STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

CONTRACT T201811302

BOYDS CORNER MAINTENANCE YARD

Advertisement Date: December 20, 2021

INCLUDED IN THIS DOCUMENT:

BID PROPOSAL:
GENERAL DESCRIPTION
PROSPECTIVE BIDDER'S NOTES
GENERAL NOTICES
PREVAILING WAGES
SPECIAL PROVISIONS
STATEMENTS
SAMPLE AFFIDAVIT - CRAFT TRAINING
SAMPLE SUBCONTRACTOR FORM
QUANTITY SHEET SUMMARY

ADDITIONAL BID PROPOSAL ITEMS:

ATTACHED OR POSTED DOCUMENTS:
PROJECT PLANS
APPENDIX A – Technical Specifications
BREAKOUT SHEETS
QUESTIONS & ANSWERS (if posted)

PAPER BIDDERS CONTACT DELDOT FOR BID SUBMITTAL DOCUMENTS:
DRUG TESTING AFFIDAVIT;
CERTIFICATION FORM;
BID BOND FORM;
CD FOR BID PRICE ENTRY & PRINTING

PRE-BID MEETING: A virtual Pre-Bid Meeting will be held Thursday January 6, 2022 at 2:00 P.M.

This Bid Proposal and related documents can be viewed on bids.delaware.gov and, for subscribers bidx.com/de/

Internet Bids for Bidders with Bid Express® accounts can be submitted at BIDX.com/de; **OR**;

Paper Bids With CD will be received at the DelDOT Administration Building, Dover, DE;

ALL BIDS DUE PRIOR TO 2:00 P.M. Local Time, JANUARY 25, 2022.

GENERAL DESCRIPTION

A. BIDS DUE: JANUARY 25, 2022 PRIOR TO 2:00 P.M. Local Time – unless changed via Addendum.

BIDS MUST BE SUBMITTED VIA:

(a) Internet - Bidders with DelDOT Bid Express® accounts can submit bids at www.bidx.com/de/.
OR:
(b) Paper Bid Delivered To: Delaware Department of Transportation, Administration Building
North Entrance, Bidders Room, 800 Bay Road, Dover, DE 19901

For paper bids, contact DelDOT at dot-ask@delaware.gov or (302) 760-2031 to request a CD for bidding, required forms, and instructions. Bidders enter their Bid Item prices onto the supplied CD then print the form and deliver in a sealed envelope; the Bid Form, completed CD, and required documents prior to the Bid due date and time. *(CD's cannot be used to submit bids to bidx.com)*

Do not submit both Internet and Paper Bids. *If so, the Internet bid and documents will be rejected.*

BID OPENING: Bids will be publicly opened and read aloud at the Date and Time of the Bid Opening. The Bid Opening will be held at the 'Paper Bid Delivered To' address shown above. Bidder bears the risk of late delivery, bids received after the stated time will be returned unopened.

Attendance is not required. DelDOT offers a call-in number to hear the Bid Opening telephonically.
The telephone number to call is (408) 418-9388.
When prompted, enter Meeting number (access code): 173 970 0618#
It is anticipated the telephone access information will remain the same for all Bid Openings.

B. PRE-BID MEETING: Yes, Refer to: PRE-BID MEETING in PROSPECTIVE BIDDER'S NOTES.

C. LOCATION: New Castle County
These improvements are more specifically shown on the Location Map(s) of the attached Plans.

D. DESCRIPTION: The improvements consist of furnishing all labor and materials for construction of a new maintenance facility to support the maintenance of US 301 and Route 1 including sitework, utilities, a crew quarters, equipment storage buildings, and other incidental construction in accordance with the location, notes and details shown on the plans and as directed by the Engineer.

E. COMPLETION TIME: All work on this contract must be complete within 670 Calendar Days.
The Contract Time includes an allowance for 105 Weather Days.
The Department's intent is to issue a Notice to Proceed for work to start on or about March 28, 2022.

F. SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, DELAWARE DEPARTMENT OF TRANSPORTATION, AUGUST 2020 apply to this Bid Proposal and Project. 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 Standard and Supplemental Specifications can be viewed here. Units of Measure can be found at 101.4.

G. ATTACHMENTS: Included as part of this Bid Proposal are; *Project Plans*; *Questions & Answers* (if posted); *Addenda* (if issued), *Referenced Documents, Documents Posted with this Bid Proposal*; and *Bid documents mailed to contractors.*

H. ADDENDA: All Addenda are posted on the internet at bids.delaware.gov, and bidx.com/de/ and are included as part of the Bid Proposal. The Bidder is responsible to check the Website as needed to ensure that the Bidder is aware of Addenda that are included in the Bid Proposal. If Addenda are issued, the final Addendum will be posted no later than the end of the day two business days prior to the bid date. Each Addendum number and issue date must be entered on the submitted Certification Form. This original Bid Proposal will not be updated, you must refer to each Addendum.

I. QUESTIONS: E-MAIL TO; **dot-ask@delaware.gov**
Questions regarding this project are to be e-mailed to the above address no less than **six business days** prior to the bid opening date in order to receive a posted response. Please include the Contract number in the subject line. Questions

and responses are posted at bids.delaware.gov, and bidx.com/de/. The date of the final posted Questions and Answers document must be entered on the submitted Certification Form.

J. PROSPECTIVE BIDDER'S NOTES:

1. **CRAFT TRAINING** (29 Del. C. § 6962(c)(13)), § 6962(d)(13)) **NEW**
The Craft Training Regulations relating to Public Works Contracting, signed into law on June 7, 2019 are now in effect. These regulations require certain contractors and subcontractors on public works projects to commit to provide craft training for journeyman and apprentice levels at the time of contract execution.
Refer to the full requirements at the following link: https://delcode.delaware.gov/sessionlaws/ga150/chp036.pdf
Note a few of the requirements;
   - If there is a craft training program for a craft in this project, the awarded contractor must commit to provide (and commit that subcontractors must provide) craft training for journeyman and apprentice levels at the time the contractor executes the public works contract if all of the following apply:
     1. This project meets the prevailing wage requirement under § 6960 of this title.
     2. The contractor (or subcontractor) employs 10 or more total employees.
     3. The project is not a federal highway project, except for the US 301 project from the MD/DE state line to RT 1.
   - The craft training required may be provided by any of the following: The contractor; The subcontractor; A program registered under § 1101-4.0 of Title 19 of the Delaware Administrative Code.
   - Any contractor who fails to perform a public works contract or complete a public works project within the time schedule established by the agency in the invitation to bid, may be subject to suspension or debarment for 1 or more of the following reasons: Failure to supply the adequate labor supply ratio for the project; Inadequate financial resources; Poor performance on the project; Failure to provide required craft training.
   - Any subcontractor who fails to provide required craft training may be subject to suspension or debarment.
   - The public works contract must include a requirement that the contractor provide, and the subcontractor provide, craft training for journeyman and apprentice levels if all the above subparagraphs 1, 2, and 3 apply.
   - An Affidavit Of Craft Training Compliance form will be provided for signature at contract execution (sample attached).

2. **BIDDERS MUST BE REGISTERED** with DelDOT in order to submit a bid. E-Mail dot-ask@delaware.gov or call (302) 760-2031 to request registration information.

3. **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 amount bid.

4. **DELAWARE'S CONTRACTOR REGISTRATION ACT** - 19 Del.C. §§ 3601 *et seq*, requires all contractors and subcontractors to register with the Delaware Department of Labor before performing construction services or maintenance. Refer to the GENERAL NOTICES section for further information. **NEW**

5. **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 requirements at the following link:**
http://regulations.delaware.gov/register/december2017/final/21%20DE%20Reg%20503%2012-01-17.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 (*a blank affidavit 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 program in writing.

6. **PERFORMANCE-BASED RATING SYSTEM** - 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 *'General Notices'* for details.

7. **NO RETAINAGE** will be withheld on this contract unless through the Performance-Based Rating System.

8. **EXTERNAL COMPLAINT PROCEDURE** can be viewed on DelDOT's Website, https://deldot.gov/Business/cr/index.shtml?dc=civil_rights_eeo or request a copy by calling (302) 760-2555.

9. **DELAWARE BUSINESS LICENSE;** a copy of your firm's Business License must be submitted with your bid.

10. **FLATWORK CONCRETE** TECHNICIAN CERTIFICATION TRAINING:
    Section 501.3, 503.3, 505.3, 610.3, 701.3 and 702.3 of the 2020 Standard Specifications require contractors to provide an American Concrete Institute (ACI) or National Ready-Mix Concrete Association (NRMCA) certified concrete flatwork technician to supervise all finishing of flatwork concrete.

11. **BREAKOUT SHEETS** are posted with this Bid Proposal and to be completed and submitted with your bid documents. Refer to instructions included with the posted Breakout Sheets.

12. **PRE-BID MEETING**: A virtual Pre-Bid Meeting will be held **Thursday January 6, 2022 at 2:00 P.M**. The information to join the virtual meeting will be posted on-line no later than December 30, 2021.

    In accordance with 29 Del. C. §6962(d)(10)a, at the Pre-Bid Meeting, subcontractor categories will be selected to be included in the bids for performing the work required for this contract. In accordance with Title 29 Del. C. §6962(d)(10)b, a penalty of $2,000.00 will be withheld from the successful bidder for each occurrence for the failure to utilize any or all of the Subcontractors submitted with the bid.

13. **APPENDIX A**. This project incorporates Appendix A, TECHNICAL SPECIFICATIONS, which is posted and a part of this contract. Appendix A contains additional specifications required for this project.

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GENERAL NOTICES

CONTRACTOR REGISTRATION ACT **NEW** 

On July 1, 2021, the Contractor Registration Act, as codified in 19 Del.C. §§ 3601 *et seq,* took effect. This law requires all contractors to register with the Delaware Department of Labor before performing construction services or maintenance. The Contractor Registration Act applies to all contractors that engage in construction and maintenance within the State of Delaware. Additionally, it requires contractors to have Delaware workers' compensation insurance where required, compliance with labor laws, and proof of a state business license. The Delaware Department of Labor's Office of Contractor Registration is responsible for enforcement of the requirements of the Contractor Registration Act. If you have any questions about the contractor registration process, please call 302-430-7739 or email Contract.Registry@delaware.gov. Registration at https://onestop.delaware.gov/.

SPECIFICATIONS :

The Delaware specifications entitled "*Standard Specifications for Road and Bridge Construction August, 2020*", hereinafter referred to as the *Standard Specifications*; the *Supplemental Specifications* to the Standard Specifications effective as of the advertisement date of this Bid Proposal and hereby included by reference; the *Special Provisions*; *Notes on the Plans*; this *Bid Proposal* including referenced documents; any *Addenda* thereto; and any posted *Questions and Answers*; shall govern the work to be performed under this contract. The Contractor shall make itself aware of these specifications, revisions and corrections, and apply them to the applicable item(s) of this contract.

CLARIFICATIONS :

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

ATTESTING TO NON-COLLUSION :

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

QUANTITIES :

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

PERFORMANCE-BASED RATING SYSTEM

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.

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.

PREFERENCE FOR DELAWARE LABOR:

Delaware Code, Title 29, Chapter 69, Section 6962, Paragraph (d), Subsection (4)b: "In the construction of all public works for the State or any political subdivision thereof, or by firms contracting with the State or any political subdivision thereof, preference in employment of laborers, workmen or mechanics shall be given to bona fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State. Each public works contract for the construction of public works for the State or any political subdivision thereof shall contain a stipulation that any person, company or corporation who violates this section shall pay a penalty to the Secretary of Finance equal to the amount of compensation paid to any person in violation of this section."

EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS :

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

LICENSE :

A person desiring to engage in business in this State as a contractor shall obtain a license upon making application to the Division of Revenue.

CONTRACTOR / SUBCONTRACTOR LICENSE: 29 DEL. C. §6967:

(b) No agency shall accept a proposal for a public works contract unless such contractor has provided a proper and current copy of its occupational and/or business license, as required by Title 30, to such agency.

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

DIFFERING SITE CONDITIONS:

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

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

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

No contract adjustment which results in a benefit to the contractor will be allowed unless the contractor has provided the required written notice. No contract adjustment will be allowed under their clause for any effects caused on unchanged work.

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

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

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

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

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

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

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

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

RIGHT TO AUDIT

The Department shall have the right to audit the books and records of the contractor or any subcontractor under this contract or subcontract to the extent that the books and records relate to the performance of the contract or subcontract. The books and records shall be maintained by the contractor for a period of 3 years from the date of final payment under the prime contract and by the subcontractor for a period of 3 years from the date of final payment under the subcontract (29 Del.C. §6930)

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 DELAWARE 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 [Delaware] 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."

Contractors with questions may contact:

Department of Labor, Division of Industrial Affairs,
4425 N. Market Street, Wilmington, DE 19802
Telephone (302) 761-8200
https://dia.delawareworks.com/labor-law/

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 **BUILDING CONSTRUCTION** EFFECTIVE MARCH 15, 2021

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
ASBESTOS WORKERS	24.65	30.36	44.19
BOILERMAKERS	73.81	37.45	55.05
BRICKLAYERS	60.24	60.24	60.24
CARPENTERS	57.31	57.31	45.55
CEMENT FINISHERS	77.86	55.37	23.90
ELECTRICAL LINE WORKERS	49.03	42.04	32.05
ELECTRICIANS	74.70	74.70	74.70
ELEVATOR CONSTRUCTORS	102.70	69.54	89.08
GLAZIERS	78.55	78.55	61.09
INSULATORS	61.48	61.48	61.48
IRON WORKERS	70.81	70.81	70.81
LABORERS	50.55	50.55	50.55
MILLWRIGHTS	78.38	78.38	63.08
PAINTERS	55.26	55.26	55.26
PILEDRIVERS	81.12	42.44	34.32
PLASTERERS	32.18	32.18	23.85
PLUMBERS/PIPEFITTERS/STEAMFITTERS	73.05	56.98	64.01
POWER EQUIPMENT OPERATORS	75.29	75.29	75.29
ROOFERS-COMPOSITION	26.72	26.84	26.03
ROOFERS-SHINGLE/SLATE/TILE	19.83	23.58	18.55
SHEET METAL WORKERS	77.53	77.53	77.53
SOFT FLOOR LAYERS	55.81	55.81	55.81
SPRINKLER FITTERS	63.67	63.67	63.67
TERRAZZO/MARBLE/TILE FNRS	68.10	68.10	67.57
TERRAZZO/MARBLE/TILE STRS	75.52	75.52	74.93
TRUCK DRIVERS	34.57	29.58	23.03

CERTIFIED: 12/07/2021 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: T201811302 Boyds Corner Maintenance Yard, New Castle County

SPECIAL PROVISIONS

S.P. Code	SPECIAL PROVISION DESCRIPTION
211521-20	ABANDONMENT OF WELLS
401502-20	ASPHALT CEMENT COST ADJUSTMENT
401580-20	RIDE QUALITY OF HOT-MIX PAVEMENT
401699-20	QUALITY CONTROL/QUALITY ASSURANCE OF BITUMINOUS CONCRETE
601505-20	DRAINAGE SAFETY END STRUCTURE
602502-20	CONVERTING EXISTING CATCH BASIN TO MANHOLE
710500-20	INSTALLATION OF WATERMAIN AND ACCESSORIES
720557-20	BOLLARDS, STEEL
727507-20	CHAIN-LINK CANTILEVER SLIDE GATE
763501-20	CONSTRUCTION ENGINEERING
763504-20	SITE WORK
763505-20	SIGN
763511-20	ADMISTRATION BUILDING
763530-20	INITIAL EXPENSE
763598-20	FIELD OFFICE, SPECIAL I
831515-20	FURNISH AND INSTALL 3" SCHEDULE 80 PVC CONDUIT (TRENCH)
831516-20	FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (TRENCH)
831523-20	FURNISH AND INSTALL 2" GALVANIZED STEEL CONDUIT (TRENCH)
831524-20	FURNISH AND INSTALL 2-1/2" GALVANIZED STEEL CONDUIT (TRENCH)
831528-20	FURNISH AND INSTALL 2" GALVANIZED STEEL CONDUIT (BORE)
831529-20	FURNISH AND INSTALL 2-1/2" GALVANIZED STEEL CONDUIT (BORE)
831545-20	FURNISH AND INSTALL 4" HDPE SDR-13.5 CONDUIT (BORE)
908523-20	POLLINATOR MEADOW SEED MIX

211521 – ABANDONMENT OF WELLS

DESCRIPTION:

This work consists of abandoning existing wells.

