.30	0.29	0.29
60	0.36	0.30	0.28	0.27	0.27	0.27	0.26
59	0.32	0.27	0.25	0.25	0.24	0.24	0.24

Table 4 - PWL Pay Adjustment Factors

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

94	-1	-6
93	-2	-7
92	-3	-8
91	-4	-9
PWL<91	PWL - 100	PWL - 100

(b) Pavement Construction - Pay Adjustments.

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

- Degree of compaction of the in-place material

Using the test values for the cores, the Engineer will use the following steps to determine the pavement construction pay adjustment for each lot of work. .

1. Calculate the core bulk specific gravity values from the sublot tests values, to the nearest 0.001 unit. Obtain the Theoretical maximum Specific Gravity values from the corresponding laboratory sublot 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 Other[1] Locations		
Degree of Compaction	Range	Pay Adjustment Factor (%)
>= 97.0	>= 96.75	-100*
96.5	96.26 – 96.74	-5
96.0	95.75 – 96.25	-3
95.5	95.26 – 95.74	-2
95.0	94.75 – 95.25	0
94.5	94.26 – 94.74	0
94.0	93.75 – 94.25	0
93.5	93.26 – 93.74	1
93.0	92.75 – 93.25	3
92.5	92.26 – 92.74	1
92.0	91.75 – 92.25	0
91.5	91.26 – 91.74	0
91.0	90.75 – 91.25	0
90.5	90.26 – 90.74	0
90.0	89.75 – 90.25	0
89.5	89.26 – 89.74	0
89.0	88.75 – 89.25	-1
88.5	88.26 – 88.74	-3
88.0	87.75 – 88.25	-5
87.5	87.26 – 87.74	-10

87.0	86.75 – 87.25	-15
86.5	86.26 – 86.74	-20
86.0	85.75 – 86.25	-25
85.5	85.26 – 85.74	-30
85.0	84.75 – 85.25	-40
84.5	84.26 – 84.74	-50
=< 84.0	=<84.25	-100*

* or remove and replace at Engineer's discretion

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

.04 Dispute Resolution.

Disputes or questions about any test result shall be brought to the attention of the Contractor and the Engineer within two operational days of reported test results. The following dispute resolution procedures will be used.

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

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

When disputes over production testing occur, the samples used for Dispute Resolution testing will be those samples the properly captured, labeled, and stored, as described in the second paragraph of the section of these specifications titled **.02 Acceptance Plan, (a) Material Production - Tests and Evaluations**. If no samples are available, the original testing results will be used for payment calculations.

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

If there is a discrepancy between the Engineer's acceptance test result and the Contractor's test result, the Contractor may ask for the Dispute Resolution sample to be tested. The Contractor may request up to two dispute resolution samples be tested per calendar year without charge. Any additional Dispute Resolution samples run at the Contractors request where the results substantiate the acceptance test result will be assessed a fee of $125. Any additional Dispute Resolution samples that substantiate the Contractors test result will not be assessed the fee.

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

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

Appendix A - Repairing Core Holes in Bituminous Asphalt Pavement

Description.

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

Materials and Equipment.

The following material shall be available to complete this work:

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

The following equipment shall be available to complete this work:

- Sponge or other absorbent material - Used to extract water from the hole.
- Compaction Hammer - mechanical (electrical, pneumatic, or gasoline driven) tamping device with a flat, circular tamping face smaller than 6 inches in diameter. .

Construction Method.

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

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

Performance Requirements.

The Engineer will judge the patch on the following basis:

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

Basis of Payment.

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

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

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

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

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

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

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

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

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

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

Structural Number Calculations

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

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

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

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

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

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

Example:

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

Calculation:

For the Type B lift the calculation would be:

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

For the Type C lift the calculation would be:

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

11/3/14

601503 - CLEANING BRIDGE SCUPPERS

Description:

This work consists of furnishing proper equipment and cleaning the existing bridge scuppers and downspouts in accordance with the notes and locations on the Plans as directed by the Engineer.

Construction Methods:

The Contractor shall remove sediment, debris, etc., from the box of the scupper and pipe outfalls. Once this blockage has been removed, the Contractor shall rout, if required, and flush downspouts with water under pressure to remove any obstructions and cleanse the system. Routing and flushing equipment shall be industry accepted equipment for this type of cleaning and flushing operation.

Method of Measurement:

The quantity scuppers cleaned will be measured as the actual number of each scupper cleaned and accepted.

Basis of Payment:

The quantity of scuppers cleaned will be paid for at the Contract unit price per each. Price and payment shall constitute full compensation for cleaning, routing and flushing in pipe from scupper to pipe discharge, disposal of removed materials, for all labor, tools, equipment and necessary incidentals to complete the work.

8/15/17

604502 - PROTECTION OF EXISTING STRUCTURES

Description:

This work shall consist of the monitoring and protection of existing structures and utilities due to the Contractor's construction activities that include, but are not limited to, excavation, embankment construction, pile driving, installation of utilities using tunneling methods, installing augered cast-in-place piles (including micropiles), temporary shoring systems (e.g., trench box, isolation trench, steel sheet piling, etc.), removal of existing structures, and the operation of other types of heavy equipment. This work shall also include monitoring and protecting existing structures and utilities at the locations shown on the Plans and as may be directed by the Engineer. Inclinometers to monitor ground movements between new and existing structures are described in this provision.

Existing structures include all buildings and structures located at least within a 50-foot radius measured from the nearest construction activity or as determined by the vibration control consultant with concurrence by the Engineer.

Existing utilities include utilities shown on the Plans located at least within a 50-foot radius measured from the nearest construction work activity as determined by the vibration control consultant with concurrence by the Engineer. The Contractor shall verify the locations of all existing utilities prior to beginning any work.

Materials:

None

Construction:

The Contractor shall take precautions to prevent damage to existing structures and utilities. The Contractor shall consider the location of and type of planned construction operations to limit vibrations from damaging existing structures and utilities adjacent to the work area. The Contractor will be held responsible for vibration damages to all adjacent structures and utilities.

A. Submittals

The Contractor shall provide the following items described herein to the Engineer for review and approval within the timeframe listed:

1. Monitoring Consultant Qualifications: submit a minimum of 2 weeks before starting preconstruction survey and/or vibration monitoring activities and/or inclinometer installation and monitoring.
2. Pre-Construction Survey – Structures: submit within 2 weeks after completing survey.
3. Pre-Construction Survey – Utilities: submit within 2 weeks after completing survey.
4. Vibration Monitoring Plan: submit a minimum of 2 weeks before starting construction activities requiring vibration monitoring.
5. Inclinometer Installation and Monitoring Plan: submit a minimum of 2 weeks before starting MSE wall construction activities.
6. Inclinometer Installation Records: submit before starting MSE wall construction activities.
7. Inclinometer Profiles – Submit updated inclinometer profiles weekly during MSE wall construction and the settlement quarantine period and monthly during the remaining duration of bridge construction.
8. Postconstruction Survey – Structures: submit within 2 weeks after completing construction in the prescribed influence zone.
9. Postconstruction Survey – Utilities: submit within 2 weeks after completing construction in the prescribed influence zone.

B. Monitoring Consultants

The Contractor shall provide a vibration control consultant and inclinometer monitoring consultant.
The Contractor shall provide a qualified vibration control consultant who shall assist the Contractor in determining the structures and utilities within the influence zone of the planned construction operations for which vibration monitoring should be performed. The vibration control consultant shall also be responsible for performing the vibration monitoring during the construction operations. The Contractor shall submit the

qualifications of the vibration control consultant to the Engineer for review and approval. The vibration control consultant shall provide documentation of at least 5 years of experience including evidence of the satisfactory completion of at least 5 vibration monitoring programs comparable in scope to this work and 3 examples of pre- and post- construction survey reports.

The Contractor shall provide a qualified inclinometer monitoring consultant who shall prepare the installation monitoring plan, install inclinometers, prepare inclinometer installation records, perform regular inclinometer readings and prepare and update inclinometer profiles. The Contractor shall submit the qualifications of the inclinometer monitoring consultant to the Engineer for review and approval. The inclinometer monitoring consultant shall provide documentation of at least 5 years of experience including evidence of the satisfactory completion of at least 5 projects using inclinometers to monitor lateral ground movement.

C. Pre-Construction Survey – Structures

The Contractor shall perform a preconstruction survey for all structures that may be vulnerable to damage from construction activities located within a 50-foot radius to the nearest construction activity or as identified by the vibration control consultant. The Contractor shall also retain a professional engineer registered in the State of Delaware who is experienced in the field of building inspection surveys. This professional engineer will be referred to hereinafter as "building inspector". The building inspector shall be approved by the Engineer.

Prior to beginning any work in the area and with approval of the Engineer, the Contractor shall notify owners of structures identified for surveying and request permission to enter the property to perform a preconstruction survey for the protection of the Department. If access to determine the condition of the buildings and structures is refused by any owner, the Contractor shall notify the Engineer immediately in writing. The Engineer will review the situation presented and may

thereupon relieve the Contractor of responsibility for making the survey with respect to the property to which access is denied. The relief from preconstruction survey of any existing structure does not relieve the Contractor of vibration monitoring requirements or responsibility for damage to those structures.
The Contractor, Contractor's insurer, building inspector, vibration control consultant, and the Engineer shall make a detailed inspection of each structure to record the condition of walls and other structural elements, as well as its contents and equipment that may be in place, and pavements and sidewalks that may become subject to possible damage.

The preconstruction survey of structures shall be performed in the presence of the respective owner of each structure or duly authorized representative and shall consist of the following:

1. A written report including measurements, sketches, and photographs as required to fully delineate the extent of or lack of deficiencies. Photographs shall be 8 x 10 inch color photographs and shall include views inside and outside of the existing structures as well as any pre-existing deficiencies that may be adversely affected by the planned construction. The Contractor may submit video as part of the inspection report.

2. A notarized statement certifying the dates this preconstruction survey was performed shall be provided by the Contractor, the building inspector and the vibration control consultant. This certification shall include a statement that the preconstruction survey was made in the presence of and to the satisfaction of the respective owners. Where possible, the Contractor shall secure the signature of the owner/representative on the completed statement and submit a copy of the statement to the owner/representative.

3. The written report shall state acceptable levels of vibrations at the various existing structures including the Contractor's proposed construction procedures to limit vibrations within acceptable levels as stated in the report. Acceptable vibration levels shall be as recommended by the Contractor's vibration control consultant and as approved by the Engineer.

A copy of all data relative to existing conditions of each respective property as found by the preconstruction survey shall be kept on file with the Engineer. The Contractor shall not forward information directly to any property owner. The Contractor shall direct any property owners who approach the Contractor to the Engineer for any inquiries about the data relative to their property.

D. Pre-Construction Survey – Utilities

This vibration monitoring program shall include a preconstruction survey of all existing utilities adjacent to the proposed work. The existing utilities shown on the Plans are for the Contractor's information only; the Contractor shall verify the existence and exact location of all utilities within a radius of 50 feet of any work area.

The preconstruction survey shall consist of the following and shall be performed in the presence of the respective owner of each utility or duly authorized representative:

1. The Contractor shall prepare a stenographic and photographic record of the conditions of existing utilities as directed by the vibration control consultant (after consultation with the respective utility owners). This record shall consist of a written report including measurements, sketches, and photographs. Photographs shall be 8 x 10-inch size and shall be in color. The Contractor may submit video as part of the record.

2. A notarized statement certifying the dates the preconstruction survey was made shall be furnished by the Contractor and the vibration control consultant to the Engineer. This certification shall include a statement that the preconstruction survey was made in the presence of and to the satisfaction of each respective utility owner. Where possible, the Contractor shall secure the signature of the utility owner/representative on the completed statement and submit a copy of the statement to the owner/representative.

E. Vibration Surveillance

Seismic monitoring with multiple geophones is required for this project.

The Contractor's proposed plan for the vibration monitoring of structures and utilities shall be submitted to the Engineer for approval. The plan shall include the type and layout of sensing devices, construction activities that require vibration monitoring, threshold vibration values, background vibration readings if performed and procedures if/when vibration thresholds are exceeded during construction. The proposed methods and plans shall be approved prior to any construction activity. Approval by the Engineer of the proposed vibration monitoring and preconstruction survey does not relieve the Contractor of any responsibility for damage to structures or utilities that were included or omitted from the Contractor's vibration monitoring program.

The vibration control consultant shall record vibrations during all construction operations, or any other activity that may cause excessive vibrations near any adjacent structure or utility. The Contractor shall not exceed the acceptable vibration levels described in the preconstruction survey reports for the existing structures and utilities or values described herein. The vibration control consultant shall record the vibrations and direct the construction activities operations to eliminate the occurrence of damage due to the construction activities. Vibrations shall be monitored at all structures and utilities located at least within a radius of 50 feet of any proposed work activity. When the Contractor's construction procedures produce acceptable vibration levels at a utility location closest to the area of actual work, vibration measurements need not be taken at locations along the same utility located farther away. Acceptable vibration levels shall be as recommended by the Contractor's vibration control consultant and as approved by the Engineer and the respective owner of each utility.

When the vibration control consultant or the Engineer determines that any construction activity has an adverse effect on adjacent structures or utilities, the construction activity operations may be suspended while corrective action is being taken. No time extension will be granted for the suspension of construction activities and implementation of corrective actions. Vibration monitoring shall continue for as long as required by the Engineer.

F. Vibration Levels and Peak Particle Velocities

The Contractor's work activities shall not produce vibration levels exceeding of 100 decibels (VdB) or Peak Particle Velocities (PPV) exceeding of 0.5 inch per second at any time. Upon detecting vibration levels exceeding the target value specified and/or noticing settlement or heave of 1/8 inches (in the form of cracks on the ground surface), the Contractor shall immediately stop the source of vibrations and notify the Engineer and the vibration control consultant for further instructions.

G. Inclinometer Monitoring

Construction monitoring inclinometers shall be installed to monitor lateral ground movements as directed on the Plans and by the Engineer.

The inclinometer monitoring consultant shall prepare an inclinometer monitoring plan to be reviewed by the Engineer. The inclinometer monitoring plan shall include the following:

1. Plan locations of inclinometers and methods to located inclinometers in the field
2. Inclinometer installation and grouting methods
3. Inclinometer casing material
4. Methods to protect inclinometers during construction
5. Methods and equipment to perform inclinometer readings
6. Sample inclinometer profiles
7. Methods for abandoning inclinometer after readings are accepted and construction is complete

Inclinometers shall be installed at locations described and shown on the drawings and to depths described on the drawings. Material encountered and standard penetration test (SPT) results shall be logged during inclinometer installations and submitted to the Engineer. The inclinometers shall be installed, grouted and initial readings performed prior to beginning construction within the prescribed influence zone. The inclinometer monitoring consultant shall perform inclinometer readings at frequencies described on the Plans. Updated inclinometer profiles shall be submitted for review after each inclinometer reading is performed. After final inclinometer readings are accepted and construction is complete, inclinometers shall be abandoned by methods proposed by the Contractor and approved by the Engineer.

H. Post-Construction Survey

This vibration monitoring program shall include a post-construction survey of all existing structures and utilities included in the preconstruction surveys for structures and utilities. A post-construction survey shall be performed following the completion of the construction operations in that area and prior to final acceptance of the work. The Contractor, with the Contractor's insurer, building or bridge inspector, and the Engineer, shall re-examine each property/structure to determine any changes from the original conditions established by the preconstruction surveys. The limits of the post-inspection survey shall be consistent with the limits of the pre-construction survey. Any damage incurred to a structure or utility as a result of the Contractor's operations shall be repaired by the Contractor at no additional cost to the Department or structure or utility owner to the complete satisfaction of the Engineer and structure or utility owner.

Method of Measurement:

The protection of existing structures and utilities will not be measured and will be paid for at the Contract lump sum (LS) price for the Protection of Existing Structures item. The payment will include all costs of the preconstruction and post-construction surveys, vibration control consultant, inclinometer consultant, inclinometer surveys and profile preparation, building inspector, preparation and submission of written reports including any video, vibration monitoring, and all material, labor, equipment, tools, and incidentals necessary to complete the work.

Basis of Payment:

Accepted work will be paid at the Contract Unit Prices as follows:

ITEM	DESCRIPTION	UNIT
604502	PROTECTION OF EXISTING STRUCTURES	LS

08/27/2019

605509 - MICROPILES
605510 - MICROPILE PROOF TEST

Description:

This work shall consist of constructing micropiles as shown on the Plans and approved working drawings and as specified herein. The micropile specialty contractor shall furnish all materials, products, accessories, tools, equipment, safety equipment, services, transportation, labor, supervision, and manufacturing techniques required for the installation and testing of micropiles including pile top attachments for this project.

Materials:

All materials furnished for the micropiles shall be new and without defects. Defective materials shall be removed from the jobsite at no additional cost to the Department. Additional requirements are presented below.

A. Admixtures for Grout. Admixtures shall conform to the requirements of ASTM C494/AASHTO M 194. Admixtures that control bleed, improve flowability, reduce water content, and retard set may be used in the grout, subject to the review and acceptance of the Engineer. Admixtures shall be compatible with the grout and mixed in conformance with the manufacturer's recommendations. Expansive admixtures shall only be added to the grout used for filling sealed encapsulations and anchorage covers. Accelerators are prohibited.

B. Cement. All cement shall be Portland cement conforming to ASTM C150/AASHTO M 85, Types I, II, III, or V.

C. Centralizers and Spacers. Centralizers and spacers shall be fabricated from schedule 40 polyvinyl chloride (PVC) pipe or tube, steel, or material nondetrimental to the reinforcing steel or grout. Wood and aluminum are prohibited. Centralizers and spacers shall be securely attached to the reinforcement; sized to position the reinforcement within 1/2 in. of plan location from center of pile; sized to allow grout tremie pipe insertion to the bottom of the drill hole; and sized to allow grout to freely flow up the drill hole and casing and between adjacent reinforcing bars.

D. Epoxy Coating. The minimum thickness of coating applied electrostatically to the reinforcing steel shall be 0.3 mm. Epoxy coating shall be in accordance with ASTM A775 or ASTM A934. Bend test requirements are waived. Bearing plates and nuts encased in the pile concrete footing need not be epoxy coated unless the footing reinforcement is epoxy coated.

E. Fine Aggregate. If sand/cement grout is used, sand shall conform to ASTM C144/AASHTO M 45.

F. Grout. Provide neat cement or sand/cement with a minimum 7-day compressive strength of 4000 psi when tested as specified in ASTM C1019. The mix design and quality control procedures shall be submitted to the Engineer for approval. Previous test results for the proposed grout mix completed within one year of the start of work may be submitted for initial verification of the required compressive strengths for installation of initial production piles.

G. Permanent Casing Pipe. Permanent steel casing/pipe shall have the diameter and minimum wall thickness shown on the Plans.

The permanent steel casing/pipe shall meet the tensile requirements of ASTM A252, Grade 3 except the yield strength shall be a minimum of 80 ksi. The permanent steel casing/pipe may be new "Structural Grade" (a.k.a. "Mill Secondary") steel pipe conforming to these requirements but without mill certification, free from defects (dents, cracks, tears) and with two coupon tests per truckload delivered to the fabricator.

For all welded steel casing pipe, the carbon equivalency (CE) as defined in AWS D1.1, shall not exceed 0.45 as demonstrated by mill certifications. The sulfur content shall not exceed 0.05 percent as demonstrated by mill certifications.

For permanent casing/pipe that will be shop or field welded, the following fabrication or construction conditions apply:

1. The steel casing pipe shall not be joined by welded lap splicing.
2. Welded seams and splices shall be complete penetration welds.
3. Partial penetration welds may be restored in conformance with AWS D1.1.
4. The proposed welding procedure certified by a welding specialist shall be submitted for approval.

Threaded casing joints shall develop at least the required nominal resistance used in the design of the micropile.

H. Reinforcing Bars. Reinforcing steel shall be deformed bars conforming to ASTM A615/AASHTO M 31, Grade 75 or ASTM A722/AASHTO M 275, Grade 150. When a bearing plate and nut are required to be threaded onto the top end of reinforcing bars for the pile top to footing anchorage, the threading may be continuous spiral deformed ribbing provided by the bar deformations or may be cut into a reinforcing bar. If threads are cut into a reinforcing bar, the next larger bar number designation from that shown on the Plans shall be provided at no additional cost to the Department.

If mechanical splices for the reinforcement bar(s) are required, they shall develop a minimum of 125% of the spliced yield strength of the bar without evidence of any failure.

I. Plates and Shapes. Structural steel plates and shapes for pile top attachments shall conform to Section 1039. If bar tendon couplers are required, they shall develop the ultimate tensile strength of the bars without evidence of any failure.

J. Water. Water used in the grout mix shall conform to AASHTO T 26 and shall be potable, clean, and free from substances that may be injurious to cement and steel.

K. Backfill Material. Backfill material to be used when filling voids caused by the demolition of existing structures shall consist of structural fill according to Section 207 or flowable fill according to Section 208.

Construction Methods:

A. Micropile Specialty Contractor Qualifications. The micropile specialty contractor shall be experienced in the construction and load testing of micropiles and have successfully constructed at
least five projects in the last five years involving construction totaling at least 50 micropiles of similar resistances per project as those required in the Contract Documents.
The micropile specialty contractor shall have previous micropile drilling and grouting experience in soil similar to the project conditions. The micropile specialty contractor shall submit construction details, structural details, and load test results for at least three previous successful micropile load tests from different projects of similar scope to this project.