MATERIALS:

A. None

CONSTRUCTION METHODS:

A. The wells will be abandoned with the procedure set forth in the DNREC's Regulations Governing the Construction of Water Wells dated September 11, 2016.

1. All wells to be abandoned shall be sealed only by a licensed well contractor, well driller, or well driver.
2. Must be licensed by DNREC to perform this work.
3. Copies of the above referenced material can be obtained from the Water Supply Section of DNREC's Division of Water Resources.

B. Adhere to Section 10 of DNREC's Regulations Governing the Construction of Water Wells regarding the abandonment of the monitoring wells and other wells as noted on the Plans.
1. Within thirty (30) days of abandonment of the wells, submit to DNREC, a Well Abandonment Report signed by the licensed contractor/driller/driver in charge of on-site supervision of the well abandonments.
2. The report form can be obtained from the Water Supply Branch of DNREC's Division of Water Resources.
3. A copy of the completed report shall be provided to the Department's inspector at the time of submission to DNREC.

METHOD OF MEASUREMENT:

A. The Department will measure the quantity of wells abandoned as the actual number abandoned and accepted.

BASIS OF PAYMENT:

A. The Department will pay for the quantity of wells abandoned at the contract unit price per each. Price and payment will constitute full compensation for:

1. Providing all materials
2. Following all applicable requirements and regulations; and
3. For all labor, equipment, tools, and incidentals required to complete the work.

11/02/2021

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://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.

If the Contractor exceeds the authorized allotted completion time, the price of asphalt cement on the last authorized allotted workday, 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.

12/14/2020

401580 - RIDE QUALITY OF BITUMINOUS PAVEMENT

Description:

This specification outlines requirements for an acceptable ride surface in addition to requirements established in DelDOT Standard Specifications. The Contractor is responsible for providing smoothness characteristics that meet these requirements. The Contractor is responsible for providing equipment, maintenance of traffic (MOT) as required by the Delaware MUTCD, and performing testing in accordance to this specification. All costs for testing and MOT are incidental to this item. Both the International Roughness Index (IRI) and deviations located within a 10' straightedge are used to characterize smoothness in this Special Provision.

Definitions:

Class 1 Project - a project that consists of full depth construction. Full depth construction is considered to be when contract documents or modifications provide opportunity for preparation of the subgrade prior to paving.

Class 2 Project - a project that consists of a minimum of two smoothness opportunities.

Class 3 Project - a project that consists of one smoothness opportunity.

Deviation - a hump or depression that exceeds defined tolerances.

Smoothness Opportunity - a smoothness opportunity is considered to be any of the following; roadway milling, placement of a leveling course, in-place recycling, or placement of a lift of bituminous concrete. The final wearing surface is considered one smoothness opportunity.

Equipment:

The Contractor must have a 10' straightedge available during all paving operations.

The Contractor must also have a high speed or lightweight inertial profiling system that meets requirements of AASHTO M328 capable of collecting data in both wheelpaths simultaneously.

Prior to the start of corrective actions, the Contractor must provide to the Engineer:

1. Manufacturer, Make, and Model of the test system
2. Equipment Owner,
3. Relevant Certifications,
4. Manufacturer Calibration Procedures, and
5. Relevant Operator Training information.

Testing:

The Contractor is responsible for testing the pavement surface using an approved inertial profiler in accordance to manufacturer and AASHTO R57 from the start of paving limits to the end of pavement limits. Testing must be performed 3 times in each lane paved in the direction of traffic flow. Testing must be performed within seven (7) days of completion of project paving operations in each location.

The Contractor is responsible for providing information relative to locations that are to be excluded from calculation of the International Roughness Index. These areas must still meet 10' straightedge requirements.

Areas that are to be tested but will be removed prior to IRI analysis are:

1. 50 feet prior to the first bridge deck expansion joint and 50 feet after the last expansion joint if a bridge deck is excluded from smoothness operations.
2. 50' longitudinally from the center of an existing obstruction within the test area such as a manhole, water main, or catch basin that impedes paving operations.
3. 50' longitudinally from transverse joints that separate it from existing pavement not included on this contract.

Areas that are not to be profiled but are still subject to 10' straightedge requirements are:

1. Shoulder areas
2. Parking lots
3. Ramps, Streets, or Acceleration / Deceleration lanes less than 1000' in length.

Submission Requirements:

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

The Contractor is required to submit summary table IRI reports from their test equipment for 1 run for each lane and direction of paving. This report must also include:

1. Profiling Company Name
2. Date of Test
3. Contract Number
4. Location Description
5. Testing Personnel

The Contractor is required to submit ERD files for each of the 3 tests run in each lane and direction of paving to the Engineer for analysis. The Contractor must provide to the Engineer written documentation indicating the start and end of bridges and the center of obstructions relative to the stationing used on the testing that are not subject to IRI analysis.

Acceptance and Payment:

Acceptance of the final pavement will be based on Engineer calculated IRI values using ProVAL software upon removal of allowable areas of exemption and the number of deviations found in the pavement surface. The IRI measurements will be calculated in 0.1 mile (528 foot) sections for payment purposes. The average value of the three test runs will be used and the average value will be rounded to the nearest tenth. Payments for each section will be based on estimated tonnage calculated from plan thickness and widths using the average maximum specific gravity ("Rice") for all surface mix used at that location.

Deviations equal to or in excess of 0.25" in 10' are to be corrected at the Contractor's expense or will have a discount charge of $200.00 per deviation.

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

Where: L = Length Segment (ft.)

W = Lane Width (ft.)

T = Plan Thickness (in.)

*IRI Incentive / Disincentive = Estimated Tonnage * UP * (PA-100)/100*

Where: UP = Contract Unit Price (Dollars)

PA = Pay Adjustment (Table A)

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

*($\sum$ IRI adj for each section) - Total Deviations * 200*

It is possible to receive incentive for IRI measurements and a discount charge for excessive deviations on the same project. If a 528' section has an IRI value resulting in a deduction of at least 84% of the section pay, the deviation discount charge for that section is disregarded and the IRI discount charge is the only action taken for that section.

Table A: Payment Adjustments for IRI	
Class 1	
IRI per 0.1 mile Segment (in./mi.)	**Pay Adjustment**
≤ 50	103%
> 50 and < 145	100+ 0.2(65- IRI)
≥ 145	84%
Class 2	
IRI per 0.1 mile Segment (in./mi.)	**Pay Adjustment**
≤ 60	106%
> 60 and < 170	100+ 0.2(90- IRI)
≥ 170	84%

Correction to the paving surface, such as diamond grinding with approved equipment, patching, or other measures may be taken at the Contractor's expense and at the Engineers discretion to correct pavement surfaces assessed a discount charge. The Engineer may require corrective actions including remove & replace if the deviation discount charge exceeds 50% of the cost of materials or the IRI pay adjustment is 84%. Deviations must be corrected if it is determined that they are at a height or depth that may create a safety concern.

4/10/2019

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 140ºF 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) B 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 B Quality Level Analysis by the Standard Deviation Method

PU or PL	QU and QL for An@ 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 B Quality Level Analysis by the Standard Deviation Method

	QU and QL for An@ Samples						
PU or PL	**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

601505 - DRAINAGE SAFETY END STRUCTURE

Description:

This work consists of constructing a Drainage Safety End Structure as shown on the construction documents.

Materials:

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

Construction Methods:

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

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

Method of Measurement:

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

Basis of Payment:

A. The Department will pay for Drainage Safety End Structure at the contract price per EACH. Price and payment will constitute full compensation for:

1. Excavating within the template of the item including the foundation, subbase and bedding material;
2. removal and disposal of existing materials required for item construction;
3. foundation preparation;
4. providing and placing materials;
5. supplying and placing reinforcing bars;
6. supplying and installing grates and fasteners;
7. supplying, placing, finishing, and curing PCC;

8. compaction;
9. providing and placing forms and forming;
10. backfilling;
11. removing surplus materials; and
12. removing and replacing cracked or damaged portions of the structure
13. removing and replacing damaged portions of the grate

B. The Department will pay for:
   1. Excavation and embankment outside the template of the item in accordance with section 202 at the direction of the engineer or as otherwise required by the contract;
   2. rock removal in accordance with Section 202;
   3. undercut excavation in accordance with Section 202.

11/15/2021

602502 - CONVERTING EXISTING CATCH BASIN TO MANHOLE

DESCRIPTION:

This work consists of providing all materials and constructing a manhole from an existing catch basin.

MATERIALS:

A.	PCC, Class A or B	Section 1022
B.	Expansion Joint Material	Section 1042
C.	Bar Reinforcement	Section 611 and Section 1037
D.	Curing Compound	Section 1022
E.	Welding	AASHTO / AWS D1.1 Welding Code
F.	Castings	Section 1039.07
G.	Steps	AASHTO M199 and ASTM C478
H.	Polypropylene	ASTM D4101
I.	Borrow, Type C	Section 1001
J.	Rectangular Precast Structures	ASTM C913

CONSTRUCTION METHODS:

Construction in accordance with section 602.3

METHOD OF MEASUREMENT:

The Department will measure the quantity of catch basins converted to manholes and accepted.

BASIS OF PAYMENT:

A. The Department will pay the quantity of catch basins converted to manholes. Price and payment will constitute full compensation for:

1. sawcutting;
2. reinforcing steel;
3. frames and covers;
4. excavating within the template of the item;
5. removal and disposal of existing materials;
6. providing and placing materials;
7. forms and forming;

8. supplying, placing, finishing, and curing PCC;
9. joints;
10. expansion joint material;
11. sealing;
12. backfilling;
13. all labor, equipment, tools, and incidentals necessary to complete the item.

8/16/2021

710500 - WATER MAIN AND ACCESSORIES

Description:

This work consists of furnishing, transporting, installing, and testing the water main, line, laterals, and accessories in accordance with the locations, details and notes on the Contract Documents, and as directed by the Engineer. The work shall be performed in accordance with these Special Provisions, Delaware Standard Specifications, and the requirements of the Standards and Specifications of the Owner. The Owner of the water utility is Artesian Water Company and for purposes of the water utility is referred herein as the Utility Owner. In case of conflict between these Special Provisions, Delaware Standard Specifications, and the Standards and Specifications of the Utility Owner, the Standards and Specifications and all other requirements of the Utility Owner shall prevail.

Special Requirements:

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

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

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

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

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

The Contractor will be permitted to close down specific water mains and services for a period of time not exceeding four (4) hours after obtaining approval from the Owner in order to make connections as shown in the Contract Documents. The schedule for making connections will be so arranged that the water users

will be out-of-service for a minimum period of time. The Contractor will receive no additional compensation for working during off-peak hours.

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

Shutdowns are not permitted if tapping sleeves and valves are specified for making the connections.

Any and all emergency repairs required are the responsibility of the Contractor. Upon notification via telecommunication from the Owner, attend to any repairs immediately. In the event the Owner is unable to contact the Contractor or the Contractor fails to make the emergency repairs in a length of time determined by the Owner, the Owner reserves the right to attend to any or all emergency repair work. In such a case, the Contractor is responsible for reimbursements due to the Owner for the costs of the repairs.

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

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

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

Materials:

Provide Materials as specified in the following DelDOT Specifications:

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

All the materials including pipe, fittings, and all other accessories as listed under this Special Provisions, shall conform to the material and quality requirements of the Standards and Specifications of the Utility Owner. The Utility Owner shall have right to inspect and reject the materials, if his/her specifications

requirements are not met. It is recommended that the Contractor should contact the Utility Owner and get himself/herself familiarized with the applicable requirements of the materials required under this Contract before submitting his/her bid.

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

The Contractor shall transport, handle, and store pipe and fittings as recommended by manufacturer.

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

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

A. WATER LINE MATERIALS

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

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

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

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

1. PIPE BEDDING MATERIAL – Pipe bedding material shall be in accordance with DelDOT Standard details.

2. DUCTILE IRON PIPE (DIP) – Ductile iron water mains shall be push on, Class 52, unless otherwise specified. DIP shall be centrifugally cast in lengths not less than 12 feet and no more than 20 feet, conforming to ANSI/AWWA C151/A21.51-81. Provide a minimum cover of 42 inches. DIP shall be cement lined in accordance with the requirements of ANSI/AWWA C104/121.4-80. A bituminous seal coating shall be applied to the interior and exterior as soon as the cement lining has sufficiently dried.

3. HIGH DENSITY POLYETHYLENE PIPE (HDPE) – HDPE water mains shall be IPS DR 9, unless otherwise specified. 2.5-inch HDPE shall conform to ASTM D3035, AWWA C901. 4-inch HDPE shall conform to ASTM D3035, AWWA C906. Provide a minimum cover of 42 inches.

4. POLYVINYL CHLORIDE (PVC) – PVC water mains 4-inch diameter and above shall be C900, unless otherwise specified and conform to the most recent AWWA C900 standard. Gaskets shall meet ASTM F477 and joints shall be in compliance with ASTM D3139. Provide a minimum cover of 42 inches. PVC water mains less than 4-inches in diameter shall be SDR-21, unless otherwise specified and conform to the most recent ASTM D2241 standard.

5. GATE VALVES

    a. Main gate valves shall be Mueller A-2360 or H2370-20, open left, or approved equal

6. BUTTERFLY VALVES

    a. Main butterfly valves shall be Mueller Lineseal III Class 150B or approved equal.

7. VALVE BOXES – Valve boxes shall be Mueller H-10350, or approved equal.

8. METER PIT – Shall be determined by Artesian Water Company.

9. DIP FITTINGS – DIP Fittings shall be ductile iron casting and have mechanical joints, Class 350 conforming to AWWA specification C153, covering compact fittings. Mechanical joints shall conform to AWWA Specification C111, latest revision, with gaskets made from vulcanized crude rubber compound. Fittings shall be cement lined and bituminous coated. Mastic spray is to be used where any uncoated pipe or fitting is exposed such as welds, Megalugs, scraped coating, etc.

10. HDPE FITTINGS – HDPE Fittings shall be in accordance with AWWA C901/906.

11. PVC FITTINGS – PVC Fittings 4-inch and greater in diameter shall be in accordance with AWWA C900 and ASTM D1784. PVC fittings less than 4-inch in diameter shall be in accordance with ASTM D2241.

12. STIFFENERS INSERTS. Stainless steel stiffener inserts, ASTM 240, shall be used for all fittings and connections to HDPE pipe.