B. Submittals. The micropile specialty contractor shall prepare and submit to the Engineer for review the following information for the micropile system to be constructed:

1. The micropile specialty contractor shall supply a geotechnical engineer, licensed as a Professional Engineer in the State of Delaware to supervise the work with experience on at least three projects of similar scope to this project completed over the past five years. The Contractor shall not use manufacturers' representatives to satisfy these supervising geotechnical engineer requirements. The on-site foremen and drill rig operators shall also have experience on at least three projects over the past five years installing micropiles of equal or greater resistances as required in these Contract Documents.
Each micropile specialty contractor shall submit a completed project reference list and a personnel list. The project reference list shall include a brief project description with the owner's name and current phone number, and load test reports. The personnel list shall identify the supervising geotechnical engineer, drill rig operators, and on-site foremen to be assigned to the project. The personnel list shall contain a summary of each individual's experience and be sufficiently complete for the Engineer to determine whether each individual satisfies the required qualifications.

2. Detailed step-by-step description of the proposed micropile construction procedure, including personnel, testing and equipment to ensure quality control. This step-by-step procedure shall be shown on the working drawings in sufficient detail to allow the Engineer to monitor the construction and quality of the micropiles. This step-by-step description shall specify how the Contractor will determine the beginning of the anchorage zone.

3. Proposed start date, time schedule, and micropile installation schedule providing the Micropile Number, location and total micropile length.

4. If welding of casing is proposed, submit the proposed welding procedure, certified by a qualified welding specialist. Include name of qualified welder and proof of qualification per Section 615.

5. Information on headroom and space requirements for installation equipment that verify the proposed equipment can perform at the site.

6. Certified mill test reports for the reinforcing steel or coupon test results for permanent casing without mill certification. The ultimate strength, yield strength, elongation, and material properties composition shall be included. For API 5CT Grade N80 pipe casing, coupon test results may be submitted in lieu of mill certification.

7. Details of casing threads, including inside and outer diameters for both male and female thread connections.

8. Proposed grouting plan which shall include complete descriptions, details, and supporting calculations for the following:

a. Grout mix design and type of materials to be used in the grout including certified test data and trial batch reports.

b. Methods and equipment for accurately monitoring and recording the depth, volume, and pressure of the grout as it is being placed.

c. Grouting rate calculation. The calculations shall be based on the initial pump pressures or static head on the grout and losses throughout the placing system including anticipated head of drilling fluid (if applicable) to be displaced.

d. Estimated curing time for grout to achieve specified strength. Previous test results for the proposed grout mix completed within one year of the start of grouting may be submitted for initial verification and acceptance before start of production work.

e. Procedure and equipment for micropile specialty contractor monitoring of grout quality, including sampling and testing for grout density and compressive strength. The specialty micropile contractor must describe the corrective steps that will be taken when grout samples fail to meet the general requirements presented.

9. Detailed plans for the proposed micropile load testing methods. This shall include all drawings, details, and structural design calculations sealed by a professional engineer registered in the State of Delaware necessary to clearly describe the proposed test methods, reaction load system capacity and equipment setup, types and accuracy of apparatus to be used for applying and measuring the test loads and pile top movements.

10. Calibration reports and data for each test jack, pressure gauge, master pressure gauge and electronic load cell to be used. The calibration tests shall have been performed by an independent testing laboratory, and tests shall have been performed within 90 calendar days of the date submitted. Testing shall not commence until the Engineer has reviewed and accepted the jack, pressure gauge, and master pressure gauge and/or electronic load cell calibration data.

11. Micropile installation is prohibited until the construction submittals have been approved by the Engineer. Provide submittal items at least 48 hours prior to the preconstruction meeting. The Engineer will review the construction submittals to evaluate conformance with Contract Documents. Within 5 work days of receipt of the complete submittal, the Engineer will notify the Contractor of any additional information required and/or changes that may be necessary to meet the requirements of the Contract Documents. The Engineer will reject any part of the plan that is unacceptable. Submit changes agreed upon for reevaluation. The Engineer will notify the Contractor within 7 days after receipt of proposed changes of their acceptance or rejection. All equipment and procedures are subject to trial and satisfactory performance in the field. Additional time required due to incomplete or unacceptable submittals shall not be cause for delay or impact claims.

12. The micropile specialty contractor shall not make any changes to the approved construction procedures without written consent from the Engineer. The Engineer may require additional micropile tests if the

micropile specialty contractor revises construction procedures. Any additional verification testing required due to changes in the micropile specialty contractor's procedures shall be at no additional cost to the Department.

13. If more than one micropile specialty contractor is utilized, each micropile specialty contractor shall perform the verification load testing shown on the plans. The additional verification load testing required due to the use of multiple micropile specialty contractors shall be at no additional cost to the Department.

C. Micropile Preconstruction Meeting. A micropile preconstruction meeting will be scheduled by the Engineer and held prior to the start of micropile construction. Attendance is mandatory for the general contractor, the micropile specialty contractor, and excavation contractor. The preconstruction meeting will be conducted to clarify the construction requirements for the work, to coordinate the construction schedule and activities, and to identify contractual relationships and delineation of responsibilities amongst the Contractor and the various subcontractors – specifically those pertaining to excavation for micropile structures, anticipated subsurface conditions, micropile installation and testing, micropile structure survey control, and site drainage control.

The meeting will also focus on clarifying the procedures to follow when an obstruction is encountered during drilling for the micropile.

D. Site Drainage Control. The Contractor shall control and properly dispose of drill flush and construction related waste including excess grout, in conformance with the Specifications, and all applicable local codes and regulations. Positive control and discharge shall be provided for all surface water that will affect construction of the micropile installation. All pipes or conduits used to control surface water during construction shall be maintained. Damage caused by surface water shall be repaired at no additional cost to the Department. Upon substantial completion of the work, surface water control pipes or conduits shall be removed from the site.

The Engineer shall be contacted immediately if unanticipated existing subsurface drainage structures are discovered during excavation or drilling. Work shall be suspended in these areas until remedial measures approved by the Engineer are implemented.

E. Excavation. Micropile installation and the excavation shall be coordinated so that the micropile structures are safely constructed. Excavation shall be performed in accordance with the Plans and approved submittals. Excavations steeper than those specified herein or shown on the Plans are prohibited above or below the micropile structure locations without written approval of the Engineer.

F. Micropile Installation. The micropile specialty contractor shall select the installation means and methods to install the micropiles to the size and lengths shown on the Plans. The micropile load resistances shall be verified by static load testing on production micropiles (proof load testing) and shall conform to the test acceptance criteria specified herein.

The micropile specialty contractor shall utilize their own assessment of the subsurface conditions and experience constructing micropiles in similar subsurface conditions to determine the micropile installation methods and equipment needed to successfully construct the proposed micropiles to the depths required on the Plans. The Contractor shall bear the costs associated with any modifications to the initial construction procedures required to successfully construct the micropiles.

The micropile specialty contractor shall select the drilling method, the grouting procedure, and the grouting pressure used for the installation of the micropiles. Gravity grouting, or Type A micropile (as defined in FHWA-SA-97-070) will not be allowed. The micropile specialty contractor shall be responsible for estimating the grout take and adjusting grouting procedures as there will be no extra payment for grout overruns or time extensions. All adjustments to the grouting operations must be notified to the Engineer for acceptance prior to proceeding with micropile construction at other locations. The Engineer may request proof load testing on such micropiles constructed with the adjusted grouting procedure.

1. Drilling. The micropile shall be temporarily cased along the entire length to prevent caving of the side walls. The use of drilling fluids, such as slurry or sacrificial grout, must be considered by the specialty contractor to prevent bottom heave conditions at the bottom of casing during drilling operations.
The drilling equipment and methods shall be suitable for drilling through the conditions to be encountered without causing damage to any overlying or adjacent structures or services. Open-hole drilling or drilling with

fluid alone without advancing temporary casing will not be allowed. The use of air for drilling and hollow stem augers shall not be permitted.
Drilling in advance of the temporary casing may be allowed by the Engineer only when in the opinion of the Engineer difficult drilling conditions are encountered and advancement of the casing cannot be achieved otherwise. The specialty contractor must demonstrate that all available resources have been exhausted prior to drilling pass the tip of the casing.

2. Ground Heave or Subsidence. During construction the Contractor shall observe the conditions in the vicinity of the micropile construction site on a daily basis for signs of ground heave or subsidence. The Engineer shall be notified immediately if signs of movements are observed. The micropile specialty contractor shall immediately suspend or modify drilling or grouting operations if ground heave or subsidence is observed, if the micropile structure is adversely affected, or if adjacent structures are damaged from the drilling or grouting.
The Engineer may allow the Contractor to proceed constructing micropiles at a different location while ground conditions are further assessed and monitored within the impacted area. The Contractor shall be responsible for developing corrective measures to the grouting procedures to avoid adverse impacts at the site. These corrective measures shall be notified to the Engineer for acceptance prior to implementation.

3. Pipe Casing and Reinforcing Bars Placement and Splicing. Permanent steel pipe casing meeting the requirements defined in the MATERIALS section above shall be installed to the minimum bottom elevation specified in the Plans by either splice welding or thread screwing casing segments. A continuous casing segment shall be installed to a minimum of 5 feet below the new bottom of footing elevation. Segments of lesser length to that specified in the Plans will not be allowed unless approved by the Engineer. A 1-foot casing plunge length is required into the bond zone.

Reinforcement may be placed either prior to grouting or placed into the grout-filled drill hole before temporary casing is withdrawn. Reinforcement surface shall be free of deleterious substances such as soil, mud, grease, or oil that might contaminate the grout or coat the reinforcement and impair bond.
The micropile specialty contractor shall check pile top elevations and adjust all installed micropile casing and reinforcement bars to the planned elevations.

Centralizers and spacers shall be provided at 10 ft centers maximum spacing. The upper and lower most centralizer shall be located a maximum of 5 ft from the top and bottom of the micropile. Centralizers and spacers shall permit the free flow of grout without misalignment of the reinforcing bars and permanent casing. The central reinforcement bars with centralizers shall be lowered into the stabilized drill hole and set. The reinforcing steel shall be inserted into the drill hole to the desired depth without difficulty. Partially inserted reinforcing bars shall not be driven or forced into the hole. The micropile specialty contractor shall re-drill and reinsert reinforcing steel when necessary and allowed by the Engineer to facilitate insertion. The Engineer may request that the pile be re-grouted or pressure grouted to account for grout volume losses during the process.

Lengths of casing and reinforcing bars to be spliced shall be secured in proper alignment and in a manner to avoid eccentricity or angle between the axis of the two lengths to be spliced. Splices and threaded joints shall conform to the requirements herein. Threaded pipe casing joints shall be located at least two casing diameters (OD) from a splice in any reinforcing bar.

4. Grouting. Micropiles shall be primary grouted the same day the load transfer bond length is drilled. The grout selected by the micropile specialty contractor shall be mixed in conformance with the approved mix design and shall conform to the specified strength requirements stated in the MATERIALS Section above. Admixtures (if used) shall be mixed in conformance with manufacturer's recommendations.

The grouting equipment used shall produce a grout free of balls, lumps and undispersed cement. The grout shall be kept in agitation prior to mixing. Grout shall be placed within one hour of mixing. The grouting equipment shall be sized to enable each pile to be grouted in one continuous operation.

The grout shall be injected from the lowest point of the drill hole and injection shall continue until uncontaminated grout flows from the top of the pile. The grout may be pumped through grout tubes or drill rods. The tremie pipe shall always extend below the level of the existing grout in the drill hole. Upon completion of the tremie grouting, pressure grouting shall be performed to fully develop the bond zone. The grout pressures and grout takes shall be controlled to prevent excessive heave or fracturing of rock or soil formations. Grout tubes used during grouting of the micropile may remain in the hole only when these are

securely fastened to the threaded bar reinforcement and filled with grout upon completion. The micropile specialty contractor shall have means and methods of accurately measuring grout volumes.

5. Grout Testing. Grout within the micropile proof test piles shall attain the minimum of 4000 psi compressive strength prior to load testing. During production, micropile grout shall be tested by the micropile specialty contractor for compressive strength in conformance with AASHTO T 106 at a frequency of no less than one set of three 2 in. grout cubes from each grout plant each day of operation or per every 10 piles, whichever occurs more frequently. The compressive strength shall be the average of the three cubes tested.
Grout consistency as measured by grout density shall be determined by the micropile specialty contractor in conformance with AASHTO T 133 or ANSI/API 13B-1 at a frequency of at least one test per pile, conducted just prior to start of pile grouting. The Baroid Mud Balance specified in API 13B-1 is an approved device for determining the grout density of neat cement grout. The measured grout density shall be between 115 and 120 pcf. Grout samples shall be taken directly at the injection point or top of micropile. Grout cube compressive strength and grout density test results shall be submitted to the Engineer within 24 hours of testing.

The Engineer may conduct random verification testing on grout samples to evaluate quality of the grout. If test results from verification testing show the grout not meeting minimum strength requirements listed herein for at least 5 or more sets, micropile specialty contractor shall not drill any micropile past the bottom of the casing elevation shown on the plans for that bridge pier location and shall revise the grout mix or any grout mixing operations prior to drilling past the bottom of the casing on any micropile. The Engineer may request to increase grout testing frequency until grout meets with minimum strength and density specified herein at no additional cost to the Department.

G. Micropile Allowable Construction Tolerances. The center line of piling shall not be more than 3 inches from the locations shown on the Plans. All piles shall be plumb within 2 percent of total-length plan alignment. The top elevation of pile shall be plus 1 inch or minus 2 inch maximum from specified elevation. The center line of reinforcing steel shall be within 1/2 inch from the center line of the micropile casing.

H. Micropile Construction Procedures when Obstructions are Encountered. When an obstruction is encountered, all work shall stop at the micropile in question and the Contractor shall notify the Engineer immediately. The Contractor shall notify the Engineer if the obstruction was encountered within the cased length or bond zone length portion of the micropile and report the micropile identification number and depth at which the obstruction was encountered. An obstruction shall be defined as any unknown or assumed buried element that impedes the advancement of the micropile drilling operation without causing misalignment of the micropile outside the defined vertical tolerances.

When an obstruction is encountered which prevents the minimum bottom of casing elevation or minimum pile tip elevation to be achieved, the micropile shall be abandoned and the bored hole grouted through the casing during casing withdrawal. The abandoned micropile shall be replaced with a new micropile in a location designated and approved by the Engineer. The Contractor may propose a new location but shall receive approval from the Engineer prior to initiating construction of the replacement micropile.
At any time after the Contractor has notified the Engineer of the obstruction encountered within any micropile, work on other production micropile within the group may proceed.

I. Micropile Installation Records. The micropile specialty contractor shall prepare and submit to the Engineer full-length installation records for each micropile installed. The records shall be submitted within one week after that pile installation is completed. The data shall be recorded on a separate log for each micropile.
J. Pile Load Tests. Proof testing of piles shall be performed at the locations specified on the Plans or designated by the Engineer. Compression load testing shall be performed in accordance with ASTM D 1143 except as modified herein. The micropile specialty contractor shall provide all necessary equipment to perform the specified test.

1. Testing Equipment and Data Recording. Testing equipment shall include digital dial gauges, dial gauge support, jack and pressure gauge, electronic load cell, and reaction frame. The
micropile specialty contractor shall provide a description of test setup and pressure gauge and load cell calibration curves as specified herein under Submittals.

The testing reaction frame shall be designed to be sufficiently rigid and of adequate dimensions so that excessive deformation of the testing equipment does not occur. The jack, bearing plates, and stressing

anchorage shall be aligned so that unloading and repositioning of the equipment will not be required during the test.

The micropile specialty contractor shall apply and measure the test load with a hydraulic jack and pressure gauge. The pressure gauge shall be graduated in 100 psi increments or less. The jack and pressure gauge shall have a pressure range not exceeding twice the anticipated maximum test pressure. Jack ram travel shall allow the test to be completed without resetting the equipment. The creep test load hold shall be monitored during testing with both the pressure gauge and the electronic load cell. The load cell shall be used to accurately maintain a constant load hold during the creep test load hold increment of the test.

The pile top movement shall be measured with a displacement gauge capable of measuring to 0.001 in. The displacement gauge shall have adequate travel to complete testing without having to reset the gauge. The gauge shall be visually aligned to be parallel with the axis of the micropile and support the gauge independently from the jack, pile, or reaction frame. A minimum of two gauges shall be used when the test setup requires reaction against the ground or reaction piles on each side of the test pile. The Engineer may require the micropile specialty contractor to install gauges on the reaction piles used to monitor their top displacements during the load test.

The required load test data shall be recorded by the micropile specialty contractor's supervising geotechnical engineer.

2. Proof Load Tests (PLT). A minimum of one proof load test shall be performed at each substructure location. The location of additional PLTs, if required, shall be as designated by the Engineer.

3. Proof Test Loading Schedule. Proof load testing shall be performed in increments of the Reference Test Load (RTL) equal to the micropile nominal geotechnical resistance (Rn). The micropile nominal geotechnical resistance is the factored resistance shown on the Plans divided by a resistance factor (ö) of 0.55. Test piles designated for compression proof load testing shall be load tested to a maximum load equal to 0.75 RTL. Proof load tests shall be made by incrementally loading the micropile in accordance with the schedule in Table 1.

Table 1: Micropile Proof Load Test Schedule

STEP	LOADING	APPLIED LOAD	HOLD TIME (MIN.)
1	APPLY AL	0.05 RTL	2.5
2	LOAD CYCLE	0.15 RTL	2.5
		0.30 RTL	2.5
		0.45 RTL	2.5
		0.60 RTL	2.5
		0.75 RTL	10 – 60
3	UNLOAD CYCLE	0.70 RTL	2
		0.50 RTL	2
		0.30 RTL	2
		0.10 RTL	2
		AL	1

AL = Alignment Load = 0.05 RTL (Maximum)

The Alignment Load (AL) shall not exceed 5 percent of RTL. Dial gauges shall be reset to zero after the initial AL is applied.

Creep testing shall be performed at the 0.75 RTL load step. If pile top movement during the initial 10-minutes of creep testing is below 0.04 inches, creep testing may be terminated at 10 minutes. If pile top movement during the initial 10-minutes of creep testing exceeds 0.04 inches, creep testing shall extend an additional 50 minutes (60-minute total test duration). Pile top movements during creep testing shall be recorded at 1, 2, 3, 5, 6, 10, 20, 30, 50 and 60 minutes.

4. Reporting

Prepare and submit, within three Working Days of the completion of each micropile proof load test a written report with the results of the proof load test including:

a. Name and location of micropile proof test.
b. Date and time of proof test.
c. Name and contact information for supervising geotechnical engineer present during testing.
d. Data recorded during testing including load step, jack pressure, jack load, individual displacement gauge readings, and time of each reading.
e. Summary of micropile performance relative to acceptance criteria listed in following section.

5. Proof Load Test Acceptance Criteria.

Acceptance criteria for proof load testing area as follows:

a. The pile shall sustain the compression 0.75 RTL test load with no more than 0.50 in. total vertical movement at the top of the pile, relative to the position of the top of the pile prior to testing.

b. At the end of the 0.75 RTL creep test load increment, test piles shall have a creep rate not exceeding 0.04 in./log cycle time (1 to 10 minutes) or 0.08 in./log cycle time (6 to 60 minutes). The creep rate shall be linear or decreasing throughout the creep load hold period.

c. The maximum set or permanent pile displacement at the top must not exceed 0.50 inches after all loading is removed from the pile.

6. Proof Test Pile Rejection. If a proof-tested micropile fails to conform to the acceptance criteria, the micropile specialty contractor shall immediately proof load test another micropile within that footing. For failed piles, and further construction of other piles, the micropile specialty contractor shall modify the installation methods. Modifications may include installing replacement micropiles, incorporating piles at not more than 50 percent of the maximum load attained, postgrouting, modifying installation methods, increasing the bond length, or changing the micropile type, as approved by the Engineer. A new proof test pile will be required on a production pile adjacent to the failed pile to confirm that the modifications produce piles meeting the required load resistances specified on the Plans.

Any modifications of design or construction procedures, or cost of an additional proof test piles, proof load testing, or replacement production micropiles shall be at no additional time or cost to the Department.

Method of Measurement:

A. The Engineer will measure the quantity of micropiles by the total length of piles in Linear Feet from the plan top of micropile elevation to the final bottom of micropile elevation. The Engineer will not separately measure excavation, furnishing and setup of equipment, drilling, drill fluid and spoil handling and disposal, furnishing and placing the reinforcing steel and casing, grouting (there will be no payment for grout overruns), or pile top attachments.

B. The Engineer will measure micropile proof testing on an Each basis upon receipt of acceptable associated proof load testing report(s) according to the specified loading procedures and to the designated maximum load shown in the Contract Documents. The Engineer will not separately measure furnishing and setup of the necessary load test frame, installation of reaction piles or mats to support the frame and applied test loads, dial gauges, survey equipment and all other items necessary to complete the proof load tests, running successfully the respective load tests, and furnishing a signed and sealed report for each load test as described.

Basis of Payment:
A. The Department will pay for accepted quantities at the Contract Unit Price as follows:

ITEM	DESCRIPTION	UNIT
605509	MICROPILE	LF
605510	MICROPILE PROOF TEST	EA

B. The Department will pay for the installed quantity of micropiles at the Contract Unit Price per Linear Foot. Such payment is full compensation for all costs associated in the development, review, and revision process for providing acceptable submittals, and for all material, labor, equipment, tools and incidentals necessary to complete the Work.

05/06/2019

623500 - BRONZE BEARINGS

Description:

Fabricate, furnish, and install Bronze Bearings as indicated on the Plans, in accordance with these Special Provisions, and as directed by the Engineer.

Materials:

Provide Materials conforming to the following:

A. Self-Lubricating Bronze Bearings. Self-lubricating bronze bearing plates shall conform to the requirements of ASTM B22, Alloy C91100 unless otherwise specified.