13. BOLTS, NUTS & RODDING – All underground installed bolts, T-bolts, nuts and any rodding required shall be stainless steel, ASTM F 593 Type 316 for all watermain fittings including mechanical joints, hydrants, valves, tees, bends, taps, etc. No other type of bolts, nuts or rodding will be allowed unless approved in writing by the City Engineer.

14. HYDRANTS – Hydrant laterals shall be retraining tee, 6 inch resilient wedge gate valve and box with 6 inch ductile iron pipe. Hydrants shall be Waterous Pacer WB-67-250. Valve opening

shall be 5 ¼ inch, open left. The muzzle arrangement shall be two 2 ½ inch hose connections and one 4 ½ inch pump connections, National Standard Thread. Lateral connection shall be 6 inch mechanical joint. Operating nut shall be 1 ½ inch pentagon.

15. YARD HYDRANTS – Hydrant laterals shall be sized per plan sheet with appropriate resilient wedge gate valve and box. Yard hydrants shall be Mueller FH-15 Post Hydrant with 2 nozzle openings. The muzzle arrangement shall be two 2 ½ inch hose connections, National Standard Thread. Lateral connection shall be sized appropriately. Operating nut shall be 1 ½ inch pentagon.
16. TAPPING SLEEVES AND VALVES – Tapping sleeves shall be Mueller H-615, Mueller Stainless H-304. Tapping valves shall be Mueller H-687, open left. Tapping sleeves shall be a minimum of 6 feet from pipe joints or other fittings.
17. BUILDING SERVICES AND SERVICE SADDLES – Contractor shall be responsible for locating all water services; determining is active or abandoned; and confirming size and material. Locating and determining active status shall be incidental to the service connection item.
    a. CURB STOPS - Curb stops shall be Mueller H-15204, or approved equal.
    b. CURB BOXES - Curb boxes Mueller-H10350, or approved equal.
    c. METER YOKES – Meter yokes shall be Mueller H1412, or approved equal.
    d. WATER METER – The meter (Master Meter) shall be as determined by the Utility Owner.
18. POLYETHYLENE ENCASEMENT MATERIAL – Polyethylene encasement material shall conform to the requirements of AWWA C-105 for tube type installation and 8 mil nominal film thicknesses.
19. BENDS – All bends shall be concrete buttressed or utilize locking gaskets. Refer to construction details in the drawings.
20. RESTRAINED JOINTS – Restrained joints shall be provided at all transition connections. Restrained joints shall be MEGA-LUG series 1100 or approved equal. At locations were bends are required pre-cast thrust blocks. For connection between HDPE and DIP pipe, Contractor shall use a MJ Adapter for connection. Contractor is responsible for restraining DIP joints and fittings at alignment changes; at valve locations where a future tie-in may occur; at valve locations where existing pipe will be removed and replaced during future operations; and as shown on the drawings or required based on requirements of the construction details.
21. Backflow Preventer and Basket Strainer for Temporary Water Main and Hydrostatic Testing: Reduced pressure principal type, flanged and supplied complete with integral valves, following the American Society of Safety Engineers Standard No. 1013 and AWWA C510.
    a. Materials: Bronze, or liquid epoxy coated cast iron body with bronze and stainless steel working parts.
    b. Pressure Requirements: Suitable for supply pressure as high as 175 psi and hydrostatic test pressure of 350 psi.

c. Manufacturers: Conbraco, Febco, Zurn Industries, Watts Regulator or approved equal.

d. Basket Strainers.

i. Installation: Inlet side of backflow preventer following Drawings.

ii. Strainers: Flanged ends, unless otherwise noted.

(1) Strainer bodies: Ductile iron, gray iron, or bronze and designed to withstand maximum working pressure of 175 psi with tapped opening for flushing strained debris.

iii. Screens: Unless otherwise noted, stainless steel or brass sheet metal with ¼ inch perforations.

(1) Open area of screen: At least 4 times inside cross-sectional area of pipe.

iv. Manufacturers: Hersey Products, Inc., Mueller Co., or approved equal.

Construction Methods:

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

A. WATER PIPE INSTALLATION

1. WORKING HOURS – The Utility Owner shall be notified at least 48 hours prior to commencing any work. Contractors are subject to being shut down and or having work rejected if proper notification is not given to the Utility Owner. A schedule of work shall be submitted to the Engineer and Utility Owner prior to construction defining which portions of the contract will occur at night or during the day. Changes to this schedule should be made throughout the construction and reported immediately to the Utility Owner and Engineer. The definition of "Work" also includes the starting of equipment and the delivery of materials to the job site.

2. INSTALLATION OF PIPE AND FITTINGS – Watermain and water services shall be placed with a minimum of 48 inches of finished ground cover from the top of pipe to finished grade. The laying and jointing of water pipe shall be in accordance with the Contract Documents and the requirements of the Utility Owner's Specifications and as stated herein. All pipe and fittings shall be thoroughly cleaned before laying, in accordance with AWWA Standard C601-81 or the now current standard, and shall be kept clean until acceptance of the Work. No Work may be performed except under the supervision of the Utility Owner's inspector.

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

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

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

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

No pipe shall be laid upon a foundation into which frost has penetrated, nor at any time when the Owner or the Engineer shall deem that there is danger of frost penetration at the bottom of the excavation. Keep all excavations free from water or other liquids during the progress of the Work. Excavate and backfill trenches per the applicable requirements of Section 207. Remove all excess Material in accordance with Section 106.08.

3. The Contractor shall keep all excavation free from water or other liquids during the progress of the work; and backfilling of trenches shall meet the applicable requirements of Section 207 of the DelDOT Standard Specifications.

    a. Installation of Polyethylene Pipe (PE) and their appurtenances shall conform to the requirements of AWWA C901/906. The installation shall be to the bedding and backfill conditions specified by the Manufacturer, Plans, Specifications, or Special Provisions.

    b. Installation of ductile iron water mains (DIP) and their appurtenances shall conform to the requirements of AWWA C-600 Specifications, the Plans, Specifications and Special Provisions.

4. PIPE LAYING OPERATIONS – Trench excavation and bedding preparations shall proceed ahead of pipe placement so as to permit proper placement and joining of the pipe and fittings at the prescribed grade and alignment without unnecessary hindrance. All foreign matter or dirt shall be removed from the inside of the pipe and fittings before they are lowered into position in the trench, and they shall be kept clean by approved means during and after laying. The water main materials shall be carefully lowered into laying position by the use of suitable restraining devices. Under no circumstances shall the pipe be dropped or dumped into the trench. At the time of pipe placement, the bedding conditions shall be such as to provide uniform and continuous support for the pipe between bell holes. Bell holes shall be excavated as necessary to make the joint connections, but they shall be no larger than would be adequate to support the pipe throughout its length. No pipe material shall be laid in water or when the trench or bedding conditions are otherwise unsuitable or improper. When placement or handling precautions prove inadequate, in the Engineer's opinion, the Contractor shall provide and install suitable plugs or caps effectively closing the open ends of each pipe section before it is lowered into laying position, and they shall remain so covered until removal is necessary for connection of an adjoining unit. As each length of bell and spigot pipe is placed in laying position, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material, which shall be thoroughly compacted by tamping around the pipe to a height of at least 12 inches above its top.

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

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

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

6. REACTION BACKING – Reaction backing shall be provided at all watermain fittings and at the hydrant in accordance with the typical backing detail shown on the standard details. In any instance where the Engineer determines that solid backing against undisturbed earth is not obtainable for fittings or hydrants, the Contractor shall use stainless steel tie rods, ASTM F 593 Type 316 or mechanical joint retainer glands as directed by the Engineer. Valves on branch lines or in hydrant leads shall in all cases be tied to an adjacent tee or cross fitting or back one full length of pipe.

7. <u>EXCAVATION AND TRENCHING</u> - Excavation shall be performed in accordance with Section 207 of the DelDOT Standard Specifications and Excavation and Backfill for Pipe Trenches herein. The bottom of the trench shall be cut true and even, so that the barrel of the pipe will

have a bearing for the full length. The trenches for water mains shall be excavated to such depth as will provide pipe elevations as indicated on the Water Main Relocation Profiles. The trenches for water service connections shall be excavated to the minimum standard depth or to such depth as required to connect to existing mains or service pipes. For pipe under 24-inch, internal diameter, the excavation (excluding rock), backfill and backfilling shall be included in the price for installation of the water main(s). Furnishing and borrowing shall be performed in accordance with section 210 of the Standard Specifications.

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

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

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

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

8. EMERGENCY REPAIRS TO DAMAGED UTILITIES

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

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

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

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

9. CONNECTIONS TO EXISTING MAINS: Only District personnel shall make connection to the existing water mains when and as directed by the District Inspector at the contractor's expense. In no case shall the Contractor shut off the water or operate the fire hydrants or gate valves of the existing distribution system without the expressed permission of the District Inspector. In case it becomes necessary to delay the cut-off, such instructions shall be given and obeyed without recourse. In making connections to the old distribution system, valves shall be set as shown on the plan, or at such designated place as the Engineer may direct. If due to unforeseen conditions, these locations have to be changed or additional valves or fittings added, the Contractor shall install the valves or fittings at the new locations.

10. CONCRETE BLOCKING: All turns, fittings, fire hydrant connections, etc., that induce pressure which would cause separation of pipe, breakage, etc., shall be blocked with 3,000 lb. concrete. Blocking shall be formed and placed in such a manner that the pressure to be exerted at the point of blocking shall be transferred to firm, undisturbed earth at a maximum load of 2,000 lbs, per square foot. The Contractor shall insure that blocking at all tees, bends, plugs, etc., shall be sufficient to contain all pressure exerted by the pipe up to a pressure of 200 lbs. per square inch hydraulic pressure within the pipe, i.e. pressure at plug = 200 x (area of pipe in inches). The Contractor shall also be responsible for any damage or repairs caused by blowouts of any insufficiently blocked pipe. The contractor shall wrap all fittings, fire hydrant connections, etc. with District approved plastic wrap before any and all concrete pouring is started.

11. WATERMAIN TESTING - In order to assure quality materials and workmanship, the following tests shall be required unless waived by the Engineer. The Engineer or designee shall be present for all tests and shall be notified at least 48 hours in advance of the specific test. Testing shall be completed after all the utility pipes have been installed in the area to be tested and prior to commencement of the street construction. All tests shall be in accordance with CEAM standards or what is stated within this specification. Individuals qualified to perform and evaluate such tests shall do all testing. The Contractor shall pay for all tests required in these guidelines. Copies of the results shall be submitted to the Utility Owner. If inspection or test shows defects, including visible leaks, such defective work or material shall be replaced at the expense of the Contractor, and inspection and tests shall be repeated. All repairs shall be made with new material; failure to meet the tests specified above will be sufficient cause to reject the work until the defects are satisfactorily repaired. All expenses and costs incurred in carrying out the specified tests shall be borne by the Contractor at no extra cost to the Utility Owner or to the State and shall be included in the Contract unit price per linear foot bid for the various sizes of installing water main.

a. PRESSURE TESTING OF WATERMAIN - Hydrostatic pressure testing shall conform with AWWA C-605, latest revision as well as to the specifications of the Owner. Pressure testing shall be performed on all pipe, valves, hydrants, and fittings. The test shall be conducted on line segments from shut valve to shut valve in segments not exceeding 1,500 linear feet. The Contractor shall provide a suitable pump for applying pressure and an accurate gauge for measuring the pressure. The pipe shall be tested by applying one hundred fifty (150) pounds per square inch hydrostatic pressure for a period of two (2) hours with the Utility Owner's inspector present and to the full satisfaction of the Engineer. The maximum allowable leakage is in accordance with AWWA C605. Install any taps required at high points on the line to expel trapped air prior to testing. Following the tests, tightly plug all taps with suitable threaded brass plugs. Repair all visible leaks regardless of total leakage shown by test.

b. CONDUCTIVITY TESTING OF WATERMAIN - Conductivity testing of DIP watermain, copper straps or copper tipped gaskets shall be required to run at 350 amps for 5 minutes. PVC/HDPE watermain tracer lines shall be tested using standard underground utility locator, demonstrating that the lines can be located with standard equipment.

c. STERILIZATION OF WATERMAIN - The method to be used for sterilization shall comply with AWWA C 601-81, C 651, and Owner requirements, with the plugs used in the pressure test still installed in the pipe prior to placement into service. Extreme care is to be exercised in order to prevent the entrance of any contaminants into the main. All expenses and cost incurred in carrying out the specified sterilization work shall be borne by the Contractor at no extra cost to the Utility Owner or the State and shall be included in the contract unit price per linear foot bid for the Water Main Installation.

d. BACTERA TESTING OF WATERMAIN - Provide an adequate blowoff for use in flushing of the main. Before the water is turned on for use by the consumer from the relocated mains, the Owner will conduct bacteriological tests on water samples taken from the blowoff. All expenses incurred in the performance of these tests by the Owner are borne by the Contractor. Upon final sanitary approval by the Owner, return water service for use by the consumer. Before the final connection is made, thoroughly clean all surfaces of the relocated line, including all gaskets and glands, and the existing water main that are to become part of the closing joint with a 5 percent solution of Sodium Hypochlorite. Exercise extreme care in order to prevent the entrance of any contaminants into the main. All expenses and cost incurred in carrying out the specified sterilization work is borne by the Contractor at no extra cost to the Owner or the State and is included in the Contract Unit Price per linear foot bid for the Item for the various sizes. Plug adjacent pipe openings as required in accordance with the Section 202.03.2.

12. AS-BUILT / FINAL LOCATION DRAWINGS - Within thirty (30) days after completion of required work, the Contractor shall submit an accurate print or prints showing the horizontal and vertical location of mains, bends and other appurtenances to the Engineer and the Utility Owner. Services, fittings, fire hydrants and all other reconnections to the replaced pipes shall be identified and marked in the construction drawings by the Contractor. The Contractor shall be responsible for marking the construction drawings in reference to at least two fixed and easily found points.

Method of Measurement and Basis of Payment:

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

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

A breakout sheet attached to the Proposal lists the different elements of work or materials involved in completing this item. The Contractor shall fill in a unit price for each item. The Lump Sum cost for Item 710500, shall be derived from the total sum of the cost of all items listed. The breakout sheet shall be attached to the Bid Proposal.

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

720557 - BOLLARD, STEEL

Description:

This work consists of constructing Steel Bollards.

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

Materials:

A. 8″ diameter x 3/16″ steel tubestock.
B. Delaware No. 57 stone
C. PCC, Class B conforming to the requirements of Section 1022.
D. Zinc-rich primer conforming to the requirements of AASHTO M300 Type I or II
E. Epoxy-polyamide paint conforming to the requirements of SSPC-Paint 22
F. Aliphatic urethane topcoat conforming to the requirements of SSPC-P5
G. Polyethylene plastic pipe sleeve, dome cover

Construction Methods:

A. Bollard
    a. Steel housing for the bollard is to be installed in the hole in vertical position on a 6" bed of Delaware No. 57 stone and encased with concrete as shown on the Plans and/or as directed.
    b. Steel housing is to be filled with PCC, Class B.
    c. “Federal Yellow” polyethylene plastic sleeve to be installed over steel housing.
B. Paint
    a. All exposed steel is to be painted. Individual coats of paint shall consist of an inorganic zinc-rich primer meeting the requirements of AASHTO M300 Type I or II; an epoxy-polyamide intermediate coat meeting the requirements of SSPC-Paint 22 (pigmented to contrast with both the primer and topcoat); and an aliphatic urethane topcoat meeting the requirements of SSPC-P5 Guide 17.00 Type II. The topcoat color of the exposed steel shall be federal standard 595a, color number 13538 (yellow). The Contractor shall select a complete coating system from one manufacturer. This selected coating system must be submitted to the Department’s Material and Research Section for approval prior to coating. Steel surfaces that have not been shop-coated shall be solvent-cleaned. Surfaces that contain loose rust, loose mill scale, and other foreign substances shall be mechanically cleaned by power wire brushing or sand blasting. Minor amounts of residual rust that cannot be removed by applying a sharp knife to any edge, will be allowed to remain. After cleaning, one coat of primer shall be applied.

Method of Measurement:

A. The Department will measure the quantity of Bollards, Steel in Each.

Basis of Payment:

A. The Department will pay for Bollards, Steel at the contractor unit price per Each. Price and Payment will constitute full compensation for:
   1. Excavation within the template of the item including the foundation;
   2. removal and disposal of existing materials;
   3. foundation preparation;
   4. providing and placing materials;
   5. compaction;
   6. supplying, placing, finishing, and curing PCC;
   7. backfilling;
   8. removing surplus materials; and
   9. removing and replacing any cracked or damaged materials.

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

11/15/2021

727507 - CHAIN-LINK CANTILEVER SLIDE GATE

Description:

This work consists of providing, transporting, installing, and testing the Chain-Link Cantilever Slide Gate, Motors, Electronics and other accessories.

Action Submittals:

A. Product Data: For each type of product indicated. Include construction details material descriptions, dimensions of individual components and profiles, and finishes for chain-link gates.
   1. Gate posts, rails, and fittings.
   2. Chain-link fabric, reinforcements, and attachments.
   3. Accessories: Barbed wire,
   4. Gates and hardware.
   5. Gate operator controls, Entrapment Protection, and Gate Operating instructions.
   6. Motors: Show nameplate data, ratings, characteristics, and mounting arrangements.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work, show accessories, hardware, gate operation, and operational clearances.
   1. Gate Operator: Show locations and details for installing operator components, motor starter disconnect switch, limit switches and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions. All electrical equipment shall be in NEMA 3R enclosure.
   2. Wiring Diagrams: For power, signal, and control wiring.

Information Submittals:

A. Qualification Data: For qualified factory-authorized service representative.
B. Product Certificates: For each type of chain-link operator and gate, from manufacturer. Provide independent certification as to the use of a documented welding procedure specification and procedure qualification record to insure conformance to the AWS D1.2 Welding Code.
C. Product Test Reports: For framing strength according to ASTM F 1043.
D. Field quality-control reports.
E. Warranty: Sample of warranty.

Closeout Submittals:

A. Operation and Maintenance Data: For the following to include in emergency, operation, and maintenance manuals:
   1. Gate hardware.
   2. Gate operator.

Project Conditions:

A. Field Measurements: Verify layout information for chain-link gates shown on drawings in relation to property survey and existing structures, Verify dimensions by field measurements.

Warranty:

A. Special Warranty: Manufacturer's standard form in which installer agrees to repair or replace, components of chain-link gates that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Faulty operation of gate operators and controls.
      b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Period: Minimum Two years (cantilevered slide gate and operator) and Five (truck bracket and roller assembly) from date of Substantial Completion.

Materials:

A. HORIZONTAL-SLIDE GATES
   1. General: Comply with ASTM F 1184 for gate posts and single sliding gate types. Provide automated vehicular gates that comply with ASTM F 2200.
      a. Classification: Type II Cantilever Slide, Class I with external roller assemblies.
         i. Gate Frame Width and Height: As indicated.
   2. Pipe and Tubing:
      a. Aluminum: Comply with ASTM B 429; manufacturer's standard finish.
      b. Gate Posts: Comply with ASTM F 1184. Provide round tubular aluminum or rectangular tubular aluminum posts.
      c. Gate Frames and Bracing: Round tubular aluminum or Rectangular tubular aluminum.
   3. Frame Corner Construction: Welded.
   4. Extended Gate Posts and Frame Members: Extend gate posts and frame end members above top of chain-link fabric at both ends of gate frame as required to attach barbed wire assemblies.
   5. Hardware:
      a. Latches permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.
      b. Padlock and Chain: DelDOT furnished.
      c. Hangers, roller assemblies, and stops fabricated from mill-finished Grade 319 aluminum-alloy casting with stainless-steel fasteners.

B. FITTINGS
   1. General: Comply with ASTM F 626.
   2. Barbed Wire Arms: Pressed steel or cast iron, with clips, slots, or other means for attaching strands of barbed wire, and means for attaching to posts; for each post unless otherwise indicated, and as follows:
      a. Provide line posts with arms that accommodate top rail or tension wire.
      b. Provide corner arms at fence corner posts, unless extended posts are indicated.
      c. Type II, single vertical arm.
   3. Tie Wires, Clips, and Fasteners: According to ASTM. F 626.
      a. Standard Round. Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
         i. Aluminum: ASTM B 211; Alloy 1350-.H19; 0.192-inch- diameter, mill-finished wire.

4. Finish:
    a. Aluminum: Mill finish.

C. BARBED WIRE
1. Steel Barbed Wire: Comply with ASTM A 121, for three-strand barbed wire, 0.099-inch- diameter line wire with 0,080-inch- diameter, four-point round barbs spaced not more than 5 inches o.c.
    a. Aluminum Coating: Type A.

D. GATE OPERATORS
1. General: Provide factory-assembled automatic operating system designed for gate size, type, weight, and operation frequency. Provide operation control system with characteristics suitable for Project conditions, with remote-control stations, safety devices, and weatherproof enclosures; coordinate electrical requirements with building electrical system.
    a. Provide operator designed so motor may be removed without disturbing limit-switch adjustment and without affecting auxiliary emergency operator.
    b. Provide operator with UL -approved components.
    c. Provide electronic components with built-in troubleshooting diagnostic feature.
    d. Provide unit designed and wired for both right-hand/left-hand opening, permitting universal installation.
2. Comply with NFPA '70.
3. UL Standard: Fabricate and label gate operators to comply with UL 325, Class IV.
4. Motor Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, within installed environment, with indicated operating sequence, and without exceeding nameplate rating or considering service factor. Comply with NEMA MG 1 and the following:
    a. Voltage: 115 VAC, single phase, 60 Hz.
    b. Horsepower: 1/2 HP, continuous duty.
    c. Enclosure: Totally enclosed, weatherproof, lockable.
    d. Duty: Continuous duty at ambient temperature of 105 deg F and at altitude of 3300 feet above sea level.
    e. Service Factor: 1.0 for totally enclosed motors.
5. Gate Operators: Equipment base/pad mounted and as follows:
    a. Mechanical Slide Gate Operators:
        i. Duty: Heavy duty, commercial/industrial.
        ii. Gate Speed: Minimum 55 feet per minute (11 inches per second).
        iii. Maximum Gate Weight: 1000 lb.
        iv. Frequency of Use: 20 cycles per hour.
        v. Operating Type: Roller chain with manual release.
        vi. Drive Type: V-belt and chain-and-sprocket reducers, roller-chain drive.
        vii. Inherent Obstruction Sensing: Force adjustments for both open and closed directions.
        viii. External Obstruction Sensing: Input connections provided for external contact and non-contact sensors, such as photo eyes and edge devices.
6. Controls: Electric controls separated from gate and motor and drive mechanism. Provide the following control device(s):
    a. Heavy-Duty, surface mountable, momentary contact, 3-Button (“Open”/”Close”/”Stop”) controllers compatible with gate operators. One such controller shall be provided for each gate operator. “Stop” button shall be red in color and different from the colors of the “Open” and “Close” buttons. Buttons shall be labeled “Open”, “Close”, “Stop”.
7. Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop gate at fully retracted and fully extended positions.
    a. Type: Integral fail-safe release, allowing gate to be pushed open without mechanical devices, keys, cranks, or special knowledge.
8. Operating Features:
    a. LED Indicators for operator input, status and diagnostics.

b. Control Inputs: Allow the connection of optional external devices like loop detectors, access control systems and radio receivers.
c. Digital Logic Control: Supports long-distance control wiring runs of over 1,000 feet.
d. Surge and Spike Protection: Circuitry designed to provide protection from external spikes and surges.
e. Warning Device: UL 325 compliant entrapment warning alarm with the ability to be set for pre-operation warning; provides 3-second warning prior to and during gate movement.
f. External Manual Disconnect: Allows gate to be opened in the event of a power loss without removing the operator cover.
g. Limit Settings
h. Lockable Access Door: Weather-resistant
i. System Integration: With controlling circuit board capable of accepting any type of input from external keypad devices for complete working system.
j. Open Override Circuit: Designed to override closing commands.
k. Reversal Time Delay: Designed to protect gate system from shock load on reversal in both directions.
l. Maximum Run Timer: Designed to prevent damage to gate system by shutting down system if normal time to open gate is exceeded.

9. Accessories:
   a. Warning Module: Audio and light alarm sounding three to five seconds in advance of gate operation and continuing until gate stops moving; compliant with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines.
   b. Instructional, Safety, and Warning Labels and Signs: According to UL 325, Class IV.
   c. Equipment Bases/Pads: Cast-in-place concrete, mix no. 3, 3500 psi. Drawings, dimensioned and reinforced according to gate-operator component manufacturer's written instructions and as indicated on Drawings.
10. Loop Detector Sensors:
    a.
    Continuous length of wire without any breaks or splices. The loop wire can be 14, 16, or 18 gauge stranded wire with either a cross-link polyethylene (XLPE) or polyester insulation.
    b. Loop Detector Sealer: Per Section 846.2 of the Standard Specifications.

E. GROUT AND ANCHORING CEMENT
1. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.
2. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

F. FENCE GROUNDING
1. Conductors: Bare solid wire for No 6 AWG and smaller; stranded wire for No. 4 AWG and larger.
   a. Material above Finished Grade: Copper
   b. Material on or below Finished Grade: Copper
   c. Bonding Jumpers: Braided copper tape, 1 inch wide, woven of No, 30 AWG bare copper wire, terminated with copper ferrules.
2. Connectors and Grounding Rods: Comply with UL 467.
   a. Connectors for Below-Grade Use: Exothermic welded type.
   b. Grounding Rods: Copper-clad steel, 3/4 by 96 inches

Execution:

A. EXAMINATION
1. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the work.
   a. Do not begin installation before final grading is completed unless otherwise permitted by the engineer.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

B. PREPARATION
1. Stake locations of gates and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

C. GATE INSTALLATION
1. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means, Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.
2. Barbed Wire: Install barbed wire uniformly spaced as indicated on drawings. Pull wire taut, install securely to extension arms, and secure to end post or terminal arms.

D. GATE OPERATOR INSTALLATION
1. General: Install gate operators according to manufacturer's written instructions, aligned and true to fence line and grade.
2. Excavation for Support Posts and Equipment Bases/Pads: Hand-excavate holes for bases/pads, in firm, undisturbed soil to dimensions and depths and at locations as required by gate-operator component manufacturer's written instructions and as indicated.
3. Comply with NFPA 70 and manufacturer's written instructions for grounding of electric-powered motors, controls, and other devices.

E. GATE CONTROLS
1. Main gate (Crew Ops), operator and controls must be fully operational prior to turning over to DelDOT to occupy.
2. Maintenance Building Gate (301 Gate Enclosure), operators and controls must be fully operational prior to turning over to DelDOT to occupy.
3. Install conduits to the panel as shown on the plans.
4. Interface electrical operation of gate with the controls in Section 281300 “Access Control System” in appendix A: technical specifications.

F. FIELD QUALITY CONTROL
1. Grounding-Resistance Testing: Engage a qualified testing agency to perform tests and inspections.
2. Acceptance Terms: Test each system function, supply all equipment necessary for system adjustment and testing

G. ADJUSTING
1. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
2. Automatic Gate Operator: Energize circuits to electrical equipment and devices. Adjust operators, controls, safety devices, and limit switches.
3. After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
5. Lubricate hardware, gate operator, and other moving parts.

H. DEMONSTRATION

1. Engage a factory-authorized service representative to train DelDOT personnel to adjust, operate, and maintain chain-link fences and gates.

Method of Measurement:

The Department will measure chain-link cantilever slide gate as the actual number installed and accepted.

Basis of Payment:

The Department will pay for chain-link cantilever slide gate at the contract unit price per each. Price and payment will constitute full compensation for providing all materials, following all applicable requirements and regulations and for all labor, equipment, tools, and incidentals required to complete the work.

07/21/2021

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, slopes, profile grades, centerline or offset lines, benchmarks, structure working points and any additional points to complete the project.

The Engineer will only establish the following:

1. Original and final cross-sections for borrow pits.
2. 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.
3. Line and grade for extra work added on to the project plans.

A. 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.

B. 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:

A. Performance Requirements

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. The Contractor shall be responsible for the staking of all drainage inlets in accordance with the plans and the Department Standard Construction Details. The offsets and top of grate elevations need to be calculated for each type of drainage inlet specified in the contract plans by the Contractor in order to line up the drainage inlet's flow line with the specified curb or ditch flow line as shown in the Contract Documents. The Engineer must approve any deviations 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.

7. 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.

B. Submittals

1. 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.

2. 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:

A. 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

        i. 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 OPENROADS (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. OpenRoads - Proposed corridor model - 3-D Surface
        ii. Microstation - Proposed surface elements - triangles

    b. Alignment Data Files:
        i. ASCII Format

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

B. Contractor's Responsibilities

1. The Contractor shall provide the Engineer with a GPS rover and Automatic Level, for use during the duration of the contract. At the end of the contract, the GPS rover and Automatic Level will be returned to the Contractor. The Contractor shall provide a total of 8 hours of formal training on the Contractor's GPS machine control system to the Engineer and up to three additional Department appointees per rover.

2. The Contractor shall review and apply the data provided by the Department to perform GPS machine control grading.

3. The Contractor shall bear all costs, including but not limited to the cost of actual reconstruction of work, that may be incurred due to application of GPS machine control grading techniques. Grade elevation errors and associated corrections including quantity adjustments resulting from the contractor's use of GPS machine control shall be at no cost to the Department.

4. The Contractor shall convert the electronic data provided by the Department into a format compatible with their system.

5. The Contractor’s manipulation of the electronic data provided by the Department shall be performed at their own risk.

6. The Contractor shall check and if necessary, recalibrate their GPS machine control system at the beginning of each workday in accordance with the manufacturer's recommendations, or more frequently as needed to meet the requirements of the project.

7. The Contractor shall meet the accuracy requirements as detailed in the Standard Specifications.

8. The Contractor shall establish secondary control points at appropriate intervals and at locations along the length of the project. These points shall be outside the project limits and/or where work is performed. These points shall be at intervals not to exceed 1000 feet. The horizontal position of these points shall be determined by conventional survey traverse and adjustments from the original baseline control points. The conventional traverse shall meet or exceed the Department's Standards. The elevation of these control points shall be established using differential leveling from the project benchmarks, forming a closed loop. A copy of all new control point information including closure report shall be provided and approved by the Engineer prior to construction activities. The Contractor shall be responsible for all errors resulting from their efforts and shall correct deficiencies to the satisfaction of the Engineer and at no additional cost to the Department.