B. Bronze Plate Bearings. Phosphor Bronze (Copper Alloy) Plates shall conform to ASTM B100, Alloy C510000.

C. Structural Steel. Structural steel for bronze bearings shall conform to AASHTO M270, Grade 50.

D. Anchor Bolts. Anchor bolts, nuts, and washers shall be in accordance with Subsection 1039.04.

E. Paint. All painting of new and existing steel shall be in accordance with Section 616 and as noted on the Plans.

F. Masonry Products. Grout used for filling annular space around anchor bolts shall be non-shrink, flowable, cementitious type material conforming to ASTM C1107 grade C with a maximum aggregate size of 5/32".

G. Lubricating Compound. The lubricating compound shall consist of graphite and metallic substances with a lubricating binder capable of withstanding the atmospheric elements.

H. Multipurpose Grease. Provide a waterproof, corrosion-resistant grease for the bearings.

Construction:

A. Working Drawings

1. Design, manufacture, and test bearings in accordance with the specified edition of the AASHTO LRFD Bridge Design Specifications.

2. Prepare and submit Working Drawings for the bearings. Such drawings must show all details of the bearings and of the Materials proposed for use, must be sealed by a Professional Engineer registered in the State of Delaware, and must be approved by the Engineer prior to fabrication. Such approval shall not relieve the Contractor of any responsibility under the Contract Documents for the successful completion of Work. The Working Drawings must include, but not be limited to, the following:

a. The total quantity of each kind of bearing required (fixed, expansion), grouped first according to type (load range) and then by actual design capacity.

b. The plan view and section elevation showing all relative dimensions of each type of bearing.

c. The maximum design coefficient of friction as noted in the Contract Documents.

d. The type of Materials to be used for all bearing elements.

e. If applicable, a clear description and details for any welding process used in the bearing manufacture that does not conform to the approved process of the specified AASHTO/AWS D1.5 Bridge Welding Code.

f. The vertical and horizontal load, rotation, and movement capacity.

g. Painting or coating requirements.

h. Alignment plans.

i. Installation scheme.
j. Complete design calculations verifying conformance with the Contract Documents.

k. Anchorage details.

l. Bearing preset details, if applicable.

m. The location of the fabrication plant.

n. The Manufacturer's name and the name of the Manufacturer's representative who will be responsible for coordinating production, inspection, sampling, and testing.

B. Packaging, Handling, and Storage

Packaging, handling, and storage of bronze bearings shall be in accordance with Subsection 623.03.B.
C. Bronze Bearings

1. Install bearings in accordance with the Contract Documents and Working Drawings.

2. The bearings shall receive one shop coat of paint in accordance with the requirements of Section 616.

3. Steel plates shall meet a flatness requirement of 0.5 percent in the direction being measured (width, length, and diagonals) maximum, but not to exceed 1/8 inch. Steel surfaces of the sole plates and bearing plates in contact with other surfaces, shall be machine finished to at least 250 microinches Root-Mean-Square. Surfaces of the sole plate and masonry plate in contact with the bronze plate shall have a machine finish of at least 125 microinches Root-Mean-Square. The sliding surfaces shall be coated with multipurpose grease before shipment. Prior to erection, the coating shall be removed using a solvent.

4. The sliding surfaces of self-lubricating bronze plates shall be polished and provided with annular grooves or cylindrical recesses, or a combination thereof, filled with a lubricating compound. The lubricating compound shall be free of any material that could cause abrasive or corrosive action upon the metal surfaces and shall be able to withstand extremely high pressures and atmospheric elements over long periods of time. The lubricating compound shall be compressed into the recesses under sufficient pressure to form a non-plastic lubricating inset. The lubricating inset shall comprise not less than 25% of the total area of the plate. The frictional coefficient shall not exceed 0.10 during the first 1000 cycles at the design dead load
5. The sliding surface of the phosphor bronze plate shall be polished.

6. The bearing shall be shop assembled and match-marked to ensure proper fit. Bevel the sole plate to match the grade if the grade exceeds 1%. For bearing replacement locations, the Contractor shall measure the grade of the bridge in the field to determine the appropriate bevel at each bearing to be replaced. For bronze bearings at proposed girders, the bevel shall be as indicated on the Plans.

D. Anchor Bolts

All anchor bolts shall be in accordance with Subsection 623.03.E.

E. Replacement of Existing Bearings

1. Removal of existing bearing plates from the existing girder shall not damage portions of the existing girder to remain. Any damage caused by the Contractor's operations shall be repaired at the Contractor's expense to the satisfaction of the Engineer.

2. The bottom flanges of existing girders to receive new bronze bearings shall be cleaned in accordance with Section 616 prior to installation and welding of the new sole plate.

3. All field welding shall be done by the shielded metal-arc process. The Contractor shall not paint welds prior to inspection by the Engineer.

4. All replacement bearings and areas of the existing girders requiring touch up due to installation operations for bearing replacements shall be painted in accordance with Section 616, as noted on the Plans, and as directed by the Engineer.

5. The Engineer will be the sole judge in determining if any additional bearings are to be replaced.

6. When no longer required, as determined by the Engineer, all materials used for this operation shall become the property of the Contractor and shall be legally disposed of clear of the site.
7. Jacking of existing girders shall be in accordance with Section 604 and as detailed on the Plans.

F. Cleaning and Greasing Bearings

Clean and grease new and replacement bearings in accordance with Subsection 623.03.F and as directed on the Plans.

Method of Measurement:

Bronze Bearings will be measured as the number of EACH bearing device placed and accepted.

Basis of Payment:

A. Payment will be made for accepted quantities at the Contract Unit Price as follows:

ITEM	DESCRIPTION	UNIT
623500	BRONZE BEARINGS	EACH

B. Price and payment will constitute full compensation for furnishing all labor, Materials, tools, Equipment, and incidentals and for doing all the Work involved in furnishing, testing, cleaning, lubricating, and installing the bronze bearings, anchor bolts, nuts, washers, welding, and painting as specified herein, as shown on the Contract Documents, and as directed by the Engineer.

C. For replacement of existing bearings, payment for removal and disposal of the existing bearings will be incidental to the Bronze Bearing item.

D. Payment for this item does not include cleaning and painting. Payment for cleaning and painting will be made under Item Nos. 616000 – Cleaning And Painting Existing Steel and 616003 – Testing And Disposal Of Existing Hazardous Steel Coating.

E. Payment for this item does not include anchor bolt repair or replacement for existing bearings. Payment for anchor bolt repair or replacement will be made under Item No. 623003 – Replace Anchor Bolts.

F. Price and payment for cleaning and greasing bearings will be made under Item No. 623004 – Clean and Grease Bridge Bearings.

08/02/2019

625503 - ADDITIONAL LATEX-MODIFIED CONCRETE FOR PARTIAL DECK REPAIRS

Description.

This Work consists of furnishing additional Latex-Modified Concrete (LMC) to perform partial deck repairs in unsound areas of the existing deck slab removed during the hydrodemolition operation. Work shall be completed as indicated on the Plans, in accordance with these Special Provisions, and as directed by the Engineer.

Materials:

Provide latex-modified concrete materials in accordance with Section 1046.01.

Construction Methods:

Additional Latex-Modified Concrete for Partial Deck Repairs shall be placed in accordance with Subsection 625.03. Additional Latex-Modified Concrete for Partial Deck Repairs shall be placed concurrently with the latex-modified concrete overlay.

Method of Measurement:

A. Additional Latex-Modified Concrete for Partial Deck Repairs will be measured as the number of cubic yards furnished.

B. Additional Latex-Modified Concrete for Partial Deck Repairs will be measured to the nearest 0.1 cubic yards. The quantity of Additional Latex-Modified Concrete for Partial Deck Repairs will be determined by deducting the theoretical volume of material necessary to construct the deck overlay at Plan thickness from the total volume of deck overlay material placed on the deck surface. Measurement for the volume of Additional Latex-Modified Concrete for Partial Deck Repairs will be based on the meter readings on the mixers dispensing the latex modified concrete excluding the calculated volume of any waste. Any volume of material wasted or used to fill depressed areas caused by the Contractor's negligence in milling or concrete removal during the hydrodemolition operation will not be included in this quantity.

Basis of Payment.

A. Payment for furnishing all Materials for Additional Latex-Modified Concrete for Partial Deck Repairs will be paid for at the Contract Fixed Unit Price specified for Item 625503 – Additional Latex-Modified Concrete for Partial Deck Repairs. The Contract Fixed Unit Price will be $600 per cubic yard for the latex-modified concrete furnished including all material and any other incidental items necessary to furnish the additional material.

B. Labor and equipment costs for placing the additional latex-modified concrete monolithically as part of the partial deck repairs will be incidental in the Contract Unit Price per square yard per inch for Item 625000 – Latex-Modified Concrete Overlay Installation.

05/09/2019

625504 - POLYESTER POLYMER CONCRETE SAND MIX FOR RUMBLE STRIPS

Description:

This work shall consist of furnishing and placing a polyester polymer concrete (PPC) sand mix with a high molecular weight methacrylate (HMWM) resin prime coat to fill in existing rumble strips on existing bridge decks where specified in the Plans. The work shall also include the preparation of all receiving surfaces. All work shall be in accordance with the Plans, System Provider's recommendations, as directed by the Engineer, and as required by these Special Provisions.

Materials:

The System Provider shall be able to demonstrate expertise working with PPC components on recent projects.

Material requirements for the PPC sand mix are as follows:

1. **Primer**

The prepared surface shall receive a wax-free low odor, HMWM resin prime coat conforming to the following:

High Molecular Weight Methacrylate (HMWM) Resin		
Property	**Requirement**	**Test Method**
Volatile Content*	30 percent, maximum	ASTM D 2369
Viscosity* (Brookfield RVT with UL adapter, 50 RPM at 25 degrees C)	25 cps, maximum	ASTM D 2196
Specific Gravity* (at 77 degrees F)	0.90 - 1.10	ASTM D 1475
Flash Point*	180 degrees F, minimum	ASTM D 3278
Vapor Pressure* (mm Hg at 77 degrees F)	1.0	ASTM D 323
Tack Free Time (minutes at 77 degrees F)	400 minutes, maximum	ASTM C 679
PCCa Saturated Surface-Dry Bond Strength (at 24 hours at 70 ± 2 degrees F)	500 psi, minimum	California Test Method 551
Thermal compatibility	No delamination of overlay	ASTM C 884

*Tested prior to adding initiator
a PCC = Portland cement concrete

The prime coat promoter/initiator shall consist of a metal drier and peroxide. If supplied separately from the resin, at no time shall the metal drier be mixed directly with the peroxide. The containers shall be stored in a manner that will not allow leakage or spillage from one material to contact the containers or material of the other.

NOTE: Mixing the metal drier directly with the peroxide will result in a violent exothermic reaction.

2. **Aggregate**

Aggregate for PPC sand mix and abrasive finishing sand shall conform to the following gradation requirements:

Combined Aggregate		
Sieve Size	**⅜" Max. Percent Passing**	**#4 Sieve Max. Percent Passing**
⅜"	100	100
#4	65 -82	62 - 85
#8	45 - 64	45 - 67
#16	27 - 48	29 - 50
#30	12 - 30	16 - 36
#50	6 - 17	5 - 20
#100	0 - 7	0 - 7
#200	0 - 3	0 - 3

Aggregate retained on the #8 sieve shall have a maximum of 45 percent crushed particles when tested in accordance with AASHTO Test Method T 27. Fine aggregate shall consist of natural sand only.

The minimum Mohs scale hardness of the silica sand shall be 7.0, and all aggregates retained in the No. 8 sieve shall have a minimum hardness of 7.0.

Aggregate absorption shall not exceed one percent (1%) as determined by AASHTO Test Methods T 84 and T 85.

At the time of mixing with the resin, the moisture content of the aggregate, as determined by AASHTO Test Method T 255, shall not exceed one half of the aggregate absorption.

Sand for abrasive sand finish shall be commercial quality blast sand having at least 95 percent passing the No. 8 sieve and at least 95 percent retained on the No. 20 sieve and conform to the dryness requirements for polyester concrete aggregate as specified in this special provision.

3. **Polyester Resin Binder**

The PPC sand mix shall consist of polyester resin binder and dry aggregate. The resin shall be an unsaturated isophthalic polyester-styrene co-polymer conforming to the following:

Polyester Resin Binder		
Property	**Requirement[a]**	**Test Method**
Viscosity* (RVT No. 1 Spindle, 20 RPM at 25 degrees C)	75 to 200 cps	ASTM D 2196
Specific Gravity*	1.05 to 1.10 at 77 degrees F	ASTM D 1475
Elongation	35 percent, minimum Type I at 0.45"/minute Thickness = 0.25" ± 0.03"	ASTM D 638
	Sample conditioning: 18/25/50 + 5/70	ASTM D 618

Tensile Strength	2500 psi, minimum Type I at 0.45"/minute Thickness = 0.25" ± 0.03"	ASTM D 638
	Sample conditioning: 18/25/50 + 5/70	ASTM D 618
Styrene Content*	40 percent to 50 percent (by weight)	ASTM D 2369
Silane Coupler	1.0 percent, minimum (by weight of polyester styrene resin)	
PCC[b] Saturated Surface Dry Bond Strength	500 psi, minimum at 24 hours and 70 ± 2 degrees F	California Test Method 551
Thermal Compatibility (mixed with aggregate)	No delamination of overlay	ASTM C 884

*Tested prior to adding initiator
a Values are based on specimens or samples cured or aged at 77 degrees F unless otherwise indicated.
bPCC = Portland cement concrete

The silane coupler shall be an organosilane ester, gamma-methacryloxypropyltrimethoxysilane. The promoter shall be compatible with methyl ethyl ketone peroxide (MEKP) and cumene hydroperoxice (CHP) initiators. The promoter shall be compatible with suitable peroxide initiators.

D. Samples. Samples of materials for all components of the overlay system shall be submitted by the System Provider to the Materials and Research Section a minimum of five (5) days prior to the PPC sand mix application. Samples shall be representative of the materials to be used in the overlay application and shall consist of a one gallon (1 gal.) sample for each liquid component (HMWM resin primer and polyester resin binder) and a five pound (5 lb.) sample for each dry component. Appropriate amounts of catalysts and promoters shall be supplied with the one gallon samples.

E. Packaging and Shipment. A Material Safety Data Sheet shall be furnished prior to use for each shipment of polyester resin binder and HMWM resin. All components shall be shipped in strong, substantial containers, bearing the System Provider's label specifying date of manufacture, batch number, brand name, quantity, and date of expiration or shelf life. In addition, the mixing ratio shall be printed on the label of at least one (1) of the system components. If bulk resin is to be used, the Contractor shall notify the Engineer in writing ten (10) days prior to the delivery of the bulk resin to the job site. Bulk resin is any resin that is stored in containers in excess of 55 gallons.

F. Basis of Acceptance. Project acceptance of the PPC sand mix materials will be based on the following:

1. Delivery of the PPC sand mix materials to the project site in acceptable containers bearing all the label information as required above in Packaging and Shipment.

2. Receipt of a Manufacturer's certification stating the primer, aggregate and polyester resin binder meet the material requirements of items 1 through 3 above.

3. Approval by the Materials and Research Section based on conformance with the material requirements above.

Construction Methods:

A. Submittals. Prior to placing the PPC sand mix, the Contractor shall submit to the Department a Work Plan for placing the PPC sand mix. The Work Plan shall include, but not be limited to, the following:

1. A schedule and sequence of all work relating to filling the rumble strips on specified bridge decks

2. Technical literature from the System Provider including requirements for storage, handling, mixing, application, cleanup, and disposal of materials and containers

3. Description of materials and test reports for all overlay system materials to be used

4. Description of equipment for applying HMWM resin

5. Description of equipment for measuring, mixing, placing, and finishing PPC sand mix material

6. Cure time for PPC sand mix

7. Description of equipment for applying sand

8. Procedures for surface preparation, application, curing, and finishing

In addition, the System Provider's technical representative who will be on site shall also review and approve the Work Plan. Any deviations from the approved Work Plan shall be approved by the Engineer.

B. General. The System Provider's technical representative shall be made available on the job site for a minimum of one (1) work day to make recommendations to facilitate the PPC sand mix installation. This shall include, but not be limited to, surface preparation, PPC sand mix application, and PPC sand mix curing.
During surface preparation and PPC sand mix application, precautions shall be taken to assure that traffic is protected from rebound, dust and construction activities. Appropriate shielding shall be provided as required and directed by the Department.

During PPC sand mix application, the Contractor shall provide suitable coverings (e.g. heavy duty drop cloths) to protect all exposed areas not to be filled, including, but not limited to, joints, parapets, etc. All damage to the existing structure to remain as a result of the Contractor's operations shall be repaired by the Contractor to the satisfaction of the Engineer at no additional
cost to the Department.

C. Storage of Materials. All materials shall be stored and handled in accordance with the System Provider's recommendation to ensure their preservation. Applicable fire codes may require special storage facilities for some components of the PPC sand mix system.

D. Equipment. Equipment shall be fitted with suitable traps, filters, drip pans, or other devices to prevent oil, fuel, grease, or other deleterious material from being deposited on the deck.

1. Surface Preparation. All equipment to be used for surface preparation shall be as specified by the PPC sand mix System Provider and approved by the Engineer. Unless otherwise specified, the Contractor shall use automatic shot blasting units to clean rumble strip surfaces. In those areas not accessible to this machinery, the surface may, with the Engineer's approval, be cleaned with blast cleaning equipment.
Automatic shot blasting units shall be self propelled and include a vacuum to recover spent abrasives. The abrasive shall be steel shot. Magnetic rollers shall be used to remove any spent shot remaining on the deck after vacuuming.

2. Application. PPC sand mix shall be mixed in mechanically operated mixers. Mixer size shall be sufficient for complete mixing of batch and shall be approved by the System Provider's technical representative and the Engineer. The binder shall be initiated and thoroughly blended just prior to mixing with aggregate. The PPC sand mix shall be mixed a minimum of two (2) minutes prior to placement.

A continuous mixer employing an auger screw/chute device with self-contained, separate aggregate, resin, and peroxide compartments may be used. The continuous mixer shall 1) be equipped with a metering device that automatically measures and records the aggregate volumes and the corresponding resin volumes and 2) have a readout gage, visible to the Engineer at all times, that displays the volumes being recorded. The volumes shall be recorded at no greater than five (5) minute intervals along with the time and date of each recording. A printout of the recordings shall be furnished to the Engineer at the end of each work shift.
A minimum of four (4) Class B fire extinguishers, five pound (5 lb.) minimum, in good working order shall be mounted approximately equidistant around the perimeter of each mixer unit. The capacity, operating speed, and all mix control constants shall be clearly and prominently mounted on the unit by the System Provider in a durable metal plate or plates.

3. Finishing and Texturing. Finishing shall be performed by hand trowel or approved equal and shall ensure a smooth finish between the PPC sand mix filled rumble strip and the surrounding existing deck surface.
E. Surface Preparation. All structural slab surfaces that will be in contact with the PPC sand mix shall be prepared as follows:

1. The Contractor shall determine the size of shot, flow of shot, forward speed of shot blast machine and number of passes necessary to provide a surface capable of a tensile bond strength greater than or equal to 250 psi or a failure area, at a depth of 0.25" or more into the base concrete, greater than 50% of the test area. The acceptance testing shall be performed by the Department per ACI 503R-93, Appendix A of the ACI Manual of Concrete Practice. The Engineer will designate the location of the test patches. A test result shall be the average of three (3) tests. Test patches shall be installed at the same thickness, and with the same materials, equipment, personnel, timing, sequence of operations, and curing period that will be used for placing PPC sand mix. The cleaning practice, materials, and installation procedure will be approved if one passing test result is obtained from each test area when tested at an age of 24 hours or more. Tensile adhesion tests shall not be performed at surface temperatures above 80 degrees F.

Before application of the primer, the entire length of the rumble strips shall be cleaned by shot blasting and other means using the approved cleaning practice to remove any epoxy resins, asphaltic material, oils, dirt, rubber, curing compounds, paint, carbonation, laitance, weak surface mortar and other potentially detrimental materials, which may interfere with the bonding or curing of the PPC sand mix.

If the Engineer determines that an approved cleaning practice has changed prior to the completion of the PPC sand mix application, the Contractor must return to the approved cleaning methods and re-clean the suspect areas or verify through tests at no additional cost to the Department that the practice is acceptable.
All patching and cleaning operations shall be inspected and approved prior to placing the PPC sand mix. Any contamination of the deck after initial cleaning shall be removed. The entire PPC sand mix system shall be applied following the cleaning and prior to shifting traffic onto the rumble strips.

Cleaned pavement surfaces shall not be exposed to vehicular or pedestrian traffic other than that required by the PPC sand mix operation. If the pavement is contaminated before the PPC sand mix is placed, it shall be re-cleaned by abrasive blasting to the satisfaction of the Engineer. No additional payment will be made for re-cleaning work.

The concrete shall be dry at the time of application of the HMWM primer. If deemed necessary, the Department will test for the presence of deck moisture in accordance with ASTM D 4263. The Contractor's means and methods shall allow for placement of the primer within 24 hours of surface cleaning. Dryers shall be used, as necessary, to facilitate the timely placement of the HMWM primer and PPC sand mix materials. After the cleaning operation is completed there shall be no visible evidence of oil, grease, dirt, rust, loose particles, spent abrasives or other foreign material on any of the surfaces to be overlaid.

F. Application.

1. Prime Coat

Prior to applying the prime coat, the area shall be dry and shall be blown clean with oil-free compressed air. The surface temperature during application and curing shall satisfy the System Provider's requirements.
The prime coat shall be uniformly applied to completely cover the surface to receive the PPC sand mix. The rate of spread shall be approximately 1.4 ounces per square foot of deck
surface or as recommended by the System Provider. The prime coat shall be allowed to cure a minimum of 15 minutes before placing the PPC sand mix.