9. The Contractor shall provide stakes at all alignment control points, at every 500 foot stationing, and where required for coordination activities involving environmental agencies and utility companies at the Contractor's expense. Work that is done solely for utility companies and that is beyond the work performed under item 763501 - Construction shall follow and be paid for under item 763597 -Utility Construction Engineering.

10. The Contractor shall at a minimum set hubs at the top of finished grade at all hinge points on the cross section at 500 foot intervals on the main line and at least 4 cross sections on side roads and ramps as directed by the engineer or as shown on the plans. Placement of a minimum of 4 control points outside the limits of disturbance for the excavation of borrow pits, Stormwater Management Ponds, wetland mitigation sites etc. These control points shall be established using conventional survey methods for use by the Engineer to check the accuracy of the construction.

11. The Contractor shall preserve all reference points and monuments that are identified and established by the Engineer for the project. If the Contractor fails to preserve these items the Contractor shall reestablish them at no additional cost to the Department.

12. The Contractor shall provide control points and conventional grades stakes at critical points such as, but not limited to, PC's, PT's, superelevation points, and other critical points required for the construction of drainage and roadway structures.

13. No less than 2 weeks before the scheduled preconstruction meeting, the Contractor shall submit to the Engineer for review a written machine control grading work plan which shall include the equipment type, control software manufacturer and version, and proposed location of the local GPS base station used for broadcasting differential correction data to rover units.

14. The Contractor shall follow the guidelines set forth in the "Geometric Geodetic Accuracy Standards and Specifications for Using GPS Relative Positioning Techniques" and follow a minimum of Second Order Class 1, (2-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.

C. Contract Control Plan

1. 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:

a. A control network diagram of all existing horizontal and vertical control recovered in the field as contract control.
b. 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.
c. 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.
d. 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.
e. 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.
f. 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.
g. 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.
h. 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:

A. The quantity of Construction Engineering will not be measured.

BASIS OF PAYMENT:

A. 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.

7/1/2021

763504 –SITE WORK

DESCRIPTION:

This work consists of performing site work and providing the materials necessary to complete the site work including the Electrical Site Work and Security Fence Work as indicated in the Contract documents and further described in the technical specifications in Appendix A - Technical Specifications for Building and Site Work.

MATERIALS AND CONSTRUCTION:

All materials and construction shall conform to the requirements of the Contract drawings, the Delaware Department of Transportation Standard Specifications, and the technical specifications in Appendix A - Technical Specifications for Building and Site Work.

METHOD OF MEASUREMENT:

This item will be made on a lump sum basis wherein no measurement will be made.

BASIS OF PAYMENT:

The Department will pay for this item on a contract unit price per lump sum bid. Price and payment will constitute full compensation for

1. Providing and placing materials;
2. excavation;
3. backfilling
4. disposing of the surplus material
5. and for all labor, tools, equipment, hardware, and necessary incidentals to complete the work.

8/10/2021

763505 - SIGN

Description:

This work consists of constructing a brick masonry entrance sign.

Materials:

A. All materials and construction shall conform to the requirements of the Contract Drawings.

Construction Methods:

A. All materials and construction shall conform to the requirements of the Contract Drawings.

Method of Measurement:

A. Payment for this item will be made on a lump sum basis wherein no measurement will be made.

Basis of Payment:

A. The Department will pay for the Sign at the Lump Sum price bid for this item. Price and payment will constitute full compensation for:
    1. Excavating within the template of the item including the foundation;
    2. removal and disposal of existing materials;
    3. foundation preparation;
    4. compaction;
    5. providing and placing materials;
    6. compaction;
    7. providing forms and forming;
    8. supplying, placing, finishing and curing PCC;
    9. backfilling;
    10. removing surplus materials; and
    11. removing and replacing cracked or damaged curb.
B. The Department will pay for;
    1. Excavation and embankment outside the template of the item in accordance with section 202 at the direction of the engineer or as otherwise required by the contract
    2. rock removal in accordance with section 202

763511 - ADMINISTRATION BUILDING

DESCRIPTION:

This work consists of constructing a new Administration Building as indicated in the Contract Drawings and in accordance with Appendix A - Technical Specifications.

MATERIALS AND CONSTRUCTION:

All materials and construction shall conform to the requirements of the Contract Drawings and in accordance with Appendix A - Technical Specifications.

PRE-BID MEETING:

The meeting information will be posted on-line, and is described in the Notes to Bidders. The bidder's representative must sign-in and identify the name of the bidder they represent.

METHOD OF MEASUREMENT:

This item will be made on a lump sum basis wherein no measurement will be made.

BASIS OF PAYMENT:

The Department will pay for this item on a contract unit price per lump sum bid. Price and payment will constitute full compensation for

1. Providing and placing materials;
2. for all labor, tools, equipment, hardware, and necessary incidentals to complete the work;
3. provide a complete, working and usable facility acceptable to the Engineer.

763530 – INITIAL EXPENSE

Description:

Perform all operations necessary for the assembling and setting up of the project, any other activities required by the contract and by law or regulation, and all other work and operations that must be performed prior to beginning compensable items of work on the project. Obtain the required insurance and bonds, and all other items required for the start of work.

Materials:

Assume responsibility for the adequacy of all materials that are required to complete the required work.

Construction Methods:

Perform all work in a safe and workmanlike manner.

Method of Measurement:

This item will not be measured.

Basis of Payment:

Payment will be made at the lump sum unit bid price for "Initial Expense," for which price and payment constitutes full compensation for all work associated with setting up of the project, any other activities required by the contract and by law or regulation, and all other work and operations that must be performed prior to beginning compensable items of work on the project and for furnishing all materials, labor, equipment and incidentals required to complete the work.

When the lump sum price for this item is less than or equal to 5 percent of the total bid price of the entire contract at the time of award ("Total bid price"), 45 percent of the item will be paid on each of the first two monthly estimates and 10 percent of the item will be paid on the final estimate. When the lump sum price for this item exceeds 5 percent of the total bid price, 2.25 percent of the total bid price will be paid on each of the first two monthly estimates; and that portion exceeding 5 percent of the total bid price, plus the remaining 1/2 percent of the total bid price, will be paid on the final estimate.

11/17/2021

763598 – FIELD OFFICE, SPECIAL I

Description:

This work pertains to Contract T202180102, and consists of furnishing, erecting, equipping, maintaining, and removing a singlewide modular office. The field office and parking area are for the exclusive use of Department Officials, Engineers, Designers, Consultants, and Inspectors.

Materials:

Furnish a new field office to meet the requirements set forth in Table 1 and described herein. Construct and install both to conform to all applicable city, county, state, and federal codes. Construct a stair and deck platform at each exterior door with hand and safety rails designed to last the life of the Contract. Rails must 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. Remove the field office from the premises when directed by the Department.

TABLE 1. General Field Office Requirements

Doors Leading to Exterior	Minimum of 2 insulated doors; equip each with a keyed passage lock and a keyed deadbolt lock.
Electrical Outlets	Located a minimum of every 10 ft along each wall with a minimum of 2 outlets per room.
Exit Sign	1 lighted "EXIT" sign for each exterior passage door.
Exterior Dimensions	Minimum 50'-0" long x 12'-0" wide.
Fire Extinguisher	1 per exterior door; may be chemical or dry powder and be UL Classification 10-B:C (min.) and be suitable for Types A:B:C fires.
First Aid Kit	Commercial- or industrial-type first aid and safety kit suitable for project conditions and hazards, including snakebites.
Floor Space	Minimum of 600 sq ft.
Height (Floor to Ceiling)	8'-0" nominal.
Insulation	Exterior walls, ceiling, and floor must be insulated.

Keys	Minimum of 2 complete sets; give to the Engineer's representative.
Lighting	One 4,000-lumen overhead light centrally located and evenly spaced every 10 ft along the interior ceiling, with a minimum of 1 overhead light per room.
Microwave	New; minimum 900 watts.
Other Material Requirements	Free of asbestos and all other hazardous materials.
Refrigerator	New; minimum 2.6 cubic ft.
Smoke Detector	New; minimum 1 working combination smoke and carbon dioxide detector per room.
Water Cooler	New potable water cooler with hot and cold taps; minimum 5-gallon capacity; maintain a supply of at least 5 gallons of extra water at all times.
Windows	Minimum of 6 insulated windows total; minimum glass area of 1,150 sq inches per window. Equip each window with a horizontal mini-blind covering the full glass area, a screen, and a locking device. Cover exterior of each window with steel bar grids.

The field office must be of weatherproof construction; tightly floored and roofed with air space above the ceiling for ventilation; and fully skirted with rigid, watertight covering overlapping the bottom of the exterior siding to the existing ground. The field office must be supported above the ground and safely secured to its support if the support is an in-ground anchored foundation or by tie-downs to the ground. The field office must have interior and exterior paneling, lighting, and plumbing fixtures.

Equip the field office with heating and cooling capabilities to provide comfortable working conditions; this includes an exhaust fan, heating equipment, and air conditioning connected to an operational power source. Furnish electrical, water, fuel, or other utility necessary to fully power HVAC equipment. If electrical service is not readily available from the utility provider, provide and maintain a temporary generator (including fuel) until such time when power can be established. Contractor is responsible for performing or arranging for all necessary utility connections and/or their maintenance. Provide maintenance of the heating, exhaust fan, and air conditioning equipment by validated service contracts for the length of the Contract. Provide maintenance of the potable water supply equipment, refrigerator, and microwave by validated service contracts for the length of the Contract. Service contracts must allow a Department-authorized individual to deal directly with the service organization to request repair or maintenance.

Provide and maintain the interior of the field office with new furnishings. All furnishings must be approved by the Engineer prior to installation in the field office. Office furnishings remain the property of the Contractor at the conclusion of the project. Place the following furnishings as directed by the Engineer:

(1) 2 full-size office desks

(2) 2 fully adjustable ergonomic design swivel chairs with armrests and 5-leg base having wheel casters
(3) 12 folding chairs
(4) 1 large conference table for a minimum of 12 people
(5) 2 trash cans with lids and new plastic liners at each disposal interval – (1) 30+ gallons, (1) 10+ gallons
(6) 2 dry erase boards a minimum of 4' x 3' each with markers and erasers
(7) 1 floor mat at each entrance
(8) 1 long-handled large-size broom with synthetic bristles and dustpan

Provide and maintain the following office equipment; Engineer must approve the equipment prior to installation in the field office. The required equipment will enable the Department to synchronize project record keeping and office functions. Deliver the equipment in new and working condition:

(1) 1 all-in-one print/copy/scan/fax machine capable of producing 35 pages per minute, double-sided, on 8½" x 11" and 11" x 17" paper. Machine must be wireless capable and network capable and be able to print/copy/scan in color and in black and white.
(2) 2 combination electrical surge, spike, and noise protection devices

Provide all consumables required for the office equipment and furnishings for the length of the Contract. These consumables must be furnished on request and include, but not be limited to, paper, tape, toner/printer ink, cleaning kits, and batteries. Provide maintenance of all office equipment by a validated service contract for the length of the Contract. Service contracts must allow a Department-authorized individual to deal directly with the service organization to request repair.

Maintenance of the field office and its adjacent parking area includes the following:

(1) Removing snow and/or ice from the parking area and from the entrance pathways to the field office within 12 hours of each occurrence.
(2) Maintaining and replacing all provided items, furnishings, and equipment.
(3) Providing bottled water and drinking cups for the water cooler.
(4) Providing lavatory supplies, trash bags, and janitorial supplies.
(5) Providing replacement items for all lighting fixtures.
(6) Providing janitorial services twice a week.
(7) Cleaning up trash and debris from the parking lot once a week.

Construction Methods:

A. General Requirements

1 The field office must be ready for use no later than 30 calendar days after the date of the fully executed Contract and before construction begins, unless site mobilization is delayed for Department-approved reasons. In the event of approved delay, the field office must be ready for use no later than 10 calendar days after initial mobilization.

2 The Contractor is responsible for obtaining all required licenses and permits for installation, and placement of the field office and its parking area. The costs of obtaining such licenses and permits are incidental to the "Field Office, Special I" item.
3 The field office must be available for use by the Department continuously throughout the duration of the project.

B. Submittals

1 Submit a specific location layout drawing and construction details for the proposed field office and its parking area for approval by the Engineer.
2 Submit a copy of all validated field office, equipment, and maintenance service assistance and/or monitoring agreements and/or contracts as mentioned herein to the Department's administrative office on or before the first day the field office is ready for use.

Method of Measurement:

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

Basis of Payment:

The field office will be paid for on a unit price bid per month, which includes full compensation for performing the work specified including, but not limited to, furnishing of all materials, labor, tools, equipment, and

incidentals necessary to provide and maintain the field office and its adjacent parking area, and to restore the field office area and adjacent parking area to match the original site condition upon completion of the work. All costs associated with electric, water, and/or other fuels for HVAC equipment, snow and/or ice removal, maintenance contracts, and other items specified are incidental to the "Field Office, Special I" item; this includes all connection fees, disconnection fees, monthly fees, installation fees, service fees, other billings, and billing labor. No separate payment will be made for costs related to removing hazardous material and/or underground tanks to install the office or the parking area. Payment will be made only for the actual number of months the office is acceptably provided by the Contractor.

8/13/21

831500 - PROVIDE AND INSTALL UP TO 6” SCHEDULE 80 PVC CONDUIT (OPEN CUT)

831501 - PROVIDE AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (OPEN CUT)

831502 - PROVIDE AND INSTALL 3" SCHEDULE 80 PVC CONDUIT (OPEN CUT)

831503 - PROVIDE AND INSTALL 2-1/2" SCHEDULE 80 PVC CONDUIT (OPEN CUT)

831504 - PROVIDE AND INSTALL 2" SCHEDULE 80 PVC CONDUIT (OPEN CUT)

831505 - PROVIDE AND INSTALL 1" SCHEDULE 80 PVC CONDUIT (OPEN CUT)

831506 - PROVIDE AND INSTALL 1” FLEXIBLE METALLIC-LIQUIDTIGHT CONDUIT

831507 - PROVIDE AND INSTALL 2” FLEXIBLE METALLIC-LIQUIDTIGHT CONDUIT

831508 – PROVIDE AND INSTALL 3” FLEXIBLE METALLIC-LIQUIDTIGHT CONDUIT

831509 - PROVIDE AND INSTALL 4” FLEXIBLE METALLIC-LIQUIDTIGHT CONDUIT

831512 - PROVIDE AND INSTALL 1" SCHEDULE 80 PVC CONDUIT (TRENCH)

831513 - PROVIDE AND INSTALL 2" SCHEDULE 80 PVC CONDUIT (TRENCH)

831514 - PROVIDE AND INSTALL 2-1/2" SCHEDULE 80 PVC CONDUIT (TRENCH)

831515 - PROVIDE AND INSTALL 3" SCHEDULE 80 PVC CONDUIT (TRENCH)

831516 - PROVIDE AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (TRENCH)

831517 - PROVIDE AND INSTALL 1" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)

831518 - PROVIDE AND INSTALL 2" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)

831519 - PROVIDE AND INSTALL 2-1/2" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)

831520 - PROVIDE AND INSTALL 3" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)

831521 - PROVIDE AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)

831522 - PROVIDE AND INSTALL 1” GALVANIZED STEEL CONDUIT (TRENCH)

831523 - PROVIDE AND INSTALL 2” GALVANIZED STEEL CONDUIT (TRENCH)

831524 - PROVIDE AND INSTALL 2-1/2” GALVANIZED STEEL CONDUIT (TRENCH)

831525 - PROVIDE AND INSTALL 3” GALVANIZED STEEL CONDUIT (TRENCH)

831526 - PROVIDE AND INSTALL 4” GALVANIZED STEEL CONDUIT (TRENCH)

831527 - PROVIDE AND INSTALL 1” GALVANIZED STEEL CONDUIT (BORE)

831528 - PROVIDE AND INSTALL 2” GALVANIZED STEEL CONDUIT (BORE)

831529 - PROVIDE AND INSTALL 2-1/2” GALVANIZED STEEL CONDUIT (BORE)

831530 - PROVIDE AND INSTALL 3” GALVANIZED STEEL CONDUIT (BORE)

831531 - PROVIDE AND INSTALL 4” GALVANIZED STEEL CONDUIT (BORE)

831532 - PROVIDE AND INSTALL 1” GALVANIZED STEEL CONDUIT (OPEN CUT)

831533 - PROVIDE AND INSTALL 2” GALVANIZED STEEL CONDUIT (OPEN CUT)

831534 - PROVIDE AND INSTALL 2-1/2” GALVANIZED STEEL CONDUIT (OPEN CUT)

831535 - PROVIDE AND INSTALL 3” GALVANIZED STEEL CONDUIT (OPEN CUT)

831536 - PROVIDE AND INSTALL 4” GALVANIZED STEEL CONDUIT (OPEN CUT)

831537 - PROVIDE AND INSTALL 1” GALVANIZED STEEL CONDUIT (ON STRUCTURE)

831538 - PROVIDE AND INSTALL 2” GALVANIZED STEEL CONDUIT (ON STRUCTURE)

831539 - PROVIDE AND INSTALL 2-1/2” GALVANIZED STEEL CONDUIT (ON STRUCTURE)

831540 - PROVIDE AND INSTALL 3” GALVANIZED STEEL CONDUIT (ON STRUCTURE)

831541 - PROVIDE AND INSTALL 4” GALVANIZED STEEL CONDUIT (ON STRUCTURE)

831542 - PROVIDE AND INSTALL 2” HDPE SDR-13.5 CONDUIT (BORE)

831543 - PROVIDE AND INSTALL 2-1/2” HDPE SDR-13.5 CONDUIT (BORE)

831544 - PROVIDE AND INSTALL 3” HDPE SDR-13.5 CONDUIT (BORE)

831545 - PROVIDE AND INSTALL 4” HDPE SDR-13.5 CONDUIT (BORE)

831560 - PROVIDE AND INSTALL UP TO 4” SCHEDULE 80 PVC CONDUIT (OPEN CUT)

831561 - PROVIDE AND INSTALL 1-1/2” SCHEDULE 80 PVC CONDUIT (TRENCH)

831562 - PROVIDE AND INSTALL 1-1/2” SCHEDULE 80 PVC CONDUIT (ON STRUCTURE)

831563- PROVIDE AND INSTALL 1-1/2” GALVANIZED STEEL CONDUIT (OPEN CUT)

831564 - PROVIDE AND INSTALL 1-1/2” GALVANIZED STEEL CONDUIT (TRENCH)

831565 - PROVIDE AND INSTALL 1-1/2” GALVANIZED STEEL CONDUIT (BORE)

831566 - PROVIDE AND INSTALL 1-1/2” GALVANIZED STEEL CONDUIT (ON STRUCTURE)

831569 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT

831570 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1-1/2" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT

831571 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT

831572 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2-1/2" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT

831573 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 3" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT

831574 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 4" SCHEDULE 80 PVC CONDUITS IN TRENCH OR OPEN CUT

831575 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2" HDPE 13.5 SDR CONDUIT IN DIRECTIONAL BORE

831576 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2-1/2" HDPE 13.5 SDR CONDUIT IN DIRECTIONAL BORE

831577 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 3" HDPE 13.5 SDR CONDUIT IN DIRECTIONAL BORE

831578 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 4" HDPE 13.5 SDR CONDUIT IN DIRECTIONAL BORE

831579 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT

831580 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1-1/2" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT

831581 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT

831582 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2-1/2" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT

831583 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 3" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT

831584 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 4" GALVANIZED STEEL CONDUIT IN TRENCH OR OPEN CUT

831585 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1" STEEL CONDUIT IN DIRECTIONAL BORE

831586 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 1-1/2" STEEL CONDUIT IN DIRECTIONAL BORE

831587 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2" STEEL CONDUIT IN DIRECTIONAL BORE

831588 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 2-1/2" STEEL CONDUIT IN DIRECTIONAL BORE

831589 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 3" STEEL CONDUIT IN DIRECTIONAL BORE

831590 - PROVIDE & INSTALL SECOND AND SUBSEQUENT ADDITIONAL 4" STEEL CONDUIT IN DIRECTIONAL BORE

DESCRIPTION:

This work consists of providing and installing a conduit or shield, of the type and size required.

MATERIALS:

A. Conduit Section 831

CONSTRUCTION METHODS:

A. General Installation Requirements -

1. The Department has the right to reject any installation method proposed for a given work site. PVC shall not be installed under existing pavement unless it is on a continuous roll or with the engineer's written approval.

2. Conduit installed underground shall be installed in a straight line between terminal points. In straight runs, junction well spacing shall be no more than 600 feet for fiber optic conduit or no more than 300 feet for copper in conduit, or as directed by the engineer. If bends are required during installation, they must be manufactured sweeping bends. The engineer will be consulted before any bends are installed to ensure that the proper arc is provided.
3. Underground conduit shall have a minimum cover as measured from the finished grade of 24 inches and a maximum cover of 48 inches. The opening shall be filled halfway with the cover material and tamped down firmly before filling in the remainder of the opening. Additional lifts shall be used as required to install the metallic warning tape at the specified depth. All cover material shall be free of rocks, debris, vegetation or other deleterious material that may damage the conduit. An underground utility warning tape shall be installed as specified in this section and the remainder of the fill shall be added, tamping down the top layer.
4. Conduit not terminated to a base or in a junction well shall be terminated 2 feet beyond the edge of the pavement unless otherwise directed by the engineer , and properly capped. Tape is not an approved method. Conduit shall not extend more than 3 inches inside a junction well. See Standard Construction Details or applicable Plan Details for typical methods of termination.
5. All underground conduits shall be marked in the ground with a metallic warning tape. The marking tape shall be buried directly above the conduit run that it identifies, at a depth of approximately 12 inches below final grade. The tape identifying all conduits shall be at least 6 inches wide and have a minimum thickness of 3 mils and 500 percent elongation.
6. The color of the metallic warning tape identifying fiber optic cable should be bright orange (preferably AULCC orange) and shall read "WARNING - OPTICAL CABLE" or other wording approved by the engineer that conveys the same message. The color of the tape identifying all other cables shall be bright red and shall read "WARNING -BURIED ELECTRIC BELOW" or other wording approved by the engineer that conveys the same message.
7. Using conduit tools, rigid metallic conduit shall be cut, reamed, and threaded. The thread length shall be as necessary to ensure that the sections of conduits when screwed into a coupling and tightened correctly will butt together and the joint will be watertight. A three-piece threaded union, as approved by the engineer , shall be used to join two threaded lengths of conduit in the case where a standard coupling will not work. A threaded union shall not be used in a conduit run that is to be driven. At no time is a threadless coupling or a split-bolt coupling to be used for direct buried conduit.
8. All lengths of HDPE conduit shall be connected with irreversible fusion couplings. Mechanical and removable couplings will not be accepted.
9. All lengths of PVC conduit shall be connected by one conduit end fitting inside the flared end of the other conduit section. If this is not possible, then a coupling may be used. Regardless of how connection is made, all joints shall be sealed with the appropriate epoxy to ensure that the two conduit pieces bond to one another to form a solid waterproof link. Using conduit tools, the conduit shall be cut and prepared. If approved by the engineer , a coupler module may be used where conduit segments do not align properly to allow the flared end of one conduit segment to mate with the normal end of the other segment.
10. Sealed end caps (with knockouts if empty) shall be placed on the ends of all conduits, after compressed air has been used to clear all foreign matter.
11. If not already pre-installed by the manufacturer, a polyester or polypropylene pulling rope or tape (fish wire) with a minimum rated strength of 1,250 pounds shall be installed in each conduit for future use. In instances where the Contractor installs the cable, the fish wire may be eliminated.
12. All PVC and HDPE conduits shall have a continuous metallic trace wire installed for the entire length of the conduit run for all fiber installations.
13. Stabilize slopes in accordance with section 908 as directed by the engineer.

B. Installation of Conduit Under Existing Pavement, Directional Bore -

1. Directional bore shall be used for installation of conduits under existing pavement with a conduit diameter not less than 1-1/2-inch. The size of a bore shall not exceed the outside diameter of the conduit by more

than 1 inch. If it does, cement grout shall be pumped into the void. Only HDPE and/or Galvanized Steel conduit may be installed by Directional Bore methods.

C. Installation of Conduit Under Existing Pavement, Open Cut -

1. Installation by saw cutting the full pavement depth and removing the existing pavement with an excavator or by hand methods, shall be used only for conduits not less than 1-1/2-inch diameter. The engineer must first approve all open cutting of roadways. The width and length of open cut and patch restoration materials shall be as shown on the plan details. The Contractor shall be responsible for the removal of all cut pavement and surplus excavation, and for the replacement and correction of any damaged pavement outside the sawcut limits after the conduit(s) are installed.

D. Installation of Conduit Under Existing Pavement, Unpaved Trench -

1. Trenching or other approved method shall be used for installation of conduit in unpaved trench or under new pavement. Backfill in conduit trenches shall be compacted thoroughly as it is being placed. At the discretion of the engineer, remove sod to place conduit with an approved sod cutter and replace, or place 6 inches of topsoil and seed in accordance with section 908. In areas where new pavement is to be placed or in areas where total reconstruction is taking place, sodding or seeding may not be required by the engineer.

E. Installation of Conduit on Structure -

1. Conduit installed on structure shall consist of drilling anchors into concrete, brick, stone, steel or wood and mounting the conduit with the proper clamps or hangers. The conduit shall be attached to the structure by use of one-hole conduit hangers and approved anchors not more than 36 inches apart. Any 90-degree turns in the conduit run shall be accomplished by placing the proper size and type manufactured sweeping bends for the application needed.

F. Installation of Additional Conduit in Trench or Open Cut Pavement -

1. In the case of slotted or trenched installations, install additional conduits at the same time as the initial installation. The engineer shall indicate the quantity of conduits to be installed during a build. Additional conduits may be stacked one on top of the other, side by side or in a matrix. Conduits shall not twist around one another or be allowed to deviate from straight line paths except in the case of bend installations. Conduits installed at the same time in the same trench or slot shall remain oriented the same in relation to one another throughout the conduit run.

G. Installation of Additional Conduits in Directional Bore -

1. In the case of a directional bore that more than one conduit shall be installed at the same time as the initial installation, install 1 or more additional conduits. The engineer shall indicate the quantity of conduits to be installed during a build. The additional conduits may be stacked one on top of the other, side by side or in a matrix. Conduits shall not twist around one another or be allowed to deviate from straight line paths except in the case of a gentle bend. Conduits installed at the same time, in the same bore shall remain oriented in the same relation to one another throughout the conduit run.

METHOD OF MEASUREMENT:

A. The Department will measure the quantity of conduit in linear feet of conduit provided and installed and accepted.

B. The Department will measure the quantity of conduit in linear feet of conduit installed under existing pavement by a directional bore or by open cutting the pavement along the path of the bore or open cut, from the point that cannot be trenched to the point that trenching can resume.

C. The Department will measure the quantity of conduit in linear feet of conduit reduced or divided (with a junction well or conduit body) as part of the larger conduit.

BASIS OF PAYMENT:

A. The Department will pay for providing and installing conduit at the contract unit price per linear foot. Price and payment will constitute full compensation for:
   1. Providing all materials;
   2. labor;
   3. topsoil; and
   4. seed.

B. The Department will pay for installing conduit by directional bore at the contract unit price per linear foot. Price and payment will constitute full compensation for:
   1. Excavation and backfilling;
   2. placing the conduit;
   3. caps, if required; and
   4. all other requirements.

C. The Department will pay for installing conduit by open cutting existing pavement at the contract unit price per linear foot. Price and payment will constitute full compensation for:
   1. Excavation and backfilling;
   2. placing the conduit;
   3. disposal of excess materials; and
   4. all other requirements.

D. The Department will pay for installing conduit by unpaved trench at the contract unit price per linear foot. Price and payment will constitute full compensation for:
   1. Excavation and backfilling;
   2. removal of sod, if required;
   3. placing the conduit;
   4. disposal of excess materials;
   5. replacing excavated on site sod, if required;
   6. seeding, if required; and
   7. all other requirements.

E. The Department will pay for:
   1. Borrow in accordance with section 209;
   2. Base courses in accordance with sections 301 and 302;
   3. Bituminous pavement materials in accordance with section 402;
   4. PCC patching in accordance with section 505;
   5. Saw cutting in accordance with section 762; and
   6. Sodding and/or topsoil from an outside source in accordance with section 908.

8/10/21

908523 – POLLINATOR MEADOW SEED MIX

Description:

This work consists of the preparation, furnishing, and placing all materials to construct a pollinator meadow.

Site Preparation:

Eliminate all vegetation, especially invasive species. Remove "dead" vegetation by mowing. If the project site is a turf grass or a field, apply two rounds of herbicide to eliminate all vegetation.

Materials:

A. Topsoil

1. Friable loam soil of uniform quality and free from heavy clay, frozen clods, lumps exceeding 2 inches in diameter and materials harmful to plant growth.

2. Void of Johnsongrass (Sorghum halapense), Canada Thistle (Cirsium arvense), Burcucumber (Sicyos angulatus), Giant Ragweed (Ambrosia trifida), and Texas Amaranth (Amaranthus palmeri).

3. Determine and incorporate the type and amount of soil amendments, supplements, and process needed to establish permanent vegetation.

B. Topsoiling

1. This material consists of the existing project soils designated for stripping, salvaging, and temporarily stockpiling for later use in accordance with Section 202.

2. Void of Johnsongrass (Sorghum halapense), Canada Thistle (Cirsium arvense), Burcucumber (Sicyos angulatus), Giant Ragweed (Ambrosia trifida), and Texas Amaranth (Amaranthus palmeri).

3. Determine and incorporate the type and amount of soil amendments, supplements, and process needed to establish permanent vegetation.