2. Polyester Polymer Concrete Sand Mix

<u>Test Patches</u>

Prior to filling all of the existing rumble strips with PPC sand mix, trial patches shall be placed on a minimum of five (5) adjacent rumble strips to determine initial set time and to demonstrate the effectiveness of the mixing, placing, and finishing equipment proposed as well as curing period. Each trial shall be at least six feet (6 ft.) long. Conditions and equipment used during the construction of the trial shall be similar to those expected and to be used for the construction of the permanent PPC sand mix. If the cleaning practice, materials and installation procedure are not acceptable, the Contractor must remove the failed test patches

and make the necessary adjustments for another length of test patches. Repairs to rejected test patches shall be made at the Contractor's expense at no additional cost to the Department until satisfactory test results are obtained.

The test patch shall have minimum bond strength of 250 psi as determined by ACI 503R-93, Appendix A to assure that the overlay adheres to the prepared surface. Adhesion testing required for acceptance will be performed by the Department.

All excess material used in the trial shall become the property of the Contractor and shall be removed (if required) and disposed of at the Contractor's expense.

Calibration and general mixer operation shall be demonstrated on-site a minimum of five (5) working days prior to anticipated use. The calibration will consist of a weight/volume determination made in a 0.25 cubic yard container, filled with the polyester polymer concrete to be used, struck off, and the volume compared to the mixer output record or reading. When no longer required, as determined by the Engineer, the container and contents shall become the property of the Contractor and shall be disposed of at the Contractor's expense.

The PPC sand mix shall be placed within 120 minutes after the prime coat has been applied.

The PPC sand mix shall contain approximately 12 percent polyester resin by weight of dry aggregate; the exact percentage is dependent on the aggregate chosen and will be determined by the System Provider's technical representative during placement to enable proper finishing and texturing of the finished surface.
The target nominal thickness for the PPC sand mix shall be as shown in the Plans.

Termination edges of the overlay may require application and finishing by hand trowel due to obstructions such as a curb. All hand troweling shall be followed by broadcasting aggregate or surface texturing while the resin is still wet to provide acceptable surface friction characteristics.

The amount of initiator used in the PPC sand mix shall be sufficient to produce an initial set time between 20-120 minutes during placement. The initial set time will be determined by using an initial-setting time Gillmore needle in accordance with the requirements of ASTM C 266. Accelerators or inhibitors may be required to achieve proper set times and shall be used as recommended by the resin System Provider.
The resin binder shall be initiated and thoroughly blended just prior to mixing with aggregate. The PPC sand mix shall be mixed a minimum of two (2) minutes prior to placing.

PPC sand mix shall be placed prior to gelling and within 15 minutes following the addition of the initiator, whichever occurs first. PPC sand mix that is not placed within this time shall become the property of the Contractor and shall be disposed of at the Contractor's expense. Placing includes the broadcasting of finish sand, see below.

The surface temperature of the area to receive PPC sand mix shall be the same as specified above for the prime coat and shall satisfy the System Provider's recommendations.

The finishing equipment used shall strike off the PPC sand mix to the established grade and cross section. Finishing shall consolidate the PPC sand mix to the required relative compaction of not less than 97 percent in accordance with California Test Method 552. Compaction testing required for acceptance will be performed by the Department as deemed necessary by the Department.

The surface shall be textured with an abrasive sand finish. The finish sand shall be applied by either mechanical means or hand broadcasting immediately after strike-off, before gelling occurs, at a minimum rate of 2.75 ounces per square foot.

G. Surface and Thickness Requirements. The smoothness of the PPC sand mix with the surrounding existing deck surface will be tested with a straightedge. The surface shall not vary more than 0.125" from the lower edge of a 12.0 ± 0.2 foot long straight edge placed in any direction. Any surfaces which fail to conform to the required tolerances shall be filled with additional PPC sand mix or modified by grinding.

To ensure adequate pavement friction, the completed PPC sand mix surface shall be free of any smooth or "glassy" areas such as those resulting from insufficient quantities of surface aggregate. Any such surface defects shall be repaired by the Contractor in the manner recommended by the System Provider and approved by the Engineer at no additional cost to the Department.

H. Curing. Traffic and equipment shall not be permitted on the PPC sand mix for a minimum of four (4) hours following final finishing. The PPC sand mix shall be protected from moisture for not less than four (4) hours after finishing. The PPC sand mix shall be allowed to reach sufficient cure, as specified by the System Provider, before subjecting it to traffic loads. Cure time is dependent upon the ambient and deck temperatures. Actual degree of cure and suitability of the PPC sand mix for traffic shall be as determined by the Engineer.

Method of Measurement:

Polyester Polymer Concrete Sand Mix For Rumble Strips will be paid at the Contract Unit Price per cubic foot to include both furnishing and installing.

Basis of Payment:

A. Payment will be made for accepted quantities at the Contract Unit Price as follows:

ITEM	DESCRIPTION	UNIT
625504	POLYESTER POLYMER CONCRETE SAND MIX FOR RUMBLE STRIPS	CF

B. Price and payment for the PPC sand mix Material constitutes full compensation for furnishing and installing including the preparation of the area to receive PPC sand mix including scarifying, shot- or grit-blasting, removal of rust, oil, and other contaminants, protecting the area, placing the bonding grout or primer coat, placing of PPC sand mix, consolidating, curing, texturing, constructing, and broadcasting sand abrasive finish, and for all labor, Equipment, tools, and incidentals necessary to complete the Work.

08/02/2019

628502 - REMOVAL OF EXISTING DECK REPAIRS

Description:

This Work consists of selective removal of unsound concrete that is part of existing deck repairs of variable depths within the structural deck slabs as indicated on the Plans, in accordance with these Special Provisions, and as directed by the Engineer.

Materials:

Not applicable.

Construction Methods:

Following milling of the deck, and prior to hydrodemolition, the Engineer will visually inspect and perform a sounding test on all existing deck repairs. Existing deck repairs are defined as any repairs made to the original deck previous to Contract T201907402. Any existing deck repairs that are loose, partially delaminated, or otherwise unsound, will be measured by the Engineer and marked for removal. The Contractor shall remove the existing unsound deck repairs in accordance with Subsection 628.03(F). The removal shall not include any unsound original bridge deck concrete. Following removal of existing deck repairs as required by the Engineer, all debris shall be removed from the deck prior to hydrodemolition.

Method of Measurement:

Removal of Existing Deck Repairs will be measured by the square foot of existing deck repairs removed prior to the hydrodemolition operation.

Basis of Payment:

Removal of Existing Deck Repairs will be paid for at the Contract Unit Price per square foot for Item 628502 – Removal of Existing Deck Repairs. Payment for all equipment, labor and materials necessary to perform the operation, including the cost of cleaning and repairing reinforcement and cleaning the removal area will be included in the cost of Item 628502 – Removal of Existing Deck Repairs, along with any other incidental work necessary to complete this item.

5/09/2019

701507 - CURB RETAINING WALL, TYPE 1
701508 - CURB RETAINING WALL, TYPE 2
701509 - CURB RETAINING WALL, TYPE 3

Description:

This Work consists of furnishing all materials and constructing Curb Retaining Wall in accordance with locations, notes, and details on the Plans; the Standard Specifications; the Standard Construction Details; and as directed by the Engineer.

Materials:

Materials for Curb Retaining Wall shall conform to the requirements of Sections 610, 611, 612, and 701 of the Standard Specifications, the Plans, and the Standard Construction Details.

Construction Methods:

Construction methods for Curb Retaining Wall shall conform to the requirements of Sections 610, 611, 612, and 701 of the Standard Specifications, the Plans, and the Standard Construction Details.

Method of Measurement:

The Engineer will measure Curb Retaining Wall as the number of linear feet measured along the linear face of acceptably installed and completed Curb Retaining Wall as specified. Any Curb Retaining Wall showing cracks shall be replaced in sections that have a minimum length of 10 feet, at no cost to the Department.

The Curb Retaining Wall Types 1, 2 and 3 will be measured as indicated in the table below:

ITEM NO.	DESCRIPTION	WALL HEIGHT
701507	CURB RETAINING WALL, TYPE 1	GREATER THAN 12” TO 2’-6”
701508	CURB RETAINING WALL, TYPE 2	GREATER THAN 2’-6” TO 3’-0”
701509	CURB RETAINING WALL, TYPE 3	GREATER THAN 3’-0” TO 3’-6”

Basis of Payment:

A. Accepted quantities will be paid at the Contract Unit Prices as follows:

ITEM	DESCRIPTION	UNIT
701507	CURB RETAINING WALL, TYPE 1	LF
701508	CURB RETAINING WALL, TYPE 2	LF
701509	CURB RETAINING WALL, TYPE 3	LF

B. Price and payment will constitute full compensation for excavation within the template of the Item(s), supplying and placing GABC, compaction, forms and forming, supplying, placing, finishing and curing Portland cement concrete, Class A, epoxy-coated reinforcing steel, expansion, sealing and saw cutting, backfill and backfilling, removal of surplus Materials, removal and replacement of cracked and/or damaged Curb Retaining Wall and for all labor, equipment, tools and incidentals required to complete the Work. Excavation and embankment outside the template of the Item(s) shall be paid under Section 202. Rock removal shall be paid under Section 202. Undercut excavation shall be paid under Section 202. For removal and replacement of curb; P.C.C. removal is paid under Section 211, saw cutting is paid under Section 762 and Bituminous Pavement Patching is paid under Section 402 in addition to the curb Item.

C. Price and payment for precast will constitute full compensation for excavation within the template of the Item(s), supplying and placing GABC, compaction, backfill and backfilling, for furnishing all Materials, including reinforcing bar, related to the precast units; designing, fabricating and installing the units on site; and for all labor, tools, Equipment and incidentals required to complete the Work. Accessories and associated elements will be incidental to the respective Item.

05/06/2019

711500 - ADJUST AND REPAIR EXISTING SANITARY MANHOLE

Description:

This work consists of adjusting and repairing existing sanitary manholes in accordance with notes and details on the Plans and as directed by the Engineer.

Materials and Construction Methods:

Materials and construction methods shall conform to the applicable requirements of Section 711 of the Standard Specifications, and the Standard Specifications of the owner of the sewer system. If there is a conflict between the Department's Specifications and the Specifications of the owner, the latter will prevail.

Method of Measurement and Basis of Payment:

The method of measurement and basis of payment for the item shall be made in accordance with Subsections 711.04 and 711.05 of the Standard Specifications.

1/4/17

711503 - GUIDED TUNNEL BORING
711504 - GUIDED TUNNEL BORING OBSTRUCTION REMOVAL

Description.

Install the specified diameter(s) of pipe by the tunneling method where the product pipe or final casing is installed with a Guided Boring Machine (GBM). Tunneling operations shall be in accordance with the requirements specified in the Contract Documents at the locations, alignments and grades shown on the Plans. Work includes review and evaluation of available geotechnical information and performing test pit investigations as required to become familiar with constraints of the site and the subsurface conditions.

Definitions:

A. Bore Pit and Receiving Pits are the working pits at either end of the tunnel. The Bore Pit is an excavation from which equipment operates to install the tunnel. It may incorporate a thrust wall to spread jacking reaction loads to the ground. The Receiving Pit is an excavation at the exit of the tunnel.

B. Casing Pipe is the steel casing pipe that will be placed directly behind the Guided Boring Machine.

C. Guided Auger Boring is a term applied to auger boring systems which are similar to microtunneling, but with the guidance mechanism actuator sited in the Bore Pit. A Pilot Bore is drilled using a rotating drill string and is then enlarged by a reaming head, connected to the steel casing, to the size required for the Casing Pipe. The necessary deviation during pilot boring is provided by a slanted face to the drill head, an asymmetric drill head, eccentric fluid jets, or a combination thereof.

D. Pilot Bore is the action of creating the first (usually steerable) pass of any boring process which later requires enlarging by reaming or other methods.

E. Sewer Pipe is the Ductile Iron Pipe (DIP) that will be placed inside the casing pipe and will convey future sewer flows.

F. Spoil is the excavated material that is conveyed along the tunnel length to either the Bore Pit or Receiving Pit for removal and disposal.

G. Surface Disruption is the settlement or heaving of the ground surface.

H. GBM Methods are methods of installing a Casing Pipe directly behind a Guided Boring Machine (GBM). The GBM excavates soil, rock or combination thereof and conveys it to the launching pit while supporting the roof of the excavation until the casing pipe is installed as the machine advances. For the purpose of these Special Provisions a GBM may include any of the following boring operations: Small Boring Unit (SBU), Guided Auger Boring Machine (GBM), or a Microtunnel Boring Machine (MTBM).

Materials:

A. Casing Pipe: Casing Pipe shall be 24-inch diameter steel casing as described and detailed on the Plans.

B. Sewer Pipe: Sewer Pipe shall be 12-inch Ductile Iron Pipe (DIP) as described and detailed on the Plans.

C. Grout/Flowable Fill: Grout or flowable fill required to fill annulus space between product pipe and casing pipe shall be as described and detailed on the Plans.

Construction Methods:

A. Pre-Qualification

1. The Contractor shall be experienced in tunneling and have completed a minimum of 3 pipeline or conduit construction projects in similar ground and ground water conditions with similar cover conditions below an active interstate, heavily travelled roadway or railroad track within the last five years.

2. The Contractor shall provide to the Engineer a roster of persons to be working on the tunnel installation with names and current phone numbers. The Contractor shall provide resumes for the tunneling foreman and/or supervisor who will be responsible for daily tunneling operations and resumes for the GBM operators. GBM operators shall each have a minimum of 500 feet or 5 drives operating mechanized tunneling equipment similar to equipment mobilized for this contract and in similar ground and cover conditions.

3. Welders, tackers, and welding operators shall be qualified in accordance with applicable ordinances, codes, statutes, rules and regulations of the State of Delaware.

B. Equipment

1. Tunneling Equipment. The tunnel shall be advanced using a GBM which meets the following minimum requirements:

a. Steerable to enable controlled steering in both the vertical and horizontal directions to a tolerance of plus or minus 1 inch from design alignment.

b. Capable of controlling heave and settlement within tolerances specified herein.

c. Capable of ingesting obstructions up to one-third of the diameter of the tunneling machine.

d. If overcutting is required for installation, the lead cutter head or upsizing reamer shall not exceed a ½ inch overcut beyond the outside diameter of casing.

2. Jacking System. Jacking System shall meet the following minimum requirements:

a. The jacking equipment installed shall have a jacking capacity that is at least 150% of the maximum calculated jacking load required to install the pipe.

b. The jacking system shall develop a uniform distribution of jacking forces on the end of the Casing Pipe using thruster rings and cushioning material.

c. Steel casing shall have a minimum load capacity of 150% of the estimated jacking loads.

3. Thrust Blocks. Thrust Blocks shall meet the following minimum requirements:

a. Thrust Blocks shall be designed to transfer jacking loads into the earth and support the maximum pressure developed by the main jacking system. Reaction blocks shall be designed such that movement of the block under load does not affect the drive alignment.

b. Thrust Blocks shall be set perpendicular to the pipe alignment.

4. Excavation Controls. Excavation Controls shall meet the following minimum requirements:

a. The control equipment shall integrate the method of excavation and the removal of spoil and its simultaneous replacement by the pipe.

b. The control system shall synchronize spoil removal, excavation, and jacking speeds as each pipe section is advanced.

c. Work shall stop if tunneling operations result in pipe damage or surface disruption. The Contractor shall propose immediate action to remedy the problem, and submit for review and approval by the Engineer. If approved by the Engineer, such action shall be executed at no additional cost to the Department.

5. Steering Controls. Steering Controls shall provide the following minimum information to the GBM operator:

a. Any deviation of the GBM from the required line and grade of the casing pipe by reference to a laser beam.
b. Grade and roll of the GBM.
c. Jacking load.

d. Torque and RPM of the cutter head.
e. Indication of steering direction.

6. Guidance and Monitoring Equipment. Equipment shall have the ability to identify the position of the advancing GBM with respect to the design line and grade to an accuracy of 1 inch.

C. Submittals

1. Pre-Construction Submittals. The Contractor shall submit the following items to the Engineer for review and acceptance a minimum of 30 calendar days prior to beginning tunnel construction:

a. Personnel. Documentation summarizing the qualifications of key personnel meeting the pre-qualification requirements of these Special Provisions. Resumes shall include detailed descriptions of their tunneling experience in a minimum of three tunneling projects of similar size and scope completed within the last five years. Each tunnel project listed shall include the names and contact information for the owner's representative.

b. Test Pit Findings. Results of test pits at nearby existing bridge foundations. Include date of test pit, location of test pit, description and depth of material encountered, impact of materials on planned tunnel installation.

c. Equipment. Manufacturer's literature describing, in detail, the GBM and ancillary systems to be used including complete description and details of guidance systems and method of grade and alignment adjustments meeting the requirements of these Special Provisions.

d. Tunnel Installation Plan. The Tunnel Installation Plan shall include detailed description of pit installation, tunneling, monitoring, and sewer pipe installation including:

i. Pit dimensions and locations, method of excavation, shoring, bracing, thrust block design, and supporting drawings and calculations sealed by a professional engineer registered in the State of Delaware.
ii. Method for removal and disposal of spoil, description of slurry lubrication and grouting systems, if required, including Material Safety Data Sheets (MSDS), grout mix, proportions, marsh funnel time, and design strength, as well as equipment and injection pressure.
iii. Estimate of jacking loads for casing installation.
iv. Complete and detailed schedule and sequence of construction.
v. A detailed plan for monitoring ground surface disruption due to the tunneling operation. Survey readings from this plan shall be submitted to the Engineer within 4 hours of the readings.
vi. Contingency plans for review and acceptance for the following potential conditions: damage to the pipeline structural integrity and repair, loss and return to line and grade, and loss of ground.
vii. Verification that the Casing Pipe and Sewer Pipe conform to applicable requirements of the Contract Documents.
viii. Methods for installing the Sewer Pipe in the Casing Pipe.

2. Daily Records. Submit daily records of tunneling progress at the end of each tunnel installation shift. Daily records shall document the tunneling work accomplished, the amount of excavated soil and the result of ground surface survey monitoring.

3. Surface Monitoring. Submit subsequent readings of survey monitoring points daily during active tunnel boring operations. Copies of such elevation records shall be furnished to the Engineer on the day they are recorded.

4. As-Built Plans. The Contractor shall submit as-built plans of all tunneling elements within 45 calendar days of Sewer Pipe installation. As-built plans shall include details of the installed casing pipe, installed sewer pipe, abandoned temporary works, permanent structures, backfill materials, post-construction surveys, construction photographs and a report with descriptions of problems encountered and corrective procedures implemented during tunnel installation.

D. Project Conditions

1. The Contractor shall examine the work site and adjacent existing roadways and structures before bidding and shall factor all pertinent information included in the Contract Documents, readily visible and apparent conditions that may affect work, and the planned methodology and sequencing into the bid prices. Subsurface

data should be reviewed and is available as part of the Contract Documents. Subsurface data is provided for informational purposes only and should not be construed as warranting or being representative of all conditions present within the limits of the Work.

2. Before beginning tunnel construction, the Contractor shall perform test pits at nearby existing bridge foundations to verify existing foundations will not impede tunnel installation. Conditions encountered in test pits by the Contractor that deviate from those shown in the Contract Documents shall be described and submitted to the Engineer.

3. The Contractor shall be responsible for all surface disruptions resulting from tunnel operations and shall repair and restore damaged areas and structures to its condition prior to being disturbed at no cost to the Department.

4. The Contractor shall comply with applicable ordinances, codes, statutes, rules and regulations of the State of Delaware, applicable City of Wilmington and local municipality codes, and applicable regulations of the Federal Government, OSHA 29CFR 1926 and applicable criteria of ANSI A1O.16-81, "Safety Requirements for Construction of Tunnel Shafts and Caissons."

E. Bore and Receiving Pits

1. Bore and Receiving Pits shall be of a size commensurate with safe working practices and shall be located as indicated on the Plans. Any request for changes in the location or addition of Pits shall be submitted in writing to the Engineer for review and approval. The cost of additional pits will be considered incidental to the bid price for tunnel installation.
2. The Contractor shall choose the excavation support system to be used in conformance with these Special Provisions. The Contractor shall be responsible for the design of the system. The design of pits shall ensure safe GBM exit from the Bore Pit and entry into the Receiving Pit. The Contractor shall provide and install equipment to keep the Bore Pit free of excessive water in conformance with these Special Provisions. The Contractor shall also provide surface protection during the period of construction to ensure that surface runoff does not enter pits. The Contractor shall take all necessary precautions to protect their equipment, materials, and the completed construction from flooding and associated damage.

3. All pits shall be backfilled in accordance with the Standard Specifications. All shoring materials, bracing, temporary supports, rubbish, and construction materials shall be removed from the job site and disposed of upon completion of Sewer Pipe installation.

F. Tunneling Operations

1. Perform all required operations for installing the proposed casing and sewer pipes to the lines and grades shown on the Plans. When tunneling operations are stopped, the Contractor shall bulkhead the tunnel face if necessary. The tunnel heading shall be evaluated at the end of each shift and secured to the extent necessary to prevent loss of ground and to the satisfaction of the Engineer.