C. Seeding

1. Use water meeting the requirements of Section 1021.

2. Seeding Rate

   a. Seed at 4.5 lbs – 6.7 lbs PLS/acre. A cover crop shall be applied with this mix. For the cover crop, use one of the following:
      i. Oats (30lbs/acre) from January 1 to April 30
      ii. Brown top millet (10 lbs/acre) from May 1 to August 31
      iii. Grain rye (30 lbs/acre) from September 1 to Dec 31

3. Seed

   a. Use seed previously inspected, tested, and approved by the Delaware Department of
   b. Use the following seeding table – Pollinator Meadow Mix:

	Botanical Name	Common Name
22.40 %	*Schizachyrium scoparium, 'Camper'*	Little Bluestem, 'Camper'
19.50 %	*Elymus virginicus, PA Ecotype*	Virginia Wildrye, PA Ecotype
10.00 %	*Echinacea purpurea*	Purple Coneflower
9.90 %	*Coreopsis lanceolata*	Lanceleaf Coreopsis
9.00 %	*Chamaecrista fasciculata, PA Ecotype*	Partridge Pea, PA Ecotype
7.00 %	*Heliopsis helianthoides, PA Ecotype*	Oxeye Sunflower, PA Ecotype
3.10 %	*Penstemon digitalis*	Tall White Beardtongue
2.80 %	*Aster novae-angliae, PA Ecotype*	New England Aster, PA Ecotype
2.70 %	*Aster lateriflorus*	Calico Aster
2.00 %	*Asclepias incarnata, PA Ecotype*	Swamp Milkweed, PA Ecotype
1.60 %	*Eupatorium maculatum, PA Ecotype*	Spotted Joe Pye Weed, PA Ecotype
1.60 %	*Monarda fistulosa, Fort Indiantown Gap-PA Ecotype*	Wild Bergamot, Fort Indiantown Gap-PA Ecotype
1.50 %	*Pycnanthemum tenuifolium*	Narrowleaf Mountainmint
1.20 %	*Agastache foeniculum*	Anise (Lavender) Hyssop
1.00 %	*Lespedeza capitata, RI Ecotype*	Roundhead Lespedeza, RI Ecotype
1.00 %	*Zizia aurea, PA Ecotype*	Golden Alexanders, PA Ecotype
0.80 %	*Eupatorium perfoliatum, PA Ecotype*	Boneset, PA Ecotype
0.80 %	*Solidago juncea, PA Ecotype*	Early Goldenrod, PA Ecotype
0.80 %	*Solidago nemoralis, PA Ecotype*	Gray Goldenrod, PA Ecotype
0.50 %	*Geum canadense, PA Ecotype*	White Avens, PA Ecotype
0.40 %	*Asclepias syriaca*	Common Milkweed
0.40 %	*Solidago bicolor, PA Ecotype*	White Goldenrod, PA Ecotype

Method of Measurement:

The Department will measure the quantity of seeding by the square yard.

Basis of Payment:

A. The Department will pay the quantity of seeding at the contract unit price per square yard. Price and payment constitutes full compensation for preparing the ground and for providing and placing all seed materials.

B. The Department will pay for topsoil and topsoiling in accordance with section 908.

C. The Department will pay for the seeding at the time that the seed is placed and vegetative growth is established to 70 percent uniform density over all seeded areas.

7/22/2021

STATEMENTS

Included on the following pages:

UTILITY STATEMENTS

RIGHT-OF-WAY STATEMENTS

ENVIRONMENTAL STATEMENTS

RAILROAD STATEMENTS

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

NICOLE MAJESKI
SECRETARY

UTILITY STATEMENT

09/24/2021
State Contract No. T201811302
P.6. #18-82203
F.A.P.# NONE
Boyds Corner Maintenance Yard
New Castle County

Location: South side of SR 896/Boyds Corner Road, approximately 2.4 miles west of US Route 13. Located along the east side of US 301.

Scope of Work: Construction of new maintenance yard along with turn lane widening on SR 896/Boyds Corner Road.

The following utility companies maintain facilities within the project limits:

Artesian Water
Atlantic Broadband - Communications
Chesapeake Utilities - Gas
Comcast Cable NCC - Communications
Delmarva Power North – Electrical Distribution
New Castle County Department of Public Works - Sanitary Sewer
Verizon of Delaware - Communications

NOTE: The state contractor shall coordinate and schedule all service installations including any necessary inspections. The cost of coordination and scheduling shall be incidental to the contractor. The following is a breakdown of the utilities involved, adjustments and/or relocations as required (all stations, offsets, lengths, and calendar days are approximate):

Artesian Water

Artesian Water Company currently owns and maintains the following facilities within the project limits:

1. An underground 16" PVC water main continues in the east/west direction along the south side of Boyds Corner Road across the entire project frontage.

Artesian will need to vertically and laterally adjust the existing fire hydrant located at Station 61+05, offset right to meet existing grade and move clear of the roadway's prescribed clear zone.

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 a directed by the District Engineer.

Service: DelDOT will be acquiring water service for the maintenance yard via Artesian Water Company's standard process for applying for water service.

No working/existing Artesian Water Company Facilities can be taken out of service. These facilities will remain in place and active during the duration of this contract. If an emergency occurs during construction Artesian Water's 24-hour emergency phone number is 1-800-332-5114.

Atlantic Broadband Communications

Atlantic Broadband owns and maintains aerial communication lines running east/west on the Delmarva Power owned pole line located on the north side of SR 896/Boyds Corner Road.

Atlantic Broadband's facilities are not anticipated to be impacted by project construction. 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 a directed by the District Engineer.

The contractor must use care when working in the vicinity of Atlantic Broadband's overhead cables. The time to complete any unanticipated relocations/adjustments found to be necessary, as directed by the engineer during the construction of the maintenance yard contract will depend on the nature of the work.

No working/existing Atlantic Broadband Facilities can be taken out of service. These facilities will remain in place and active during the duration of this contract.

Chesapeake Utilities - Gas

Chesapeake Utilities owns and maintains a 6" plastic gas main along the south side of SR 896/Boyds Corner Road throughout the project frontage.

Chesapeake Utilities gas main is not anticipated to be impacted by project construction. Should any unexpected 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 a directed by the District Engineer.

It shall be the contractor's responsibility to contact and coordinate with Chesapeake Utilities before starting any construction above or near the existing pipeline. The contractor must use care when working in the vicinity of Chesapeake Utilities' underground facilities. The time to complete any unanticipated relocations/adjustments found to be necessary, as directed by the engineer during the construction of the maintenance yard contract will depend on the nature of the work.

Service: DelDOT will be acquiring gas service for the maintenance yard via Chesapeake Utilities' standard process for applying for gas service.

No working/existing Chesapeake Utilities Facilities can be taken out of service. These facilities will remain in place and active during the duration of this contract.

IN EVENT OF PIPELINE EMERGENCY, CALL TOLL FREE 1-800-427-2883

Comcast Cable NCC- Communications

Comcast Cable NCC owns and maintains aerial communication lines running east/west on the Delmarva Power owned pole line on the north side of SR 896/Boyds Corner Road .

Comcast's facilities are not anticipated to be impacted by project construction. 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 a directed by the District Engineer.

The contractor must use care when working in the vicinity of Comcast Cable's overhead cables. The time to complete any unanticipated relocations/adjustments found to be necessary, as directed by the engineer during the construction of the maintenance yard contract will depend on the nature of the work.

No working/existing Comcast Cable Facilities can be taken out of service. These facilities will remain in place and active during the duration of this contract. In case of emergency, Comcast's 24-hour phone number is 1-800-XFINITY (1-800-934-6489)

Delmarva Power North - Electric Distribution

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

1. An overhead Delmarva electric line continues in a east/west direction from utility pole #44476-34739 (Sta 51+30, offset left) to utility pole # 44582-34669 (Sta 64+00, offset left) on the north side of Boyds Corner Road.
2. Delmarva Power aerially services the Maintenance Yard site in 2 locations:
    a. Single Phase: Station 56+89, offset right (Pole #44509-34694)

b. Three Phase: Station 57+72, offset right (Pole #44515-34690)

3. Delmarva Power maintains the following guy poles on the south side of SR 896:
   a. Station 56+10, offset right (Pole # 44510-34703)
   b. Station 60+78, offset right (Pole #14585-34678)

As part of the proposed service to the site, Delmarva Power Proposes to:

1. Disconnect Single Phase service to pole #44509-34694
   a. Any underground lines from the service pole into the site will be abandoned in place and will be removed by DelDOT's Contractor.
   b. The Single-phase transformer, meter and associated equipment will be removed by Delmarva Power Forces.
   c. Existing pole #44509-34694 is a private pole and will be removed by DelDOT's Contractor after services have been abandoned.
2. Disconnect Three-Phase service to pole #44515-34690
   a. Delmarva Power has previously removed the three-phase meter and transformer from the site.
   b. Any underground lines from the service pole into the site will be abandoned in place and will be removed by DelDOT's Contractor.
3. Relocate guy pole #44510-34703
4. Remove guy pole #14585-34690

Service: DelDOT will be acquiring electric service for the maintenance yard via Delmarva Power's standard process for applying for electric service. The following items will be included in the new service to the site:

1. Delmarva Power will install a new Three-Phase service the site via a new Pole Installed at station 60+78, offset right.
2. Delmarva Power will install a new meter and transformer on the site for the new three-phase service.
3. Delmarva Power will install lighting on the follow poles on the north side of Boyds Corner Road:
   a. Pole #44501-34717
   b. Pole #44513-34707
   c. Pole #44526-34789
   d. Pole #44538-34690

Should any unexpected 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 a directed by the District Engineer.

The contractor must use care when working in the vicinity of Delmarva Power's overhead cables. The time to complete any unanticipated relocations/adjustments found to be necessary, as directed by the engineer during the construction of the maintenance yard contract will depend on the nature of the work.

No working/existing Delmarva Power Facilities can be taken out of service. These facilities will remain in place and active during the duration of this contract.

For exact location, please contact Miss Utility at (800-282-8555).
Always assume downed power lines are energized and stay away. To report a downed wire, call 1-800-898-8042.

DelDOT has not planned for or coordinated with Delmarva Power – Distribution for any temporary power outages, relocations, physical pole support for excavation nor arranged for the installation of insulation of any power line during this contract except for those listed above. Due to varying construction possibilities; if a contractors means-and-methods should require support from Delmarva Power – Distribution to fulfill the requirement of 16 Del. C. § 7405B, OSHA Regulations Table A of § 1926.1408, other applicable federal, state or local law or regulation or the Contractor's company policy; it shall be at the Contractor's sole expense and the contractor shall directly coordinate this request with Delmarva Power – Electric Distribution. All costs associated with any temporary power outages, relocations, physical pole support for excavation or the installation of insulation of any power line during this contract shall be incidental, including the cost of the coordination, to the work being performed. The Department makes no guarantees that the request for any temporary power outages, relocation or the installation of insulation of any power line during this contract will be granted by Delmarva Power – Distribution in part or in total; or during the time periods requested by the Contractor for construction purposes. Any proposed coordination with Delmarva Power – Distribution shall be included in the contractor's CPM schedule
Delmarva Power has a written requirement regarding working near overhead power lines.
Customer/Contractor Acknowledgement: Performing Work within Dangerous Proximity of High Voltage Lines:
"You are hereby notified by Delmarva Power that NO work can be performed within dangerous proximity to Delmarva's overhead lines and that you are required by law to comply with applicable OSHA regulations and the applicable state High Voltage Safety Act. Performance of any activity or causing any person, equipment or things to come within dangerous proximity of Delmarva's overhead lines creates an extreme risk of severe injury or death. You are further notified that no activities may be conducted within dangerous proximity of Delmarva's overhead lines until mutually agreeable measures to prevent contact with overhead lines have been reached with Delmarva and Delmarva has provided you with written authorization to perform the activities.
Additionally, any work involving the use of a crane with intentions to remain outside of dangerous proximity, but within 20 feet of the Company's overhead lines, requires an Encroachment Prevention Plan in order to satisfy OSHA"

New Castle County Department of Public Works – Sanitary Sewer

New Castle County Department of Public Works owns and operates the follow facilities within the project limits:

1. Underground 6" HDPE line along the north side of SR 896/Boyds Corner Road

2. Underground 30" PCV line, within a sanitary sewer easement along the south side of SR 896/Boyds Corner Road.

3. **PROPOSED (by New Castle County Forces): New Castle County has proposed the continuation of the interceptor (listed in 2 above) travelling west from the manhole located at station 63+00 Right, under US 301 to service properties west of US 301 within the existing sanitary sewer easement. Should New Castle County work during the project duration, the contractor shall allow the work to proceed unless it is in direct conflict with the project. The contactor shall coordinate this effort with New Castle County and their contractor. This coordination is incidental to the contractor.**

New Castle County's facilities are not anticipated to be impacted by project construction. Should any unexpected 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 a directed by the District Engineer.

Service: DelDOT will be acquiring sanitary sewer service for the maintenance yard via New Castle County's standard process for applying for sanitary sewer service.

No working/existing Verizon Facilities can be taken out of service. These facilities will remain in place and active during the duration of this contract.

Verizon of Delaware

Verizon of Delaware maintains underground and aerial lines along the north side of SR 896/Boyds Corner Road.

Verizon proposes to remove aerial service to the proposed maintenance yard at the bottom of the drop. All underground facilities servicing the site will be abandoned in place by Verizon. DelDOT's Contractor will remove the existing underground facilities within the site. Refer to contract plans for anticipated cable locations.

Should any unexpected 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 a directed by the District Engineer.

The contractor must use care when working in the vicinity of Verizon's overhead and underground cables. The time to complete any unanticipated relocations/adjustments found to be necessary, as directed by the engineer during the construction of the maintenance yard contract will depend on the nature of the work.

No working/existing Verizon Facilities can be taken out of service. These facilities will remain in place and active during the duration of this contract.

General Utility Notes

Outside of the companies and facilities discussed above, no additional utility involvement is anticipated. Should any conflicts be encountered as a result of the contractor's means and methods during construction requiring adjustment and/or relocation, the necessary relocation work shall be accomplished by the respective utility company and funded by the State's Contractor as directed by the District Engineer. The State Contractor shall coordinate any potential conflicts with utility companies and provide adequate notice prior to performing work. Any utility conflicts that are not readily discernable shall be coordinated by the State Contractor once the conflict is recognized. The time to complete any relocations/adjustments found to be necessary during construction of the highway project will depend on the nature of the work.

Once the State's contractor has given the Utility the advance notice required above, it is the responsibility of the State's contractor to have the work area prepared and accessible for the Utility to perform the tasks listed above. If the site conditions are not ready and the state contractor has given notice to the utility on when the work is to be accomplished, the State's Contractor shall be responsible for any extra cost incurred by the utility company and the State Contractor shall also be responsible for any time delays. Between when the required notice is given to the Utility and when the work is performed and completed, the coordination and scheduling of the Utility is the sole responsibility of the State's Contractor. All costs related to the coordination and scheduling of the utilities is incidental to the contract.

Any adjustments and/or relocations of municipally owned sewer or water facilities shall be performed by the State's Contractor in accordance with the respective agency's standard specifications as directed by the District Engineer. The State contractor shall coordinate any potential conflicts of municipally owned sewer or water facilities with facility owners and provide adequate notice to the municipally and to the District Engineer prior to performing work.