2. Tolerances. Tolerances shall be as follows:

a. The Casing Pipe alignment shall be installed within 3 inches vertical and horizontal of the locations shown on the Plans.

b. Minimum pipe cover shall be as indicated in the on the Plans.

c. Steering corrections made to the tunnel shall be carried out in such a manner that the joint-to-joint angle of any two adjacent pipes shall not exceed 0.5 degrees. A return to line and grade shall be 1 inch in 25 feet.

d. Unless otherwise noted in the Contract Documents, settlement or heave at the ground surface over or adjacent to the tunnel alignment, or adjacent to temporary excavation support systems at Bore and Receiving Pits, roadways, tracks, and existing utilities during and after construction shall not exceed ½ inch. The Engineer shall be contacted immediately, and tunnel operations halted should surface disruptions exceed these limits. The Contractor shall perform or coordinate remedial measures to restore the site prior to restarting tunneling operations at no additional cost to the Department.

e. Over-cut shall not exceed 1/2 inch of the outside diameter of the pipe being installed, unless otherwise approved by the Engineer.

f. If the jacked pipeline is off design line or grade by an amount that requires redesign and construction of the pipeline or associated structure, the Contractor shall do so at no additional cost to the Department.

g. In the event of ground surface disruptions, structure or utility being detected, or damage recorded, the Engineer may order that work be stopped immediately. Before proceeding, the Contractor shall correct any problems causing or resulting from such movement at no additional cost to the Department. If settlement of the existing improvements such as roadways, railroad tracks, etc. occur, work shall be stopped until the settlement has been corrected to the satisfaction of the Engineer. All costs for correction of settlement of the existing improvements until the completion of all contract work shall be the sole responsibility of the Contractor whether such corrective action is performed by the Contractor or the tunneling subcontractor.

3. Obstructions

a. The Contractor shall advance the tunnel through ground at the line and grade shown on the plans through whatever soil material is encountered. The tunneling equipment and method shall be suited to advance the tunnel through material described in Contract Documents, material shown in the boring logs on the Plans, and encountered in test pits performed by the Contractor.

b. An obstruction is defined as material in the ground not described in the Contract Documents or subsurface exploration performed by the Contractor which stops the forward advance of the GBM for more than one hour. Obstructions include but are not limited to any of the following that appear partially or completely within the profile of the tunnel and that prevent forward progress of the tunnel excavation: hard rock or concrete with unconfined compressive strength greater than 1500 psi, concrete debris larger than one-third of the diameter of the tunneling machine, stone masonry, buried trees, timbers or planking, conduits, pipes or drains, concrete or steel piles, and steel sheeting.

c. If the Contractor encounters an obstruction during the tunneling procedure the Contractor shall notify the Engineer immediately. The Contractor shall demonstrate that the conditions encountered at the obstruction differ from those indicated in the Contract Documents and the subsurface exploration performed by the Contractor. The Engineer shall verify that an obstruction has stopped the forward progress for more than one hour duration and shall authorize the Contractor to commence obstruction removal and rescue pit activities to be paid for under the appropriate payment item. Payment for removal shall be from the start of removal operations (not including the first hour) until the successful removal of the obstruction. All work shall be performed in the presence of the Engineer.

d. If after eight hours from the start of removal operations, the obstruction has not yet been removed by appropriate means. Further payment shall not be made under this provision. Compensation for obstruction removal efforts beyond eight hours will be subject to a determination by the Engineer that a differing site condition exists in accordance with the Standard Specifications.

G. Survey Monitoring

1. The Contractor shall monitor the existing ground for surface disruptions above the tunnel as it is being installed. Monitoring points shall be established along the centerline of the pipe, at a maximum of 10-foot spacing.

2. The Contractor shall survey monitoring points prior to start of the tunneling operation to establish a baseline ground surface profile. Readings shall be obtained twice daily form the start of tunneling until the tunneling is complete. Readings shall be made once a week for a period of 4 weeks following installation of the pipe. If movement is identified during this 4-week period readings shall continue until the movement has ceased or corrective action is performed. The Engineer will determine if measurements indicate movement.

3. The Contractor shall increase monitoring frequency when directed by the Engineer. No additional compensation will be made for more frequent monitoring.

H. Sewer Pipe Installation

Sewer Pipe shall be installed in the steel casing pipe with skids or casing spacers as described and detailed on the Plans. For installation on skids the annulus space between the sewer pipe and casing pipe shall be filled as described and detailed on the Plans.

I. Excavation Support Systems and Dewatering Systems

1. Excavation Support Systems

a. Excavation, backfilling and grading shall be performed in accordance with the Standard Specifications and the requirements of these Special Provisions.

b. The Contractor shall select and design all excavation support systems. Support system design shall meet all OSHA, and other applicable requirement for occupancy by personnel performing the work in accordance with the Standard Specifications and the requirements of these Special Provisions.

2. Dewatering Systems

a. Dewatering systems shall be in accordance with the Standard Specifications, and the requirements of these Special Provisions.

b. When water is encountered, provide and maintain a dewatering system with enough capacity to remove water on a 24-hour basis keeping excavations free of water until backfill operations are in progress. Dewatering shall be performed in such a manner that removal of soil particles is held to a minimum. Discharge from dewatering operations shall be directed into approved receiving basins in accordance with all applicable regulatory requirements.

c. Methods of dewatering shall be the responsibility of the Contractor. When dewatering, the Contractor shall monitor the ground above the tunnel for settlement or displacement of the ground, road, tracks, or other facilities or structures. If settlement or displacement is detected, the Contractor shall notify the Engineer immediately and take such action as necessary to maintain safe conditions and prevent damage at no additional cost to the Department.

3. Protection of Drainage Facilities

a. If it becomes necessary during construction to block a ditch, pipe or other drainage facility, the Contractor shall install temporary ditches, pipes or other drainage devices to maintain adequate drainage as approved by the Engineer. The temporary devices shall be removed, and the permanent facilities restored upon completion of the work.

b. The Contractor shall use soil erosion attenuation methods and materials to protect the ditches and other drainage facilities during construction.

Method Measurement:

A. The quantity of Guided Tunnel Boring will be measured as the actual number of linear feet of tunnel bored and accepted, measured from end to end of the tunnel to the nearest 0.1 feet.

B. Guided Tunnel Boring Obstruction Removal, when authorized by the Engineer, will be measured and paid for based on the elapsed time from the start of obstruction removal to the successful removal of the obstruction, up to the limit of four hours (HR). No measurement or payment will be made for removal of obstructions requiring an elapsed time of less than one hour or for which the Engineer has not granted approval for payment under this item in advance of performance of the work.

C. Excavations, maintenance of traffic, and open cut trenching operations utilized as contingency actions are incidental to the Guided Tunnel Boring item.

Basis of Payment:

A. Accepted quantities will be paid at the Contract Unit Prices as follows:

ITEM	DESCRIPTION	UNIT
711503	GUIDED TUNNEL BORING	LF
711504	GUIDED TUNNEL BORING OBSTRUCTION REMOVAL	HR

B. Price and payment will constitute full compensation for furnishing, hauling, and installing Materials including test pits, casing and sewer pipes, casing spacers, bulkheads, grout, flowable fill, and lubricants; constructing bore and receiving pits, disposal of material, design and construction of excavation support system, dewatering, backfill and restoration of ground surface, ground surface monitoring, and for all labor, Equipment, tools, and incidentals required to complete the Work.

C. All material removed from the tunneling operation shall be assumed to be unsuitable and shall be disposed of offsite by the Contractor unless otherwise approved by the Engineer. The cost of removal and disposal of the unsuitable material shall be included in the unit costs listed above. If the Engineer determines that the excavated material from the tunneling operation is suitable for future use, the Contractor may, at their option, dispose of the material in a designated excess suitable material stockpile area approved by the Engineer. No additional compensation shall be paid to the Contractor for placing the excess material in the stockpile area.

05/09/2019

727548 - PORTABLE CHAINLINK FENCE

Description:

This item shall consist of furnishing, erecting and installing Temporary Portable Chainlink Security Fence and associated material at the required location(s) and in accordance with the notes and details on the Plans and as directed by the Engineer.

After the completion of the project, the Temporary Portable Chainlink Security Fence and associated materials shall become the property of the Contractor and shall be removed from the project site.

Materials and Construction Methods:

The Temporary Portable Chainlink Security Fence shall be used as identified on the Plans during construction as directed by the Engineer. The temporary chainlink fence shall be 6' in height and be free standing not to damage the existing paved ground.

When applicable, the Contractor shall submit the final locations of temporary fence during each stage of construction to the Engineer for approval. The Engineer shall approve the Temporary Portable Chainlink Security Fence materials including the posts, portable concrete footer, hardware and methods of securing prior to installation.

Method of Measurement:

The measurement of the item shall be made along the centerline of the Temporary Portable Chainlink Security Fence as the number of linear feet actually furnished and used as required and approved by the Engineer.

Basis of Payment:

The quantity of Temporary Portable Chainlink Security Fence measured as described above, shall be paid for at the contract unit price bid per linear foot. Price and payment shall be full compensation for furnishing, placing, maintaining, removal and disposal of the temporary fence and related accessories, furnishing all labor, materials, portable concrete footer, locking mechanisms, gates, equipment, tools and all incidentals necessary to complete the work. Temporary Portable Chainlink Fence stolen or damaged shall be replaced at the Contractor's expense.

8/30/16

760500 - TOTAL SURFACE HYDRODEMOLITION
760501 - DEEP CUT HYDRODEMOLITION

Description:

This Work consists of surface preparation of the specified existing bridge decks using the hydrodemolition method to provide a highly rough and bondable surface including select removal of all unsound concrete in the structural bridge deck prior to the placement of the proposed Latex-Modified Concrete (LMC) overlay. Work shall also include water control, shielding, all removal and disposal of concrete and debris, additional trim work, cleaning and other preparatory work at each bridge site to prepare individual bridge decks for the placement and finishing of the LMC overlay, and all work as indicated on the Plans, in accordance with these Special Provisions, and as directed by the Engineer.

Deck cores and an impact echo survey were taken in from November 2014 through February 2015 on all project bridges. The coring report and the results of the impact echo survey are included as part of the Contract Documents and are available upon request.

Materials:

Not applicable.

Construction Methods:

A. Environmental Compliance

Prior to the start of any work, the Contractor shall submit an Environmental Compliance Plan (ECP) to the Engineer for review and approval. The ECP shall follow all Federal, State, and Local environmental laws and regulations. The ECP shall include specific details of the Contractor's plan for containment, filtering, and disposal of water, slurry, and other debris, including all best management practices (BMPs) that the Contractor plans to utilize to prevent environmental pollution and protect the waters of the State. All drains, joints, and other locations where discharge water could exit the deck shall be blocked to direct runoff to a central collection and filtering location, as designed by the Contractor. When runoff can be dispersed adjacent to the bridge, BMPs shall be utilized to contain and filter the slurry to prevent the discharge of slurry or other contaminants.

B. Pavement Milling

1. Prior to milling, the depth of the deck reinforcing steel shall be verified in the field. The original thickness of the existing LMC overlay shall be milled to a depth as shown on the Plans using a pavement milling machine in accordance with Subsection 760.03.01 and capable of accurately and automatically establishing profile grades. The entire existing LMC overlay thickness shall be removed including additional depth into the original deck slab as shown on the Plans. Areas adjacent to scuppers or joints (or other locations inaccessible to the milling machine such as the temporary PCC safety barriers for MOT) shall be hand chipped using pneumatic hammers no heavier than the nominal 35-pound class operating at no more than a 45-degree angle from the horizontal. When removing LMC overlay having a variable thickness within a section of the deck, the Contractor shall provide a uniform transition as shown on the Plans. If pavement milling results in the snagging of reinforcing steel, the operation shall be stopped immediately, and the depth of removal adjusted. Damaged or dislodged reinforcing
steel resulting from Contractor negligence during the operation shall be repaired or replaced at the Contractor's expense. All construction debris, wearing surface material, or residual materials from the pavement milling process shall be completely removed from the bridge deck prior to the commencement of hydrodemolition.

2. Following pavement milling of the deck, and prior to hydrodemolition, the Engineer will visually inspect and perform a sounding test on all existing deck repairs in accordance with Item 628502 – Removal of Existing Deck Repairs.

C. Total Surface Hydrodemolition

1. Work shall consist of providing a highly rough and bondable surface including select removal of all unsound concrete in the structural bridge deck during the initial pass of the hydrodemolition equipment. Work shall include the removal and disposal of all concrete and debris as created by the process and includes shielding, deck washing, water control, and any other incidental concrete removal that may be required to prepare the deck for the placement of the LMC overlay.
2. A 'highly rough and bondable surface' is defined as a surface having a 1" amplitude between the peaks and valleys after the hydrodemolition is complete and as shown on the Plans.

D. Deep Cut Hydrodemolition

1. Work shall consist of providing a deep cut of the existing deck to the limits shown on the Plans. The minimum amount of removal shall extend from the bottom of the top layer of transverse reinforcement plus an additional 1" amplitude below the existing deck reinforcement as show on the Plans and shall include providing a highly rough and bondable surface as well as select removal of all unsound concrete in the structural bridge deck in this region during the initial pass of the hydrodemolition equipment. Work shall include the removal and disposal of all concrete and debris as created by the process and includes shielding, deck washing, water control, and any other incidental concrete removal that may be required to prepare the deck for the placement of new deck concrete.

2. A 'highly rough and bondable surface' is defined as noted in Subsection C.2 above.

E. Hydrodemolition Equipment

1. The hydrodemolition equipment shall consist of a water supply system, a high-pressure water pumping system, and a demolition type unit. The demolition unit shall be a robotic, computerized, and self-propelled unit, utilizing a high-pressure water jet stream that can remove concrete to the desired depths specified with a single pass of the unit, including the selective removal of all unsound concrete. It shall also be capable of cleaning rust and concrete particles from all exposed reinforcing steel. The resulting concrete surface shall be one that is highly rough and bondable. All water used in conjunction with the hydrodemolition process shall be potable water, except that stream or lake water may be used if properly filtered prior to use.

2. Only individuals who have experience on bridge deck overlay construction projects of comparable type within the past five (5) years shall operate the hydrodemolition equipment.

3. The demolition unit shall provide shielding to ensure containment of all dislodged concrete within the removal area to protect the traveling public, adjacent properties, and work crews from flying debris on, adjacent to, and/or below the work site.

F. Vacuum Clean-up Equipment

The vacuum equipment shall be equipped with fugitive dust control devices that can remove wet and dry debris, along with standing water, in the same pass.

G. Water Control Plan

1. Prior to the beginning of hydrodemolition, the Contractor shall prepare and submit a water control plan to the Engineer for the control and filtering of all water discharged by the operation. All scuppers, joints, and other locations where discharge water could exit the deck shall be blocked (e.g., drainage openings in temporary PCC safety barriers), to direct runoff to a central collection and filtering location, as designed by the Contractor. The Contractor shall be responsible for compliance with all environmental laws and regulations regarding the discharge of runoff water into the environment. Specific information shall be provided by the Contractor detailing the method of water and debris collection, filtering, treatment, and legal disposal.

2. The Contractor is responsible for the disposal of all concrete and debris, and securing any applicable permits which may be required.

H. Removal Requirements

Removal requirements beyond the use of hydrodemolition equipment shall be in accordance with Subsection 628.03(F) and Item 628502 – Removal of Existing Deck Repairs, except that only pneumatic hammers no heavier than the nominal 35-pound class will be allowed, operating at no more than a 45-degree angle from the horizontal, and in areas that are inaccessible to hydrodemolition equipment, or in previously patched or debonded concrete areas that require removal.

I. Equipment Calibration

1. The robotic hydrodemolition equipment shall be calibrated on a representative sample of sound deck concrete, as directed by the Engineer, to demonstrate the ability to cut to the desired depth, as indicated on the Plans. The minimum allowable water pressure shall be 13,000 psi and the maximum water pressure shall not exceed 20,000 psi. The minimum water usage shall be 20 gallons per minute. The calibration shall accomplish the desired surface roughness, profile, and cutting depth as indicated on the Plans. The equipment shall then be moved to an area of deteriorated deck, as directed by the Engineer, to demonstrate the ability to remove all unsound material. The equipment shall selectively remove all unsound concrete, avoid the removal of unnecessary sound concrete, and provide a highly rough and bondable surface. Calibration is required on each bridge, or when different equipment is brought to the site for use.

2. Upon approval by the Engineer that the equipment settings do selectively remove all unsound concrete and provide a highly rough and bondable surface, the calibration will be approved, and the settings recorded. If the equipment does not demonstrate the ability to produce the desired result, as determined by the Engineer, the equipment shall be removed from the project and the Contractor shall provide other equipment for calibration. No additional contract time or compensation will be allowed for the mobilization of different equipment to the work site.

The operating parameters shall be recorded as follows:

Water Pressure Gauge, PSI
Machine Staging Control (Step), IN
Nozzle Size, IN
Nozzle Type
Nozzle Travel Speed, FPS
Water Usage Rate, GPM

J. Operational Requirements

Upon approval of the calibration, the Contractor shall perform total surface hydrodemolition or deep cut hydrodemolition over the entire top surface of the bridge deck within the limits specified on the Plans with a single pass of the unit. The calibration and production settings shall be maintained and provided in writing to the Engineer. The settings shall be maintained throughout the operation, unless the desired results are not being attained, in which case re-calibration shall be performed. The quality of the cut shall be verified in the field for every 30 linear feet of cutting path per construction stage (i.e., Stages 2, 3A, and 3B). The Engineer may require re-calibration if the appropriate cut and profile as specified on the Plans is not being met. The Contractor shall take steps to prevent damage to existing reinforcing steel. All equipment shall be operated in a manner that does not damage the deck, reinforcing steel or superstructure components to remain. Any damage caused by the Contractor's equipment or negligence shall be repaired at the Contractor's expense. The operator shall minimize the overlap of the individual hydrodemolition passes to limit the amount of sound concrete removal. When the hydrodemolition process is taking place above an area of concern, the Contractor shall take measures to protect that area from hydro blasting through the deck, falling debris, water runoff, or any other action that the Engineer considers a risk to public safety or a risk of property damage. An area of concern shall include, but not be limited to, vehicular traffic, pedestrian traffic, parking areas, basketball courts, parks, private property, railroad property, or any other area of concern as determined by the Engineer. Only those vehicles directly required to perform the hydrodemolition work and clean-up, or corresponding overlay construction equipment, shall be allowed on the bridge deck. Contamination of the deck by construction equipment or any other source shall be prevented.

K. Removal of Slurry and Debris

The Contractor shall clean up the slurry and rubble from the hydrodemolition operations in a timely manner, and before it dries on the deck and reinforcing steel. Vacuum clean up shall follow as closely as possible behind the hydrodemolition process. The deck shall then be blown dry to remove excess water. Following the cleaning, the surface shall be free of all debris, loose material, slurry, or cement paste.

L. Reinforcing Steel

Any reinforcing steel damaged by the Contractor's operation shall be replaced at no additional cost to the Department. Replacement may include the removal of additional concrete to adequately anchor reinforcing steel to the appropriate lap splice length. Where the bond between exposed reinforcing steel and sound concrete has not been compromised as determined by the Engineer, the clearance requirement around existing reinforcing steel will be waived. Partially exposed reinforcing steel is acceptable if, as determined by the Engineer, the bond between exposed reinforcing steel and sound concrete has not been compromised.

M. Sounding

After the initial pass of hydrodemolition and appropriate cleaning, sounding will be done after the deck is clean, dry and frost free. Any unsound deck concrete that remains shall be removed at the Contractor's expense with the use of pneumatic hammers, except that only pneumatic hammers no heavier than the nominal 35-pound class will be allowed, operating at no more than a 45-degree angle from the horizontal.

N. Removal of Remaining Unsound Material

Where existing patches have debonded, or previous unsound overlay material is found below the top mat of reinforcing steel, that material shall be removed with the use of pneumatic hammers or hydrodemolition, except that only pneumatic hammers no heavier than the nominal 35-pound class will be allowed, operating at no more than a 45-degree angle from the horizontal.

O. Full Depth Repair

Work shall consist of localized full depth removal and replacement of the bridge deck in the required areas as shown on the Plans or as determined in the field. Predetermined areas of full depth repair may be performed prior to or after hydrodemolition as additional areas may require full depth repair following hydrodemolition as directed by the Engineer. Full depth deck repair shall be completed in accordance with Subsection 628.03(F) except that the concrete deck repair material used for the full depth repairs shall be placed to an elevation that is approximately one-half of the original deck thickness as shown on the Plans.

P. Final Cleaning Prior to Placement of New LMC Overlay

After completion of hydrodemolition and associated clean-up of debris, but not more than 24 hours prior to placement of the overlay, the entire deck surface shall be thoroughly cleaned by either abrasive blasting or high-pressure water blasting (7,500 psi minimum). All horizontal and vertical surfaces to which the overlay is to bond, including exposed reinforcing steel, shall be blasted clean. Upon cleaning, the deck surface shall be thoroughly saturated to the point that the surface does not dry out, and any excess water removed with compressed air. Clean polyethylene sheeting shall then be used to cover the deck completely until the overlay is poured. If the deck dries out, it shall be re-blasted at no additional cost to the Department.

Q. LMC Overlay Surface Requirements with Hydrodemolition

1. Installation of the LMC overlay shall be in conformance with applicable portions of Section 625 – Concrete Overlays. The overlay shall not be placed on areas of full depth concrete deck repairs until the repair material has reached a minimum of 3,000 psi strength. Where hydrodemolition has left variable depth areas below the plan elevation of the overlay, the entire area shall be poured monolithically with the overlay material. Any standing water on the deck shall be removed prior to placement of concrete overlay material. Hand vibrators shall be used in areas where concrete is being placed around reinforcement, deeper areas within the pour, and along scuppers, parapets, transverse joints, and construction joints.

2. See applicable portions of Subsection 625.03(A) for more details regarding surface preparation, materials, equipment, and other details related to the LMC overlay surface installation.

Method of Measurement:

A. Total Surface Hydrodemolition of the bridge deck will be measured by the square yard to the limits shown on the Plans.

B. Deep Cut Hydrodemolition of the bridge deck will be measured by the square yard to the limits shown on the Plans.

C. Pavement Milling, Deck Repair Full Depth, Removal of Existing Deck Repairs, and Additional Latex-Modified Concrete for Partial Deck Repairs will be measured in accordance with their respective items.

Basis of Payment:

A. Total Surface Hydrodemolition of the bridge deck will be paid for at the Contract Unit Price per square yard for Item 760500 – Total Surface Hydrodemolition, regardless of the number of passes of the equipment. The cost for all equipment, labor and materials necessary to perform the work, including blocking scuppers and roadway joints, initial equipment calibration, any re-calibration, filtering of discharge water, equipment shielding, hand chipping along inaccessible areas, removal of remaining unsound concrete, deck washing, and clean-up, collection and disposal of all debris, slurry, and water produced by the operation, will be incidental to the cost of Total Surface Hydrodemolition, along with any other incidental work necessary to complete this item. Payment for preparation and submittal of the ECP and the water control plan, including its implementation, will not be paid but will be incidental to the Total Surface Hydrodemolition item.

B. Deep Cut Hydrodemolition of the bridge deck will be paid for at the Contract Unit Price per square yard for Item 760501 – Deep Cut Hydrodemolition, regardless of the number of passes of the equipment. The cost for all equipment, labor and materials necessary to perform the work, including blocking scuppers and roadway joints, initial equipment calibration, any re-calibration, filtering of discharge water, equipment shielding, hand chipping along inaccessible areas, removal of remaining unsound concrete, deck washing, and clean-up, collection and disposal of all debris, slurry, and water produced by the operation, will be incidental to the cost of Deep Cut Hydrodemolition, along with any other incidental work necessary to complete this item. Payment for preparation and submittal of the ECP and water control plan, including its implementation, will not be paid but will be incidental to the Deep Cut Hydrodemolition item.

C. Pavement Milling, Deck Repair Full Depth, Removal of Existing Deck Repairs, and Additional Latex-Modified Concrete for Partial Deck Repairs will be paid for under their respective items.

05/08/2019

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 [3mm+2ppmxD] and an angle accuracy of up to 2.0 arc seconds or 0.6 milligons. If the Contractor chooses to use GPS technology in construction stakeout, the Contractor shall provide the Engineer with a GPS rover 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, StormwaterManagement 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-I) 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.

759599 - FIELD OFFICE, SPECIAL II

Description:

This Field Office, Special II item is a field office complex the work of which consists of erecting, furnishing, equipping, maintaining, and removing one (1) double wide modular field office unit, its entrance, and its adjacent parking area and one (1) single wide modular field office unit, its entrance, and its adjacent parking area. These field office units may be situated in different locations. The Contractor shall submit a specific location layout drawing and construction details for each field office, its entrance, and its parking area for approval by the Engineer. Each field office and its parking area shall be for the exclusive use of Department Officials, Engineers, Consultants, and Inspectors.

Each field office structure shall be free of asbestos and/or other hazardous materials. Each field office, its entrance, and its parking area shall be constructed and installed in accordance with all applicable city, county, state, and federal codes. The Contractor shall be responsible for obtaining all required licenses and permits for installation and placement of each field office, its entrance, and its parking area. The costs of obtaining such licenses and permits are to be incidental to the "Field Office, Special II" Item. Each field office shall be available for use by the Department continuously throughout the duration of the project.

Construction of and Equipment for the Field Offices:

The double wide field office shall be new and have a minimum floor space of 1,200 square feet with minimum exterior dimensions of 50'-0" length by 24'-0" width and the single wide 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 of each field office shall be nominal 8'-0". The exterior walls, ceiling, and floor of each field office shall be insulated. Each 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 each 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 each field office of at least 6000) square feet and having a minimum of 12 functional parking spaces striped for full size cars. An entrance shall be constructed to each field office from its point of access to its parking area as determined by its approved location layout drawing and construction details, the cost to be incidental to the "Field Office, Special II" Item. All weather pathways from the parking area to the entrances of each field office shall also be constructed and maintained. This parking area and entrance pathways shall have a minimum of 2" type "C" hot mix on top of minimum 6" graded aggregate subbase. Snow and/or ice shall be removed from the entrance, the parking area, and the entrance pathways of each 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 II" Item.

The ground area 30'-0" from around the perimeter of each field office shall be landscaped and maintained. If the earthen grounds do not have a stand of weed free grass, the surface of this area shall be loosened to a depth of 4" and a satisfactory seedbed shall be prepared free of debris and extraneous matter. The area shall be seeded to a healthy stand of grass or sodded, after which the area shall be watered, mowed, and trimmed a minimum of three times a month during the growing seasons. Cost for this landscaping and maintenance is incidental to the "Field Office, Special II" Item.

Each field office shall have full carpeting, kitchenette facilities, and interior and exterior paneling, lighting, and plumbing fixtures. Each field office shall have a minimum of two (2) exterior doors, each door having a passage and a deadbolt lock. These door locks shall be keyed and at least 2 complete sets of keys shall be supplied to the Engineer's representatives. The exterior doors of each field office shall be insulated or have storm doors. Each field office shall have a minimum of six (6) windows, each window having a minimum

glass area of 1,150 square inches and a horizontal mini-blind covering the full glass area. The windows of each field office shall be insulated or have storm windows, shall be equipped with a locking device, and shall have screens installed and repaired when damaged.

At least two (2) outside water service connections shall be provided at each 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.
Each field office shall be provided with sufficient natural and artificial light and shall be adequately heated and cooled to provide comfortable working conditions.

Each field office shall have satisfactory lighting, electrical outlets, heating equipment, and exhaust fan and air-conditioning connected to an operational power source. Plan and drawing areas shall have individual fluorescent lights situated over their worktables. Replacement fluorescent lights shall be furnished as required. Electrical current, water, and any fuel for heating equipment shall be furnished and the cost of such shall be borne by the Contractor. Maintenance of the heating, exhaust fan, and air-conditioning equipment for each field office shall be provided for by validated service contracts for the length of the Contract. These service contracts shall allow a Department authorized project person to deal directly with the service organization to request repair.

The Contractor shall furnish and maintain two fire extinguishers and provide one lighted "Exit" sign for each exterior passage door of the field offices. Fire extinguisher(s) may be chemical or dry power and shall be UL Classification 10-B:C(min.) and shall be suitable for Types A:B:C fires. A commercial or industrial type first aid and safety kit suitable for project conditions and hazards (including snakebite) shall be provided and maintained to full capacity on a monthly basis in each field office.

The Contractor shall provide an alarm system in each field office for security with electronic, direct connection to a security service provider. The security systems shall have interior motion, window, and entrance detectors and built in manual fire alarms. All windows of each field office shall be covered with steel bar grids as a deterrent to forced entry. The Contractor shall provide validated monitoring and service contracts for the length of the Contract for each field office. These contracts shall allow a Department authorized project person to deal directly with the security service provider to request service and/or repair. The Contractor shall furnish and maintain in each field office an adequate supply of cold potable water, a minimum 23 cubic foot new refrigerator, and a minimum 900-watt new microwave oven. Maintenance of the potable water supply equipment, refrigerator, and microwave shall be provided for by validated service contracts for the length of the Contract. These service contracts shall allow a Department authorized project person to deal directly with the service organization to request repair.

Suitable indoor toilet facilities, conforming to the requirements of the State and Local Boards of Health or of other bodies or courts having jurisdiction in the area, shall be provided for each field office. When separate facilities for men and women are not available or required, a sign with the wording "Rest Room" {letter heights of 1" minimum} shall be placed over the doorway and an adequate positive locking system shall be provided on the inside of the doorway to insure privacy. The facility(s) shall be maintained by the Contractor to be clean and in good working condition and shall be stocked by the Contractor with adequate lavatory and sanitary supplies at all times during the period of the Contract.

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

The telephone system for the field offices shall have a total of 9 lines consisting of 8 direct single lines with call forward busy feature and 1 dedicated facsimile line and have 8 key sets consisting of 1 master key set having privacy feature, and 7 six-button key sets having privacy feature (1 set which may be for wall mounting), all for the official and exclusive use of the Engineer and other representatives of the Department. Location of telephone lines shall by as directed by the Engineer. Arrangement shall be made to allow a Department authorized project person to deal directly with the telephone company to report outages and/or request repair. The Contractor shall arrange for the installation and initial setup of the specified telephone system. Initial installation and setup costs shall be the responsibility of the Contractor as well. All subsequent monthly billings, after initial installation and setup, for each field office telephone system shall be received and paid by the Contractor. A copy of each of these subsequent bills shall be forwarded to the Project

Resident for reimbursement on the contract pay estimate and the reimbursement will be for the amount of the bill only and shall not include any additional mark-up or profit.

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

The field office interiors shall be furnished by the Contractor. The Contractor shall provide new and maintain the following office furnishings, all which are to be approved by the Engineer prior to installation in the field office complex. Placement of these furnishings shall be as directed by the Engineer. These furnishings consist of 4 drafting tables with sufficient drawers for standard size plans, either attached to the tables or in cabinet form, each drafting table to have an ergonomic design spring back stool with five leg base having wheel casters, 9 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, 4 folding tables minimum 6'-0" by 3'-0" each with ergonomic design straight back chair with armrests, 1 work table, 1 supply cabinet, 1 or more clothes closets of ample size to meet inspection manpower requirements, 4 rough plan racks, 4 legal size filing cabinets with 4 drawers, 2 legal size fire-resistant filing cabinets with lock and key with 4 drawers and meeting fire underwriters' approval for not less than one hour test, 2 stackable steel flat file cabinets for 43" by 32" size plan sheets each cabinet having 5 drawers with full suspension, rear hood, and hinged front depressor, 2 book shelves minimum 3'- 6" by 4'-6" each, 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 3' by 2'. These office furnishings will remain the property of the Contractor at the conclusion of the project.

For each field office, the Contractor shall also furnish new and maintain the following office equipment, all which are to be approved by the Engineer prior to installation. The required equipment will enable the Department to synchronize project record keeping and office functions. The equipment shall be delivered in working and useable condition:

> 4 heavy-duty calculators having extra large 12-digit fluorescent display, full size keyboard with contoured keys, two-color ribbon printer, and AC powered;
>
> 1Muratec MFX-2855D or Toshiba e-STUDIO 2330c or approved equal all-in-one copier which includes scanner, printer, and fax. Copier to have high speed wireless and network capability. Copier shall have all necessary software and cables for proper operation and shall be connected to high speed wireless and connected for use to share on a local network. Copier to have zoom and preset reduction and enlargement features, automatic two (2) sided copying, automatic document feeder with minimum 30 sheet capacity with automatic stapling capacity;
>
> 1 micro cassette recorder, having fast playback, voice-activated system, three-digit tape counter, silent auto-stop and pause, two tape speeds, one-touch and follow-up, built-in condenser microphone, cue and review, and rechargeable with combination battery charger/AC adapter;
>
> 1 telephone answering machine having all-digital recording, 14 minute message capacity, selectable message time, voice prompt assistance, day/time stamp, call screening, two-digit LED message indicator, toll saver, power failure memory back-up, and message interrupt from any station; and
>
> 2 digital cameras with minimum 1/2.7" 4.0 mega pixel, 3X optical / 6X precision digital zoom, 12-bit DXP A/D conversion, 2.5" 123K pixel LCD display, 5-mode program AE and each with dual media slots, SXGA/XGA/VGA image resolution, E-mail mode. Also intelligent flash with red-eye protection, MPEG movie mode, clip motion, light metering, TEXT mode (GIF), playback zoom and resize, white balance, lithium battery system and in-camera picture effects, memory stick (minimum 256MB) capability, and storage case.

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

Maintenance of all office equipment in each field office shall be provided for by a validated service contract for the length of the Contract. This service contract shall allow a Department authorized project person to deal directly with the service organization to request repair.

Computer Requirements for Each Field Office:

Each field office shall have two (2) IBM compatible Microcomputer Systems both which will be furnished and maintained by the Contractor for use by the Engineer, the cost to be incidental to the "Field Office, Special II" Item. The specified computer systems will synchronize the construction management functions of the Department to monitor, report, and perform the accounting of the project work. The computer systems and all their related equipment specified below shall be furnished new and remain the property of the Contractor at the conclusion of the Contract. A detailed listing of the proposed computer systems and all their related equipment to be provided by the Contractor shall be submitted for approval by the Engineer prior to furnishing the Microcomputer Systems. The Microcomputer Systems shall be Laptop Computer Systems each with docking station, unless otherwise determined by the Engineer. In each field office both 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 80GB hard drive minimum, integrated Ethernet 10/100, and internal modem. Included software shall support double layer media writing and automatic backup of data;

Monitor (Cathode Ray Tube)

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

Laptop - shall have 15.4” display minimum;

Color Graphics Card

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

Keyboard

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

Printers

2 HP Color LaserJet CP3525n or Xerox Phaser 6280 or approved equal color printers with high speed wireless and network capability. Printers shall have all necessary software and cables for proper operation and shall be connected to high speed wireless and connected for use to share on a local network:

Software

The latest version programs for application management (operating system), word processing, spreadsheet, and anti-virus shall be provided with all user manuals. Upgrades, maintenance, and full technical support by the manufacturer shall be provided for the length of the Contract. The required software will enable the Department to synchronize accounting and record keeping functions between the project, District, and Department offices. A list of programs to be provided

shall be submitted to the Engineer for approval. Software, other than for application management and anti-virus, is to be delivered unopened to the Department's administrative office. All software is to be compatible with and for use to run on "Windows® XP Professional". The required applications software follows and is to be latest version unless noted:
spreadsheet - "Lotus 1-2-3®",
suite - "Microsoft® Office XP Professional",
tracking - "Expedition®",
antivirus - "Norton Systemworks™ 2004, and
software supporting creation of DVD +/- R/RW disks (supporting double layer media writing) and DVDR and DVDRW disks using DVDRW drive, for example: Ahead Nero, Roxio DVD/CD Creator, or some equivalent product. Note: software commonly included as part of the standard CDRW upgrade/standalone package is acceptable if included with the unit;

Related Equipment

Wireless networking hub/router, 802.11g or better, (or other high speed internet access) with all associated hardware (adapters, cables, etc) and software to enable wireless networking (or other high speed internet access) and internet connection sharing for all office computers and printers,
An electrical outlet with dedicated circuit for the main computer unit,
An optical mouse with proper driving software having complete Microsoft emulation,
An internal 56/28.8/14.4 fax modem with MNP5 error checking and complete Hayes emulation having high-speed 14.4 fax capability and regular data transmission between 2400 and 56 baud, with the latest version proper driving software,
Necessary cables for proper operation,
An uninterruptible power supply (UPS) units for protection from power loss or fluctuation, minimum of 6 outlets, adequate to provide a minimum of 30 minutes backup power for an orderly shut down of the computer system with software and connections for automatic system shutdown,
24 bit Sound Blaster compatible PCI soundcard with quality desktop speakers,
A combination surge, spike, and noise protection device with receptacles for all peripherals (may be in combination with the UPS power supply),
A wrist rest suitable for use with the furnished keyboard,
Cleaning kits for disk drives,
An anti-glare filter with grounding wire suitable for use with the furnished monitor, and
All cards, hardware, and operating, anti-virus, and equipment software to be fully installed and operational;

Maintenance and Service

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

Supplies

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

Maintenance Requirements for Each Field Office:

Maintenance of each field office including its entrance and adjacent parking area, for the time required, shall consist of maintenance and/or replacement of all provided items, security system, furniture and equipment, computer systems, providing lavatory supplies, providing trash containers and waste baskets, providing entrance mats at each door, providing replacement items for lighting fixtures, maintaining all utilities, providing vermin and pest control by professional exterminator(s), providing satisfactory and sanitary janitorial and waste disposal services twice a week, providing cleanup of trash and debris on the parking lot and landscaped area once a week, and shall be included in the monthly unit cost.

The Contractor shall provide and deliver for each field office a current copy of all validated field office equipment and computer maintenance, service, assistance and/or monitoring agreements and/or contracts as mentioned hereinabove to the Department's administrative office on or before the first day each field office is ready for use.

Method of Measurement:

This item will not be measured but will be paid for on a monthly basis. Partial months will be paid at the rate of 0.033 months per day.

Basis of Payment:

The field office complex will be paid for on a unit price bid per month, which price shall be full compensation for performing the work specified and the furnishing of all materials, labor, tools, equipment and incidentals necessary to maintain each field office, their entrance, and their adjacent parking area and restore each field office area, entrance, and adjacent parking area to match their original site condition. No separate payment will be made for costs involved for removing hazardous material or underground tanks to install these field offices, their entrances, and their parking areas. One (1) unit of payment will constitute erecting, furnishing, equipping, maintaining, and removing one (1) double wide field office and one (1) single wide field office and their entrances and parking areas. Payment will be made only for the actual number of months that the field office complex is acceptably provided by the Contractor. The field offices, their entrances, and their parking areas shall be ready for use not later than forty-five (45) calendar days after the date of the fully executed Contract and before construction operations begin.

1/19/10

830501 - JUNCTION BOX ON STRUCTURE

Description:

The item shall consist of furnishing and installing Junction Box(es) as detailed on the Plans and specified herein.

Materials and Construction Methods:

Unless noted otherwise on the Plans, the junction box shall be 8" x 8" x 4", cast iron and hot-dipped galvanized. Units shall be surface-mounted to structure and held in place by four stainless steel drop-in anchors and bolts. A flat neoprene gasket shall be cemented to the cover. The unit shall be U.L. listed and NEMA 4.

Method of Measurement:

The quantity of junction boxes will be measured as the number of EACH junction box on structure installed in accordance with these Special Provisions.

Basis of Payment:

The quantity of junction boxes installed, complete, in place and accepted will be paid for at the Contract Unit Price per EACH for Item 830501 - Junction Boxes on Structure. Price and payment constitutes full compensation for furnishing all labor, Materials, tools, Equipment, installation of the box and other related hardware, and all incidentals necessary to complete the Work.

05/08/2019

850520 - LUMINAIRE (LED), 150 WATTS HPS EQUIVALENT
850521 - LUMINAIRE (LED), 250 WATTS HPS EQUIVALENT
850522 - LUMINAIRE (LED), 400 WATTS HPS EQUIVALENT
850523 - LUMINAIRE (LED), 640 WATTS HPS EQUIVALENT (HIGH MAST ONLY)
850524 - LED WALL PACK, 250 WATTS HPS EQUIVALENT
850525 - LED WALL PACK, 400 WATTS HPS EQUIVALENT
850526 - LED WALL PACK, 75 WATTS HPS EQUIVALENT
850527 - LED WALL PACK, 150 WATTS HPS EQUIVALENT

Description:

This work consists of furnishing and installing an LED light fixture (luminaire) on pole (not inclusive in this item) with wattage, lamp type and distribution type in accordance with these and the standard specifications as applicable and as shown on the plans. The LED Wattages above are based on the equivalent output to HPS lighting. Refer to maximum LED Wattages below.

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

The fixture shall also meet the following criteria:

1. Lamps: LED
2. Wattage:
    a. 50 Watt Maximum for Item No. 850526
    b. 90 Watt Maximum for Item No. 850520 and 850527
    c. 175 Watt Maximum for Item No. 850521 and 850524
    d. 250 Watt Maximum for Item No. 850522 and 850525
    e. 450 Watt Maximum for Item No. 850523
3. Voltage: 120V - 277V
4. CRI: 70 Minimum
5. Lumens:
    a. 3,000 to 5,000 for Item No. 850526
    b. 8,000 to 12,000 for Item No. 850520 and 850527
    c. 16,00 to 20,000 for Item No. 850521 and 850524
    d. 27,000 to 31,000 for Item No. 850522 and 850525
    e. 40,000 to 50,000 for Item No. 850523
6. Rated L70 Lamp Life: 100,000 Hours Minimum when operated at 25 Degrees C (77 Degrees F)
7. Distribution: Type II or Type III (unless otherwise indicated)
8. Color Temperature: 3,000 K - 4,500 K
9. Drive Current: 850 mA Maximum
10. Driver: 0-10V Dimming
11. IP66 Rating for optical portion of the housing
12. 10kV/10kA minimum internal surge suppression module, meeting UL 1449/ANSI C62.41.2 Category C
13. 3 Pin NEMA Photocontrol Receptacle with a Shorting Cap.

Luminaire mounting height shall be as indicated on drawings. Luminaire shall provide point illumination of not less than the given values in the table that follows:

Luminaire	Foot-candle Point Table	
	Point 1	Point 2
Luminaire (LED), 75 Watts HPS Equivalent	0.10	0.11
Luminaire (LED), 150 Watts HPS Equivalent	0.16	0.22
Luminaire (LED), 250	0.27	0.37

Watts HPS Equivalent		
Luminaire (LED), 400 Watts HPS Equivalent	0.46	0.55
Luminaire (LED), 640 Watts HPS Equivalent	0.55	0.60

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

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

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

1. CCT and CRI for all luminaires

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

Construction Methods:

Contractor should install luminaires in accordance with the manufacturer's installation instructions and shall follow the following installation requirements:

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

Luminaire identification decals shall be installed to the luminaire housing in accordance with NEMA conventions. The contractor shall ensure the decal is readily visible from the ground and meets **ANSI C136.15-2015 Roadway and Area Lighting Equipment-Luminaire Field Identification standard.**

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

Inspect each installed luminaire for damage. Replace damaged luminaires and components.
Luminaires will be considered defective if they do not pass tests and inspections.
Contractor shall provide fixture cutsheets, details, and the IESNA LM-79 and LM-80 test reports to the engineer for shop drawing review before purchasing.

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

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

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

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

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

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

Method of Measurement:

The quantity of LED luminaires will be measured as the number luminaires furnished, installed, complete in place, and accepted.

Basis of Payment:

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

4/17/2018

905500 - SUPER SILT FENCE

Description:

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

Materials:

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

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

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

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

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

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

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

Construction Methods:

Construction of Super Silt Fence.

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

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

Maintenance of Super Silt Fence.

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

Sediment Removal.

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

Removal of Super Silt Fence.

The super silt fence shall be removed when the Engineer determines that it is no longer required. The super silt fence and all materials incidental to the super silt fence construction shall be removed. All areas

affected by the construction of the super silt fence shall be restored to the original or plan contours and stabilized with seed and mulch.

Method of Measurement:

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

Basis of Payment:

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

3/05/2018

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

JENNIFER COHAN
SECRETARY

UTILITY STATEMENT

July 29, 2019

State Contract No. T201907402

F.A.P. No. NH-N059 (44) P6 #19-07402

Rehabilitation of I-95, 2nd Street On-ramp Improvements

New Castle County

The following utility companies maintain facilities within the project limits:

Artesian Water Company
City of Wilmington (Sewer)
City of Wilmington (Water)
Comcast Cable of New Castle County
Delaware Department of Transportation
Delmarva Power (Electric)
Delmarva Power (Gas)
Verizon Delaware LLC

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

ARTESIAN WATER COMPANY

Artesian Water Company, Inc. (AWC) maintains underground water facilities within the project area. The existing facilities within the project limits are as follows:

EXISTING FACILITIES (SIZE/MATERIAL)	BEGIN STATION	END STATION
20-INCH	STA. 314+27/31' LT. (Line runs parallel with Maryland Ave)	STA. 314+68/51' RT.

There are no anticipated impacts to the existing Artesian Water facilities as part of the proposed construction.

No existing Artesian facilities can be taken out of service.
These facilities will remain in place and active during the duration of this contract.

DelDOT

CITY OF WILMINGTON – SEWER

The City of Wilmington maintains underground sanitary sewer facilities (CSO) within the project area. The existing sewer facilities within the project limits are as follows:

EXISTING FACILITIES (SIZE/MATERIAL)	BEGIN STATION	END STATION
8-INCH TC	STA. 1299+08/94' LT. (Line runs parallel with Maryland Ave)	STA. 1299+68/23' RT.
12-INCH TC	STA. 1799+88/30' LT. (Line runs parallel with Jackson St)	STA. 402+96/ 6' LT.
10-INCH TC	STA. 306+30/ 114' RT. (Line extends beyond LOC)	STA. 306+38/71' LT.
10-INCH TC	STA. 1700+50/ 1' RT. (Line runs parallel with Adams St)	STA. 1700+62/ 1' LT.
24" x 36" BRK	STA. 1700+65/ 47' RT (Line runs parallel with Lancaster Ave)	STA. 1799+30/ 23' RT.
39" x 43" RC	STA. 1700+72/ 46' RT. (Line splits at 29' RT. & extends beyond LOC)	STA. 1704+27/ 6' RT. (Line joins at STA. 1703+90/13' RT. & extends beyond LOC)
12-INCH TC	STA. 303+17/ 44' RT. (Line extends beyond LOC)	STA 303+17/ 26' LT. (Line extends beyond LOC)
	STA. 1702+25/ 25' LT. (Line extends beyond LOC)	STA. 1702+25/ 8' RT.
10-INCH TC	STA. 1703+76/ 22' RT. (Line runs parallel with 2nd St)	STA. 1703+76/ 16' RT.
10-INCH UNK	STA. 203+10/ 9' RT. (Line runs parallel with 2nd St)	STA. 1703+84/ 10' RT.

There are two proposed conflicts with the existing sanitary sewer system as noted below:

EXISTING FACILITIES (SIZE/MATERIAL)	LOCATION	CONFLICT
12-INCH TC	STA. 308+70 / 0' RT.	PROPOSED BRIDGE PIER
12-INCH TC	STA. 311+56 / 15' RT.	PROPOSED BRIDGE PIER

Both conflicts will require relocation of the existing facilities, including construction of eight (8) new sanitary sewer manholes and approximately 540 L.F. of new sewer pipe. It is anticipated this work will be completed by the State's Contractor as part of this contract. As shown in the contract plan sheets UR-01 through UR-05, the State's Contractor will install the following:

PROPOSED FACILITIES (SIZE/MATERIAL)	LOCATION/QUANTITY	CONFLICT
72-INCH PRECAST MANHOLE	STA. 308+34, 97' RT.	PROPOSED BRIDGE PIER
12-INCH PVC	149 L.F.	PROPOSED BRIDGE PIER
48-INCH PRECAST MANHOLE	STA. 309+80, 75' RT.	PROPOSED BRIDGE PIER
12-INCH PVC	187 L.F. (156 L.F. 24-INCH STEEL CASING)	PROPOSED BRIDGE PIER
48-INCH PRECAST MANHOLE	STA. 309+95, 112' LT.	PROPOSED BRIDGE PIER
12-INCH PVC	74 L.F.	PROPOSED BRIDGE PIER
72-INCH PRECAST MANHOLE	STA. 309+32, 152 LT.	PROPOSED BRIDGE PIER
72-INCH PRECAST MANHOLE	STA. 311+15, 73' RT.	PROPOSED BRIDGE PIER
12-INCH PVC	67 L.F.	PROPOSED BRIDGE PIER
48-INCH PRECAST MANHOLE	STA. 311+80, 64' RT.	PROPOSED BRIDGE PIER
12-INCH PVC	48 L.F.	PROPOSED BRIDGE PIER
48-INCH PRECAST MANHOLE	STA. 311+80, 17' RT.	PROPOSED BRIDGE PIER
12-INCH PVC	15 L.F.	PROPOSED BRIDGE PIER
72-INCH PRECAST MANHOLE	STA. 311+69, 6' RT.	PROPOSED BRIDGE PIER

The proposed sanitary sewer relocation work will be done by the State's Contractor as part of proposed construction phasing. It is the contractor's responsibility to coordinate with the City of Wilmington at least two (2) weeks in advance of any sanitary sewer construction.

CITY OF WILMINGTON – WATER

The City of Wilmington maintains underground water facilities within the project area. The existing facilities within the project limits are as follows:

EXISTING FACILITIES (SIZE/MATERIAL)	BEGIN STATION	END STATION
3-INCH	STA. 1298+02/ 90' LT. (Line runs parallel with Nancey St)	STA. 1298+03/ 88' LT.
12-INCH	STA. 1299+07/ 94' LT. (Line runs parallel with Maryland Ave)	STA. 1299+81/ 56' RT.
6-INCH	STA. 314+05/ 20' RT.	STA. 314+30/ 52' RT.

EXISTING FACILITIES (SIZE/MATERIAL)	BEGIN STATION	END STATION
Fire Hydrant connection – 6" D.I.P.	STA. 314+22/ 18' LT. (Line runs parallel with Maryland Ave)	STA. 314+27/ 8' LT.
8-INCH	STA. 313+87/ 54' RT. (Line runs parallel with Linden St)	STA. 314+52/ 22' LT.
4-INCH	STA. 311+04/ 72' RT.	STA. 311+92/ 31' LT. (Line extends beyond LOC)
Fire Hydrant connection – 6" D.I.P.	STA. 1799+46/ 3' LT.	STA. 1799+46/ 14' RT.
16-INCH	STA. 1799+79/ 30' LT. (Line runs parallel with Jackson St)	STA. 402+96/ 2' RT.
Lateral service – size unknown	STA. 402+78/ 2' RT.	STA. 402+78/ 16' RT. (Line extends to water main)
Lateral service – size unknown	STA. 402+71 / 2' RT.	STA. 402+71 / 16' RT. (Line extends to water main)
Lateral service – size unknown	STA. 402+71 / 2' RT.	STA. 402+71 / 16' RT. (Line extends to water main)
Lateral service – size unknown	STA. 402+48/ 2' RT.	STA. 402+48/ 16' RT. (Line extends to water main)
Lateral service – size unknown	STA. 402+09/ 2' RT.	STA. 402+11/ 16' RT. (Line extends to water main)
Lateral service – size unknown	STA. 401+84/ 0'	STA. 401+84/ 16' RT. (Line extends beyond LOC)
Lateral service – size unknown	STA. 401+28/ 3' RT.	STA. 401+28/ 16' RT. (Line extends to water main)
Lateral service – size unknown	STA. 401+26/ 3' RT.	STA. 401+26/ 16' RT. (Line extends to water main)
Lateral service – size unknown	STA. 401+10/ 3' RT.	STA. 401+10/ 16' RT. (Line extends to water main)
Lateral service – size unknown	STA. 400+94/ 3' RT.	STA. 400+94/ 17' RT. (Line extends to water main)
8-INCH	STA. 1700+81/ 45' RT. (Line runs parallel with Lancaster Ave)	STA. 1799+30/ 14' RT.
Fire Hydrant connection – 6" D.I.P.	STA. 1802+67/ 15' RT.	STA. 1802+68/ 3' LT.
12-INCH	STA. 1803+08/ 28' LT.	STA. 1803+08/ 53' RT. (Line extends beyond LOC)
4-INCH	STA. 1700+50/ 4' RT. (Line runs parallel with Adams St)	STA. 1703+86/ 3' RT.
16-INCH	STA. 202+90/ 12' RT. (Line runs parallel with 2nd St)	STA. 1703+86/ 22' RT.
Lateral service – size unknown	STA. 200+19/ 10' RT.	STA. 200+19/ 16' LT.

EXISTING FACILITIES (SIZE/MATERIAL)	BEGIN STATION	END STATION
12-INCH	STA. 1703+86/ 1' LT.	STA. 1704+26/ 1' LT.
Lateral service – size unknown	STA. 1704+10/ 29' RT. (Line extends beyond LOC)	STA. 1704+16/ 25' RT.
Fire Hydrant connection – 6" D.I.P.	STA. 1704+18/ 1' LT.	STA. 1704+21/ 14' LT.

There are no anticipated impacts to the existing City of Wilmington water facilities as part of the proposed construction.

No existing City of Wilmington water facilities can be taken out of service.
These facilities will remain in place and active during the duration of this contract.

COMCAST CABLE OF NEW CASTLE COUNTY

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

1. Comcast maintains a conduit run and underground facilities within project limits from Station 313+54 R55 to Station 313+92 L31.
2. Comcast maintains a conduit run and underground facilities at the southeast corner (Station 1703+63 R38) of the N Adams St / W 2nd St intersection then crossing the north side of the intersection (Station 1704+11).

There are no anticipated impacts to the existing Comcast facilities as part of the proposed construction.

No existing Comcast facilities can be taken out of service.
These facilities will remain in place and active during the duration of this contract.

DELAWARE DEPARTMENT OF TRANSPORTATION

Delaware Department of Transportation (DelDOT) has signal conduit at the following intersections within project limits:

1. Maryland Ave at S Adams St
2. Lancaster Ave at Jackson St
3. W 2nd St at N Jackson St
4. Lancaster Ave at Adams St
5. W 2nd St at N Adams St

DelDOT has lighting conduit at the following locations within project limits:

1. Northside of Linden St
2. Westside of W Adams St near Chestnut St
3. Westside of I-95 S On-ramp from W 2nd St
4. Westside of I-95 S On-ramp from S Jackson St
5. Lancaster Ave at Jackson St

6. Northside of Lancaster Ave
7. Lancaster Ave at Adams St
8. Westside of N Adams St

There are no anticipated impacts to the existing DelDOT signal and lighting facilities as part of the proposed construction.

DELMARVA POWER (ELECTRIC)

Delmarva Power Electric Distribution owns poles and maintains aerial and underground facilities throughout the project area.

TYPE	BEGIN STATION	END STATION
Underground	STA. 1299+29/ 95' LT. (Line runs parallel with Maryland Ave)	STA. 1299+70/ 13' LT.
Underground	STA. 1304+53/ 94' RT. (Line extends beyond LOC)	STA. 1304+57/ 74' RT. (Line extends beyond LOC)
	STA. 1304+80/ 13' LT. (Line extends beyond LOC)	STA. 1305+13/ 171' LT. (Line extends beyond LOC)
Underground	STA. 1700+83/ 44' RT. (Line runs parallel with Lancaster Ave)	STA. 1799+56/ 3' RT.
Underground	STA. 1802+50/ 3' RT.	STA. 1802+50/ 37' RT. (Line extends beyond LOC)

There are no anticipated impacts to the existing Delmarva Power electric facilities as part of the proposed construction.

No existing Delmarva Power 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 Gas maintains underground facilities within the project area. The existing facilities are as follows:

EXISTING FACILITIES (SIZE/MATERIAL)	BEGIN STATION	END STATION
8-INCH	STA. 1299+32/ 95' LT. (Line runs parallel with Maryland Ave)	STA. 1299+73/ 13' LT.
Unknown	STA. 314+05/ 53' RT. (Line runs parallel with Linden St)	STA. 314+38/ 3' RT.
8-INCH	STA. 314+79/ 54' RT. (Line runs parallel with Linden St)	STA. 314+27/ 19' LT.

EXISTING FACILITIES (SIZE/MATERIAL)	BEGIN STATION	END STATION
Unknown	STA. 1299+69/ 21' LT.	STA. 1299+94/ 35' LT. (Line extends to valve)
Unknown	STA. 313+89/ 52' RT.	STA. 313+92/ 54' RT. (Line extends beyond LOC)
4-INCH	STA. 401+70/ 11' RT.	STA. 402+96/ 11' RT. (Line runs parallel with Jackson St)
Unknown	STA. 402+52/ 11' RT.	STA. 402+52/ 16' RT. (Line extends to valve)
Unknown	STA. 402+63/ 11' RT.	STA. 402+63/ 16' RT. (Line extends to valve)
Unknown	STA. 402+87/ 11' RT.	STA. 402+87/ 16' RT. (Line extends to valve)
6-INCH	STA. 400+30/ 12' LT. (Line runs parallel with Jackson St)	STA. 400+90/ 16' RT. (Line runs parallel with Read St)
Unknown	STA. 401+04/ 13' LT.	STA. 401+04/ 17' RT. (Line extends to valve)
Unknown	STA. 401+24/ 12' LT.	STA. 401+24/ 16' RT. (Line extends to valve)
Unknown	STA. 401+47/ 12' LT.	STA. 401+47/ 16' RT. (Line extends to valve)
6-INCH	STA. 1799+30/ 29' RT. (Line runs parallel with Lancaster Ave)	STA. 1799+98/ 30' RT.
Unknown	STA. 400+29/ 4' RT.	STA. 400+41/ 4' RT.
Unknown	STA. 400+33/ 28' RT.	STA. 400+35/ 28' RT.
4-INCH	STA. 400+29/ 13' RT.	STA. 1799+69/ 30' LT. (Line runs parallel with Jackson St)
2-INCH	STA. 1799+46/ 10' LT. (Line runs parallel with Jackson St)	STA. 1799+68/ 10' LT.
Unknown	STA. 1799+64/ 26' LT.	STA. 1799+68/ 27' LT. (Line extends to valve)
Unknown	STA. 400+33/ 11' RT.	STA. 400+59/ 12' RT. (Line extends to valve)
4-INCH	STA. 1799+61/ 33' RT. (Line runs parallel with Lancaster Ave)	STA. 1803+17/ 41' RT.
Unknown	STA. 1700+45/ 30' RT.	STA. 1700+45/ 50' RT.
8-INCH	STA. 1703+99/ 22' RT.	STA. 1704+28/ 17' RT.

There are no anticipated impacts to the existing Delmarva Power gas facilities as part of the proposed construction.

No existing Delmarva Power facilities can be taken out of service.
These facilities will remain in place and active during the duration of this contract.

VERIZON DELAWARE, LLC

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

1. Verizon maintains aerial facilities on the east side of I-95 from Unknown Pole # at Sta. 1297+90 R146 extending southeast and east beyond the project limits.

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

1. Verizon maintains underground facilities along the south side of Maryland Ave from MH3202 at Sta. 1299+66 R34 extending northeast and southwest beyond the project limits.
2. Verizon maintains underground facilities on Maryland Ave from MH 3205 at Sta. 1298+57 L177 extending northwest beyond the project limits and to an existing Delmarva Power owned pole at Sta.1298+96 L219.
3. Verizon maintains underground facilities on the south side of Maryland Ave from MH 3205 at Sta. 1298+57 L177 extending south and dead ending at roughly Sta. 1298+22 L157.
4. Verizon maintains underground facilities along the north side of Maryland Ave from MH3198 at Sta. 1301+2 R206 extending southwest and northeast beyond the project limits.
5. Verizon maintains a conduit run and underground facilities crossing Maryland Ave from Station 1299+29 L2 to Station 1299+65 L2.
6. Verizon maintains a conduit run and underground facilities on the north side of Maryland Ave extending through project limits from Station 1299+45 L96 to Station 1299+87 L13.
7. Verizon maintains underground facilities on Maryland Ave from MH3203 at Sta. 1299+22 L55 extending north to MH 3204 at Sta. 1300+04 L64 before continuing northwest along Linden St beyond the project limits.
8. Verizon maintains underground facilities on the east side of S. Jackson St from MH336 at Sta. 502+53 R75 extending northeast before turning and continuing northwest at roughly station 501+44 R43.
9. Verizon maintains a conduit run and underground facilities crossing S. Jackson St at Station 402+96.
10. Verizon maintains a conduit run and underground facilities on Linden St from Station 1300+19 L99 to a manhole at Station 1300+03 L63.
11. Verizon maintains a conduit run and underground facilities on Linden St from Station 1300+22 L99 to a manhole at Station 1300+03 L63.
12. Verizon maintains a conduit run and underground facilities on Linden St from Station 1300+07 L56 to Station 1300+29 L99.
13. Verizon maintains a conduit run and underground facilities crossing through the project limits at Station 312+75 from offsets L31 to R51.

14. Verizon maintains a conduit run and underground facilities extending from Station 312+59 R62 to a Delmarva Power owned pole at Station 312+51 R51.
15. Verizon maintains a conduit run and underground facilities on Lancaster Ave from Station 1700+72 R46 to Station 1700+71 L20 then runs parallel with Adams St to Station 1703+77 R20.

There are no anticipated impacts to the existing Verizon facilities as part of the proposed construction.

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 or county 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 or county owned sewer or water facilities with facility owners and provide adequate notice to the municipally or county 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, dated August 2016. The Contractor shall contact Miss Utility (1-800-282-8555) two working days prior to any excavation. The Contractor is responsible for ensuring

proper clearances, including safety clearances, from overhead utilities for construction equipment. The State's Contractor is advised to check the site for access purposes for his equipment and, if necessary, make arrangements directly with utility companies for field adjustments to provide 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 State's 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 State's Contractor may be granted an equitable extension of time if determined appropriate by the Engineer. The contractor's means and method of construction are not taken into account when known utility conflicts are identified. If the State's Contractor's means and method of construction create a utility conflict the Utility Statement will prevail in discussions with the utility and the State's Contractor. The State's Contract 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. The State's Contractor is responsible for the support and protection of all utilities when excavating in the vicinity of said utilities.

4. The State's Contractor is responsible for rough grading as required by the roadway construction prior to the Utility Company's placing their proposed facilities, unless otherwise indicated on the plans and/or outlined elsewhere in the Contract Documents.

5. Coordination and cooperation among the Utility Companies and the State's Contractor are of prime importance. Therefore, the State's Contractor is directed to contact the following Utility Company representatives with any questions regarding the proposed work prior to submitting bids and work schedules. Proposed work schedules should reflect the Utility Companies' proposed relocations. The Utility Companies do <u>not</u> work on weekends or legal holidays.

NAME	COMPANY	PHONE	EMAIL
Luis Camacho	City of Wilmington (Water)	(302) 576-3065	lcamacho@wilmingtonde.gov
Michelle Devillers	City of Wilmington (Sewer)	(302) 576-3072	mdevillers@wilmingtonde.gov
Matt Murray	Comcast Cable c/o Americomm, LLC	(717) 713-7586	mattm@americomm-llc.com
Jim Bunting	DelDOT Traffic	(302) 222-5970	Jim.Bunting@delaware.com
Angel Collazo	Delmarva Power – Electric	(302) 454-4370	angel.collazo@delmarva.com
Laszlo Keszler	Delmarva Power – Gas	(302) 429-3364	laszlo.keszler@delmarva.com
George Zang	Verizon Delaware, LLC	(302) 422-1238	george.w.zang@verizon.com

6. 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.

7. 16 Del. C. § 7405B requires notification to and mutually agreeable measures from the public utility operating the electric line for the 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 distance of 10'-0" from all energized lines.

8. In conjunction with bid preparation and prior to starting work, the State's Contractor shall confirm with all respective Utility Companies noted in this Utility Statement to have advance utility relocations that the advance relocations have in fact been accomplished as summarized herein.

PREPARED AND RECOMMENDED BY:

Whitman, Requardt & Associates, LLP Consulting Engineers For Todd Oliver	toliver@wrallp.com Email	7/29/19 Date

APPROVED AS TO FORM:

Delaware Department of Transportation Deborah L. Kukulich	Deborah.Kukulich@delaware.gov Email	7/30/2019 Date

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

CERTIFICATE OF RIGHT-OF-WAY STATUS

STATE PROJECT NO. T201907402

F.A.P. NO. NH-N059(44)

REHABILITATION OF I-95, 2ND STREET ON-RAMP IMPROVEMENTS

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

Monroe C. Hite, III
Chief of Right of Way

July 16, 2019

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

JENNIFER COHAN
SECRETARY

August 30, 2019

ENVIRONMENTAL REQUIREMENTS

FOR
State Contract No. T201907402
Federal Aid No.: NH-N059(44)

Contract Title: Rehabilitation of I-95, 2nd Street On-Ramp Improvements

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

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, are listed below. These requirements 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. DelDOT Environmental Studies Section (302) 760-2264 must be notified if there are any changes to the project methods, footprint, materials, or designs, to allow the Department to coordinate with the appropriate resource agencies (COE, DNREC, and SHPO), for approval.

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

JENNIFER COHAN
SECRETARY

RAILROAD STATEMENT
For

State Contract No.: T201907402

Federal Aid No.: NH-N059(44)

Project Title: Rehabilitation of I-95, 2nd Street On-Ramp Improvements

The following railroad companies maintain facilities within the contract limits:

- ☐ Amtrak
- ☐ CSX
- ☐ Delaware Coast Line
- ☐ East Penn
- ☐ Delmarva Central
- ☐ Maryland & Delaware
- ☐ Norfolk Southern
- ☐ Wilmington & Western
- ☑ None

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 untill 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

23May19
DATE

BID PROPOSAL FORMS

CONTRACT T201907402.01

FEDERAL AID PROJECT NH-N059(44)

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 T201907402.01
- Name of Contractor

CONTRACT ID: T201907402.01 PROJECT(S): NH-N059(44)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 REHABILITATION OF I-95, 2ND STREET ON-RANP IMPROVEMENTS					
0010	201000 CLEARING AND GRUBBING	LUMP	LUMP			
0020	202000 EXCAVATION AND EMBANKMENT	1708.000 CY				
0030	202003 UNDERCUT EXCAVATION	20.000 CY				
0040	202518 SETTLEMENT MONUMENT	26.000 EACH				
0050	204000 TEST HOLE	18.000 CY				
0060	207000 STRUCTURAL EXCAVATION	5009.000 CY				
0070	208000 FLOWABLE FILL	50.000 CY				
0080	209004 BORROW, TYPE C	600.000 CY				
0090	209006 BORROW, TYPE F	476.000 CY				

CANNOT BE USED FOR BIDDING

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0100	211000 REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LUMP	LUMP			
0110	211001 REMOVAL OF PORTLAND CEMENT CONCRETE PAVEMENT, CURB AND SIDEWALK	2600.000 SY				
0120	211002 REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	1145.000 LF				
0130	301001 GRADED AGGREGATE BASE COURSE, TYPE B	927.000 CY				
0140	301002 GRADED AGGREGATE BASE COURSE, TYPE B, PATCHING	8.000 CY				
0150	302005 DELAWARE NO. 57 STONE	55.000 TON				
0160	401016 SUPERPAVE TYPE B, PG 76-22	149.000 TON				
0170	401021 SUPERPAVE TYPE BCBC, PG 64-22	197.000 TON				
0180	401026 BITUMINOUS CONCRETE, SUPERPAVE TYPE C, 160 GYRATIONS PG 64-22 PATCHING	4.000 TON				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0190	401027 BITUMINOUS CONCRETE, SUPERPAVE TYPE B, 160 GYRATIONS PG 64-22 PATCHING	6.000 TON				
0200	401028 BITUMINOUS CONCRETE, SUPERPAVE BITUMINOUS CONRETE BASE COURSE, 160 GYRATIONS PG 64-22 PATCHING	12.000 TON				
0210	401045 SUPERPAVE TYPE C, PG 70-22 (NON-CARBONATE STONE)	608.000 TON				
0220	401046 SUPERPAVE TYPE C, PG 76-22 (NON-CARBONATE STONE)	98.000 TON				
0230	501006 PORTLAND CEMENT CONCRETE PAVEMENT, 12"	1124.000 SY				
0240	601031 REINFORCED CONCRETE PIPE, 12" CLASS IV	137.000 LF				
0250	601032 REINFORCED CONCRETE PIPE, 15", CLASS IV	221.000 LF				
0260	601503 CLEANING BRIDGE SCUPPERS	20.000 EACH				
0270	602001 DRAINAGE INLET, 24" X 24"	1.000 EACH				
0280	602003 DRAINAGE INLET, 34" X 24"	9.000 EACH				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0290	602031 MANHOLE, 48" X 48"	1.000 EACH				
0300	602037 MANHOLE, SPECIAL	LUMP	LUMP			
0310	602067 CONVERTING DRAINAGE INLET TO JUNCTION BOX	6.000 EACH				
0320	602130 ADJUSTING AND REPAIRING EXISTING DRAINAGE INLET	18.000 EACH				
0330	602132 ADJUSTING AND REPAIRING EXISTING MANHOLE	15.000 EACH				
0340	604000 JACKING BRIDGE	LUMP	LUMP			
0350	604001 PROTECTIVE SHIELD	LUMP	LUMP			
0360	604502 PROTECTION OF EXISTING STRUCTURES	LUMP	LUMP			
0370	605021 FURNISH STEEL H PILES, HP 12" X 53"	840.000 LF				
0380	605071 FURNISH STEEL H INDICATOR OR TEST PILES, HP 12" X 53"	131.000 LF				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0390	605121 INSTALL STEEL H PILES, HP 12" X 53"	840.000 LF				
0400	605171 INSTALL STEEL H INDICATOR OR TEST PILES, HP 12" X 53"	131.000 LF				
0410	605201 DYNAMIC PILE TESTING BY CONTRACTOR	3.000 EACH				
0420	605509 MICROPILES	2320.000 LF				
0430	605510 MICROPILE PROOF TEST	6.000 EACH				
0440	607000 MECHANICALLY STABILIZED EARTH WALLS	15873.000 SF				
0450	610002 PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT ABOVE FOOTING, CLASS A	70.000 CY				
0460	610005 PORTLAND CEMENT CONCRETE MASONRY, SUBSTRUCTURE, CLASS A	6.000 CY				
0470	610008 PORTLAND CEMENT CONCRETE MASONRY, PARAPET, CLASS A	248.000 CY				
0480	610010 PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT FOOTING, CLASS B	51.000 CY				

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0490	610012 PORTLAND CEMENT CONCRETE MASONRY, PIER FOOTING, CLASS B	216.000 CY				
0500	610013 PORTLAND CEMENT CONCRETE MASONRY, PIER ABOVE FOOTING, CLASS B	85.000 CY				
0510	610016 PORTLAND CEMENT CONCRETE MASONRY, CLASS D	40.000 CY				
0520	610017 PORTLAND CEMENT CONCRETE MASONRY, SUPERSTRUCTURE, CLASS D	613.000 CY				
0530	610018 PORTLAND CEMENT CONCRETE MASONRY, APPROACH SLAB, CLASS D	385.000 CY				
0540	610019 HIGH EARLY STRENGTH CONCRETE	4.000 CY				
0550	611000 BAR REINFORCEMENT	101427.000 LB				
0560	611001 BAR REINFORCEMENT, EPOXY COATED	267516.000 LB				
0570	613000 EPOXY CONCRETE SEALER	417.000 SF				
0580	613001 SILICONE-BASED ACRYLIC CONCRETE SEALER	24669.000 SF				

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0590	615001 STEEL STRUCTURES	LUMP	LUMP			
0600	623003 REPLACE ANCHOR BOLTS	14.000 EACH				
0610	623500 BRONZE BEARINGS	44.000 EACH				
0620	624000 PREFABRICATED EXPANSION JOINT SYSTEM, 3"	333.000 LF				
0630	625000 LATEX MODIFIED CONCRETE OVERLAY INSTALLATION	7068.000 SYIN				
0640	625001 FURNISHING LATEX-MODIFIED CONCRETE OVERLAY	247.000 CY				
0650	625503 ADDITIONAL LATEX-MODIFIED CONCRETE FOR PARTIAL DECK REPAIRS	25.000 CY				
0660	625504 POLYESTER POLYMER CONCRETE SAND MIX FOR RUMBLE STRIPS	45.000 CF				
0670	628041 DEEP SPALL REPAIR	20.000 CF				
0680	628042 REHABILITATION OF PORTLAND CEMENT CONCRETE MASONRY	2.000 CY				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS		UNIT PRICE DOLLARS	CTS	BID AMOUNT DOLLARS	CTS
0690	628053 DECK REPAIR, FULL DEPTH	15.000	SF				
0700	628070 DRILLING HOLES AND INSTALLING DOWELS	184.000	EACH				
0710	628502 REMOVAL OF EXISTING DECK REPAIRS	15.000	SF				
0720	701011 PORTLAND CEMENT CONCRETE CURB, TYPE 1-4	155.000	LF				
0730	701013 PORTLAND CEMENT CONCRETE CURB, TYPE 1-8	169.000	LF				
0740	701020 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 3-2	518.000	LF				
0750	701022 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 3-6	811.000	LF				
0760	701509 CURB RETAINING WALL, TYPE 3	254.000	LF				
0770	705001 PORTLAND CEMENT CONCRETE SIDEWALK, 4"	410.000	SF				
0780	705002 PORTLAND CEMENT CONCRETE SIDEWALK, 6"	2270.000	SF				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0790	705007 SIDEWALK SURFACE DETECTABLE WARNING SYSTEM	63.000 SF				
0800	705009 PEDESTRIAN CONNECTION, TYPE 2, 3, AND/OR 4	270.000 SF				
0810	709001 PERFORATED PIPE UNDERDRAINS, 6"	518.000 LF				
0820	710002 ADJUST WATER VALVE BOXES	16.000 EACH				
0830	711011 INSTALLING SANITARY SEWER, PVC, 12"	390.000 LF				
0840	711021 INSTALLING SANITARY SEWER, DIP, 12"	27.000 LF				
0850	711500 ADJUST AND REPAIR EXISTING SANITARY MANHOLE	10.000 EACH				
0860	711503 GUIDED TUNNEL BORING	156.000 LF				
0870	711504 GUIDED TUNNEL BORING OBSTRUCTION REMOVAL	40.000 HOUR				
0880	720021 GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	46.000 LF				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0890	721001 GUARDRAIL END TREATMENT, TYPE 1-31, TEST LEVEL 3	2.000 EACH				
0900	721010 GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 1-31	2.000 EACH				
0910	727005 DECORATIVE FENCE	1434.000 LF				
0920	727006 TEMPORARY CONSTRUCTION FENCE	242.000 LF				
0930	727548 PROTABLE CHAIN LINK FENCE	1730.000 LF				
0940	760007 RUMBLE STRIPS, CONCRETE	427.000 LF				
0950	760010 PAVEMENT MILLING, BITUMINOUS CONCRETE PAVEMENT	10700.000 SYIN				
0960	760013 PAVEMENT MILLING, PORTLAND CEMENT CONCRETE PAVEMENT	3382.000 SYIN				
0970	760500 TOTAL SURFACE HYDRODEMOLITION	950.000 SY				
0980	760501 DEEP CUT HYDRODEMOLITION	281.000 SY				

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0990	762001 SAW CUTTING, CONCRETE, FULL DEPTH	1311.000 LF				
1000	763000 INITIAL EXPENSE/DE-MOBILIZATION	LUMP	LUMP			
1010	763501 CONSTRUCTION ENGINEERING	LUMP	LUMP			
1020	763503 TRAINEE	1040.000 HOUR	0.80000		832.00	
1030	763508 PROJECT CONTROL SYSTEM DEVELOPMENT PLAN	LUMP	LUMP			
1040	763509 CPM SCHEDULE UPDATES AND/OR REVISED UPDATES	15.000 EAMO				
1050	763599 FIELD OFFICE, SPECIAL II	15.000 EAMO				
1060	801000 MAINTENANCE OF TRAFFIC	LUMP	LUMP			
1070	802003 ARROW PANELS TYPE C	1000.000 EADY				
1080	803001 FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	175.000 EADY				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1090	805001 PLASTIC DRUMS	88800.000 EADY				
1100	806001 TRAFFIC OFFICERS	900.000 HOUR	75.00000		67500.00	
1110	807001 FURNISH AND INSTALL TEMPORARY PORTLAND CEMENT CONCRETE SAFETY BARRIER, UNPINNED	240.000 LF				
1120	807002 FURNISH AND INSTALL TEMPORARY PORTLAND CEMENT CONCRETE SAFETY BARRIER, PINNED IN BITUMINOUS PAVEMENT	75.000 LF				
1130	807003 FURNISH AND INSTALL TEMPORARY PORTLAND CEMENT CONCRETE SAFETY BARRIER, PINNED IN CONCRETE	1950.000 LF				
1140	807007 REFLECTOR PANELS	60.000 EACH				
1150	807008 GLARE SCREEN	2265.000 LF				
1160	808001 FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE I	300.000 EADY				
1170	808002 FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	300.000 EADY				

CANNOT BE USED FOR BIDDING

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1180	809005 FURNISH TEMPORARY IMPACT ATTENUATOR - NON-GATING, REDIRECTIVE, TEST LEVEL 3	3.000 EACH				
1190	810001 TEMPORARY WARNING SIGNS AND PLAQUES	34500.000 EADY				
1200	811007 FLAGGER, NEW CASTLE COUNTY, FEDERAL	440.000 HOUR				
1210	811016 FLAGGER, NEW CASTLE COUNTY, FEDERAL, OVERTIME	110.000 HOUR				
1220	813001 TEMPORARY BARRICADES, TYPE III	24000.000 LFDY				
1230	817002 PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, ALKYD-THERMOPLASTIC	2075.000 SF				
1240	817005 PERMANENT PAVEMENT STRIPING, ALKYD-THERMOPLASTIC, 5"	45.000 LF				
1250	817013 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	13265.000 LF				
1260	817014 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 10"	1595.000 LF				

CANNOT BE USED FOR BIDDING

CONTRACT ID: T201907402.01 PROJECT(S): NH-N059(44)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS		UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1270	817018 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, BLACK, 3"`	2950.000	LF				
1280	817020 RETROREFLECTIVE PREFORMED PATTERENED MARKINGS, 5"	33.000	LF				
1290	817022 RETROREFLECTIVE PREFORMED PATTERNED MARKINGS, 8"	625.000	LF				
1300	817023 RETROREFLECTIVE PREFORMED PATTERNED MARKINGS, 13"	115.000	LF				
1310	817027 RAISED/RECESSED PAVEMENT MARKER	65.000	EACH				
1320	817031 REMOVAL OF PAVEMENT STRIPING	2870.000	SF				
1330	818003 SUPPLY OF FLAT SHEET ALUMINUM SIGN PANEL, TYPE XI, RETROREFLECTIVE SHEETING	110.000	SF				
1340	818006 SUPPLY OF EXTRUDED ALUMINUM SIGN PANEL, TYPE XI, RETROREFLECTIVE SHEETING	363.000	SF				
1350	819016 INSTALLATION OF 4" DIAMETER HOLE, LESS THAN OR EQUAL TO 6" DEPTH	5.000	EACH				

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS		UNIT PRICE DOLLARS	CTS	BID AMOUNT DOLLARS	CTS
1360	819018 INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON SINGLE SIGN POST	62.000	EACH				
1370	819019 INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON MULTIPLE SIGN POSTS	69.000	SF				
1380	820002 REINFORCED CONCRETE MASONRY SIGN FOUNDATION, W-8	2.000	EACH				
1390	820009 SUPPLY OF BREAKAWAY I-BEAM SIGN POSTS, W-8	40.000	LF				
1400	820014 SUPPLY AND INSTALLATION OF BOLT KIT FOR BREAKAWAY COUPLING	2.000	EACH				
1410	820015 SUPPLY AND INSTALL OF HINGE PLATE FOR BREAKAWAY COUPLING	2.000	EACH				
1420	820016 SUPPLY AND INSTALLATION OF BREAKAWAY COUPLING SYSTEM	2.000	EACH				
1430	820017 INSTALLATION OF BREAKAWAY I-BEAM SIGN POSTS	2.000	EACH				
1440	820019 INSTALL SIGN PANEL ON BREAKAWAY I-BEAM SIGN SUPPORT	165.000	SF				

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1450	821001 SUPPLY OF BARRIER MOUNTED SIGN SUPPORT, 4" POST	1.000 EACH				
1460	821003 INSTALLATION OF BARRIER MOUNTED SIGN SUPPORT	2.000 EACH				
1470	821005 INSTALLATION OF SIGN ON BARRIER MOUNTED SIGN SUPPORT	29.000 SF				
1480	822001 INSTALL SIGN PANEL OVERLAY	110.000 SF				
1490	822002 INSTALLLATION OF SIGN ON/OVER HIGHWAY STRUCTURE	198.000 SF				
1500	822008 REMOVAL OF OVERHEAD I-BEAM	6.000 EACH				
1510	822009 REMOVAL OF SIGN ON/OVER HIGHWAY STRUCTURE	391.000 SF				
1520	824001 BARRIER MOUNTED DELINEATOR	35.000 EACH				
1530	824002 POST MOUNTED DELINEATORS	5.000 EACH				
1540	830001 CONDUIT JUNCTION WELL, TYPE 1, 20" X 20" PRECAST CONCRETE	10.000 EACH				

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1550	830002 CONDUIT JUNCTION WELL, TYPE 4, 20" X 42-1/2" PRECAST CONCRETE	2.000 EACH				
1560	830008 ADJUST OR REPAIR EXISTING CONDUIT JUNCTION WELL	2.000 EACH				
1570	830010 REMOVAL OF EXISTING JUNCTION WELL	2.000 EACH				
1580	830501 JUNCTION BOX ON STRUCTURE	5.000 EACH				
1590	831001 FURNISH AND INSTALL UP TO 3" FLEXIBLE METALLIC-LIQUID TIGHT CONDUIT	80.000 LF				
1600	831003 FURNISH AND INSTALL UP TO 4" SCHEDULE 80 PVC CONDUIT (OPEN CUT)	545.000 LF				
1610	831004 FURNISH AND INSTALL UP TO 4" SCHEDULE 80 PVC CONDUIT (TRENCH)	800.000 LF				
1620	831006 FURNISH AND INSTALL UP TO 4" GALVANIZED STEEL CONDUIT (TRENCH)	125.000 LF				
1630	831008 FURNISH AND INSTALL UP TO 4" GALVANIZED STEEL CONDUIT (OPEN CUT)	150.000 LF				

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1640	831009 FURISH AND INSTALL UP TO 4" GALVANIZED STEEL CONDUIT (ON STRUCTURE)	1250.000 LF				
1650	832002 FURINSH AND INSTALL 1-CONDUCTOR # 3/0 AWG STRANDED COPPER, TYPE USE-2	850.000 LF				
1660	832006 FURNISH AND INSTALL 1-CONDUCTOR #2 AWG STRANDED COPPER, TYPE USE-2	725.000 LF				
1670	832007 FURNISH AND INSTALL 1-CONDUCTOR #4 AWG STRANDED COPPER, TYPE USE-2	1750.000 LF				
1680	832008 FURNISH AND INSTALL 1-CONDUCTOR #6 STRANDED COPPER, TYPE USE-2	9600.000 LF				
1690	832010 FURNISH AND INSTALL 1-CONDUCTOR #10 STRNDED COPPER, TYPE USE-2	1800.000 LF				
1700	832017 FURNISH AND INSTALL STRANDED INSULATED COPPER GROUND WIRE, 1/#2 AWG	225.000 LF				
1710	832019 FURNISH AND INSTALL STRANDED INSULATED COPPER GROUND WIRE, 1/#6 AWG	3300.000 LF				

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1720	832035 REMOVAL OF CABLE FROM CONDUIT OR TRAFFIC /LIGHTING POLE	3575.000 LF				
1730	833001 BONDING AND GROUNDING EXISTING JUNCTION WELL	1.000 EACH				
1740	834002 POLE BASE, TYPE 3A	1.000 EACH				
1750	834005 POLE BASE, TYPE 4A	8.000 EACH				
1760	834006 POLE BASE, TYPE 6	4.000 EACH				
1770	834007 POLE BASE EXTENSION	34.000 CF				
1780	835002 CABINET BASE TYPE M	1.000 EACH				
1790	835004 CABINET BASE TYPE R	1.000 EACH				
1800	842004 ELECTRIC SERVICE ON PEDESTAL WITH SERVICE RISER	1.000 EACH				
1810	843001 ELECTRICAL TESTING	LUMP	LUMP			

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1820	847002 INSTALL OR REMOVAL OF BASE OR PAD MOUNTED CABINET	1.000 EACH				
1830	847003 LIGHTING CONTROL CABINET - 200 A, 277/480V	1.000 EACH				
1840	850011 REMOVAL OF LUMINAIRE	18.000 EACH				
1850	850522 LUMINAIRE (LED), 400 WATTS, HPS EQUIVALENT	17.000 EACH				
1860	850527 LED WALL PACK, 150 WATTS HPS EQUIVALENT	9.000 EACH				
1870	851003 ALUMINUM LIGHTING STANDARD WITH SINGLE DAVIT ARM, 40' POLE	7.000 EACH				
1880	851007 RELOCATED EXISTING LIGHT STANDARD	3.000 EACH				
1890	905004 INLET SEDIMENT CONTROL, DRAINAGE INLET	44.000 EACH				
1900	905500 SUPER SILT FENCE	1359.000 LF				
1910	906003 SUMP PIT	6.000 EACH				

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1920	908004 TOPSOIL, 6" DEPTH	200.000 SY				
1930	908010 TOPSOILING, 6" DEPTH	2000.000 SY				
1940	908014 PERMANENT GRASS SEEDING, DRY GROUND	2000.000 SY				
1950	908020 EROSION CONTROL BLANKET MULCH	923.000 SY				
1960	908021 TURF REINFORCEMENT MATTING, TYPE 1	104.000 SY				
1970	908023 STABILIZED CONSTRUCTION ENTRANCE	400.000 SY				
	SECTION 0001 TOTAL					
	TOTAL BID					

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Contract No. T201907402.01

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:

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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)

CA 02/2019

CERTIFICATION

Contract No. T201907402.01
Federal Aid Project No. NH-N059(44)

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.

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

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

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

_____

_____

_____

(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.

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I/We acknowledge receipt and incorporation of addenda to this proposal as follows:

No.	Date	No.	Date	No.	Date	No.	Date	No.	Date

BIDDERS MUST ACKNOWLEDGE RECEIPT OF ALL ADDENDA
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. T201907402.01___, to be paid to the **State** for the use and benefit of its Department of Transportation ("**DelDOT**") for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden **Principal** who has submitted to the **DelDOT** a certain proposal to enter into this contract for the furnishing of certain materiel and/or services within the **State**, shall be awarded this Contract, and if said **Principal** shall well and truly enter into and execute this Contract as may be required by the terms of this Contract and approved by the **DelDOT**, this Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and virtue.

CANNOT BE USED FOR BIDDING

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