General Notes

1. **The Contractor's attention is directed to Section 105.9 Utilities within the Project Limits; Miss Utility One-calls, DelDOT Standard Specifications for Road and Bridge Construction, June 2021. The Contractor shall contact Miss Utility (1-800-282-8555) two working days prior to any excavation. The Contractor is responsible for the support and protection of all utilities when excavating. The Contractor is responsible for ensuring proper clearances, including safety clearances, from overhead utilities for construction equipment. The Contractor is advised to check the site for access purposes for his equipment and, if necessary, make arrangements directly with the utility companies for field adjustments for adequate clearances.**

2. **The information shown in the Contract Documents, including the Utility Statement and the Utility Schedule contained herein, concerning the location, type and size of existing and proposed utilities, their locations, and construction timing has been compiled by the preparer based on information furnished by each of the involved Utility Companies. It shall be the responsibility of the State's Contractor to verify all information and coordinate with the Utility Companies prior to and during construction, as specified in Section 105.09 of the Standard Specifications.**

3. **It is understood and agreed that the Contractor has considered in his bid all permanent and temporary utility appurtenances in their present and relocated positions as shown on the plans or described in the Utility Statement or are readily discernible and that no additional compensation will be allowed for any delays, inconvenience, or damage due to any interference from the utility facilities and appurtenances or the operation of moving them, except that the Contractor may be granted an equitable extension of time. The contractor's means and method of construction are not taken into account when known utility conflicts are identified. If the Contractor's means and method of construction create a utility conflict the Utility Statement will prevail in discussions with the utility and the Contractor. The State's Contractor shall be responsible for any costs associated with any temporary outages; holding, bracing and shielding of utility facilities; temporary relocations; or permanent relocations that are not specifically identified in this utility statement or shown in the contract plan set.**

NAME	COMPANY	E-MAIL	PHONE
Wayne Tyler	Artesian Water	wtyler@artesianwater.com	(302) 453-6987
Wesley Page	Atlantic Broadband	wpage@atlanticbb.com	(410) 490-5617
Garth Jones	Chesapeake Utilities	gjones@chpk.com	(302) 213-7455
Darren Marsteller	Comcast Cable	dmarsteller@americomm-llc.com	(717) 509-7873
Jacob Sacher	Delmarva Power Electric - North	jacob.sacher@exeloncorp.com	(302) 454-5162
Dave Clark	New Castle County Department of Public Works	dcclark@newcastlede.gov	(302) 395-5705
George Zang	Verizon	george.w.zang@verizon.com	(302) 422-1238

4. **Coordination and cooperation among the Utility Companies and the State's Contractor are of prime importance. Therefore, the Contractor is directed to contact the following Utility Company representatives with any questions regarding this work prior to submitting bids and work schedules. Proposed work schedules should reflect the Utility Companies' proposed relocations. The Utility Companies do <u>not</u> work on weekends or legal holidays.**

5. **As outlined in Chapter 3 of the DelDOT Utilities Manual, individual utility companies are responsible for obtaining all required permits from municipal, State and federal government agencies and railroads. This includes but is not limited to water quality permits/DNREC Water Quality Certification, DNREC Subaqueous Lands/Wetlands permits, DNREC Coastal Zone Consistency Certification, County Floodplain permits (New Castle County only), U.S. Coast Guard permits, US Army Corps 404 permits, sediment and erosion permits, and railroad crossing permits.**

6. **Individual utility companies are required to restore any areas disturbed in conjunction with their relocation work. If an area is disturbed by a utility company and is not properly restored, the Department may have the highway contractor perform the necessary restoration. Any additional costs incurred as a result will be forwarded to the utility company.**

7. **16 Del. C. § 7405B requires notification to and mutually agreeable measures from the public utility operating the electric line for 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. **Any existing facilities that are comprised of hazardous materials will be removed by the Utility Company unless otherwise outlined in the contract documents or language above. Any existing facilities containing hazardous materials will be purged by the Utility Company unless otherwise outlined in the contract documents or language above.**

9. **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:

William Dougherty

	bdougherty@jmt.com	9/24/2021
Johnson, Mirmiran & Thompson, Inc Consulting Engineers William J. Dougherty	Email	Date

APPROVED AS TO FORM:

JLKnight III

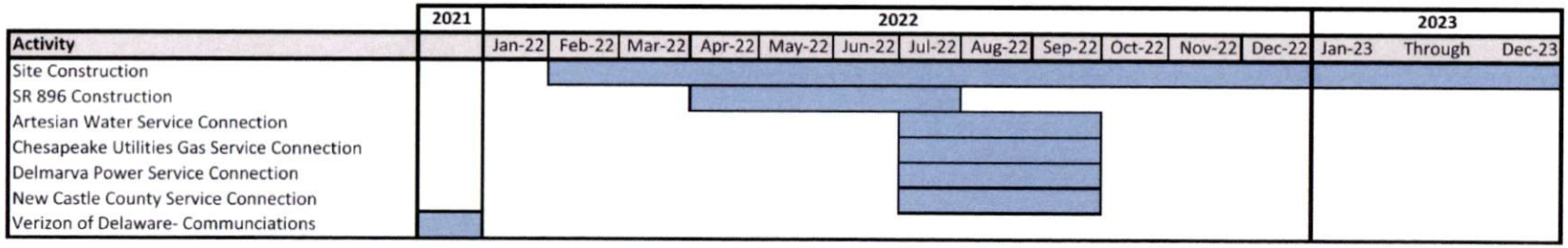
	james.knight@delaware.gov	9/24/2021
Delaware Department of Transportation James L. Knight	Email	Date

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

NICOLE MAJESKI
SECRETARY

T201811302 - BOYDS CORNER MAINTENANCE YARD

UTILITY BAR CHART



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

CERTIFICATE OF RIGHT-OF-WAY STATUS

STATE PROJECT NO. T201811302

F.A.P. NO. N/A for R/W

BOYD'S CORNER MAINTENANCE YARD

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

August 19, 2021

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

NICOLE MAJESKI
SECRETARY

July 22, 2021

ENVIRONMENTAL REQUIREMENTS

FOR

Contract Title: Boyds Corner Maintenance Yard

State Contract No. T201811302

Federal Aid No.: N/A

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 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 at (302) 760-2259 or DOT_EnvironmentalStudies@delaware.gov.

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

NICOLE MAJESKI
SECRETARY

RAILROAD STATEMENT
For

State Contract No.: T201811302

Federal Aid No.: N/A

Project Title: Boyds Corner Maintenance Yard

The following railroad companies maintain facilities within the contract limits:

- ☐ Amtrak
- ☐ CSX
- ☐ State of Delaware Delmarva Central
- ☐ East Penn
- ☐ Maryland & Delaware
- ☐ Norfolk Southern
- ☐ Wilmington & Western
- ☐ Delmarva Central
- ☑ 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) 760-4882.

☐ Railroad Agreement required. 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) 760-4882.

Approved As To Form:

Richard Sinegar
DelDOT Railroad Program Manager

8/5/2021
DATE

SAMPLE AFFIDAVIT OF CRAFT TRAINING COMPLIANCE

(Actual form for signature will be provided to the awarded contractor)

AFFIDAVIT OF CRAFT TRAINING COMPLIANCE

We, the contractor, hereby certify that we and all applicable subcontractors will abide by the contractor and subcontractor craft training requirements outlined below for the duration of the contract. Craft training is defined as "an apprenticeship program approved by and registered with any State apprenticeship agency or the United States Department of Labor."[1] A list of crafts for which there are approved and registered training programs is maintained by the Delaware Department of Labor and can be found at https://det.delawareworks.com/documents/Apprenticeship/Apprenticeship%20Occupations.pdf?20190215. Prime Contractors are reminded they commit that all subcontractors will abide by the craftt training requirements, and include the requirement in their subcontracts.

In accordance with Title 29, Chapter 69, Section 6962(d)(13) of the Delaware Code, contractors and subcontractors must provide craft training for journeyman and apprentice levels if **all** of the following apply:

A. A project meets the prevailing wage requirement under Title 29, Chapter 69, Section 6960 of the Delaware Code.
B. The contractor employs 10 or more total employees.
C. The project is not a federal highway project

Failure to provide required craft training on the project may subject the successful contractor and/or subcontractor(s) to penalties as outlined in Title 29, Chapter 69, Section 6962(d)(13) of the Delaware Code.

Craft(s) _____

Contractor Name: _____

Contractor Address: _____

_____

_____

Contractor/Subcontractor Program Registration Number _____
On this line also indicate whether DE, Other State (identify) or US Registration Number

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 AND NOTARIZED.

[1] Title 29, Chapter 69, Section 6902(7) of the Delaware Code.

Delaware Department of Transportation
Quantity Sheet Summary

Proposal ID: T201811302

Project Descripton: Boyds Corner Maintenance Yard

NOT TO BE USED FOR BIDDING

Item Number	Description	Unit	Quantity
763530	INITIAL EXPENSE	LS	1
201000	CLEARING AND GRUBBING	LS	1
202000	EXCAVATION AND EMBANKMENT	CY	26074
204000	TEST HOLE	CY	60
207000	STRUCTURAL EXCAVATION AND BACKFILL	CY	2448
209001	BORROW, TYPE A	CY	14597
207021	STRUCTURAL BACKFILL, (BORROW TYPE C)	CY	824
211002	REMOVAL OF GUARDRAIL AND FENCE	LF	164
211000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	1
601011	REINFORCED CONCRETE PIPE, 15", CLASS III	LF	194
301001	GABC	CY	7631
401014	SUPERPAVE TYPE B, PG 64-22	TON	972
401046	SUPERPAVE TYPE C, PG 76-22 (NON-CARBONATE STONE)	TON	4820
601012	REINFORCED CONCRETE PIPE, 18", CLASS III	LF	157
601014	REINFORCED CONCRETE PIPE, 24", CLASS III	LF	70
601141	REINFORCED CONCRETE FLARED END SECTION, 15"	EACH	7
601142	REINFORCED CONCRETE FLARED END SECTION, 18"	EACH	6

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Delaware Department of Transportation
Quantity Sheet Summary

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NOT TO BE USED FOR BIDDING

Item Number	Description	Unit	Quantity
601192	PVC PIPE, 8"	LF	358
762001	SAW CUTTING, CONCRETE, FULL DEPTH	LF	1538
807009	REMOVE TEMPORARY PORTLAND CEMENT CONCRETE SAFETY BARRIER, UNPINNED	LF	288
601053	REINFORCED CONCRETE PIPE, 15", CLASS V	LF	64
817002	PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, ALKYD-THERMOPLASTIC	SF	483
763598	FIELD OFFICE, SPECIAL I	EAMO	24
908004	TOPSOIL, 6" DEPTH	SY	20962
830011	PROVIDE AND INSTALL FRAME AND LID FOR JUNCTION WELL, TYPE 1	EACH	2
831515	PROVIDE AND INSTALL 3" SCHEDULE 80 PVC CONDUIT (TRENCH)	LF	105
831523	PROVIDE AND INSTALL 2" GALVANIZED CONDUIT (TRENCH)	LF	140
831524	PROVIDE AND INSTALL 2-1/2" GALVANIZED STEEL CONDUIT (TRENCH)	LF	100
831529	PROVIDE AND INSTALL 2-1/2" GALVANIZED STEEL CONDUIT (BORE)	LF	70
831545	PROVIDE AND INSTALL 4" HDPE SDR-13.5 CONDUIT (BORE)	LF	90
905004	INLET SEDIMENT CONTROL, DRAINAGE INLET	EACH	3
907017	COMPOST FILTER LOGS	LF	218
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	36147

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Delaware Department of Transportation
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Item Number	Description	Unit	Quantity
819019	INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON MULTIPLE SIGN POSTS	SF	9
211521	ABANDONMENT OF WELLS	EACH	4
908017	TEMPORARY GRASS SEEDING	SY	72294
711002	SANITARY SEWER SYSTEM	LS	1
803001	PROVIDE AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	EADY	45
601100	REINFORCED CONCRETE ELLIPTICAL PIPE, 14" X 23", CLASS III	LF	10
908523	POLLINATOR MEADOW SEED MIX	SY	3500
809005	PROVIDE TEMPORARY IMPACT ATTENUATOR - NON-GATING, REDIRECTIVE, TEST LEVEL 3	EACH	1
807004	RELOCATE TEMPORARY PORTLAND CEMENT CONCRETE SAFETY BARRIER, UNPINNED	LF	376
707015	RIPRAP, R-4	TON	170
727507	CHAIN-LINK CANTILEVER SLIDE GATE	EACH	2
763511	MAINTENANCE BUILDING	LS	1
601191	PVC PIPE, 6"	LF	45
501001	PCC PAVEMENT, 8"	SY	68
908010	TOPSOILING, 6" DEPTH	SY	15185
602036	MANHOLE, SPECIAL	EACH	1

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Delaware Department of Transportation
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Item Number	Description	Unit	Quantity
610000	PCC MASONRY, CLASS A	CY	156
763506	MISCELLANEOUS CONSTRUCTION	LS	1
763504	SITE WORK	LS	1
710500	INSTALLATION OF WATERMAIN AND ACCESSORIES	LS	1
710481	ANTI-SEEP COLLAR	EACH	1
302002	DELAWARE NO. 3 STONE	TON	25
905001	SILT FENCE	LF	1422
910009	INFILTRATION TRENCH	LF	406
817015	PREFORMED RETROREFLECTIVE THERMOPLASTIC MARKINGS, BIKE SYMBOL	EACH	3
834005	POLE BASE, TYPE 4A	EACH	2
802003	ARROW PANELS TYPE C	EADY	3
910005	CLAY BORROW POND LINER	CY	1045
811001	FLAGGER, NEW CASTLE COUNTY	HOUR	200
808002	PROVIDE AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	48
817017	PREFORMED RETROREFLECTIVE THERMOPLASTIC MARKINGS, HANDICAP SYMBOL	EACH	3
819018	INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON SINGLE SIGN POST	EACH	17

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Delaware Department of Transportation
Quantity Sheet Summary

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Project Descripton: Boyds Corner Maintenance Yard

NOT TO BE USED FOR BIDDING

Item Number	Description	Unit	Quantity
830012	PROVIDE AND INSTALL FRAME AND LID FOR JUNCTION WELL, TYPE 4	EACH	3
810001	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	1874
601054	REINFORCED CONCRETE PIPE, 18", CLASS V	LF	77
763501	CONSTRUCTION ENGINEERING	LS	1
701018	I.PCC CURB AND GUTTER, TYPE 1-8	LF	414
705007	DETECTABLE WARNING SURFACE	SF	366
705008	PEDESTRIAN CONNECTION, TYPE 1	SF	1491
809001	INSTALL TEMPORARY IMPACT ATTENUATOR	EACH	1
807001	PROVIDE AND INSTALL TEMPORARY PORTLAND CEMENT CONCRETE SAFETY BARRIER, UNPINNED	LF	288
817013	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	LF	10435
817027	RAISED/RECESSED PAVEMENT MARKER	EACH	65
830015	PROVIDE AND INSTALL PRECAST POLYMER COVER FOR JUNCTION WELL, TYPE 7	EACH	1
831516	PROVIDE AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (TRENCH)	LF	1665
831528	PROVIDE AND INSTALL 2" GALVANIZED STEEL CONDUIT (BORE)	LF	90
760010	PAVEMENT MILLING, BITUMINOUS CONCRETE PAVEMENT	SYIN	16553
601144	REINFORCED CONCRETE FLARED END SECTION, 24"	EACH	1

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Delaware Department of Transportation
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NOT TO BE USED FOR BIDDING

Item Number	Description	Unit	Quantity
908020	EROSION CONTROL BLANKET MULCH	SY	1311
908021	TURF REINFORCEMENT MATTING, TYPE 1	SY	50
908023	STABILIZED CONSTRUCTION ENTRANCE	SY	114
908015	PERMANENT GRASS SEEDING, STORMWATER	SY	2169
908024	STABILIZED CONSTRUCTION ENTRANCE, TOPDRESSING	TON	13
910001	INFILTRATION STONE, NO. 3	TON	836
910006	OUTLET STRUCTURE	EACH	1
910008	STORMWATER MANAGEMENT POND	CY	14275
501006	PCC PAVEMENT, 12"	SY	401
805001	PLASTIC TRAFFIC CONTROL DRUMS	EADY	6000
601505	DRAINAGE SAFETY END STRUCTURE	EACH	1
602003	DRAINAGE INLET, 34" X 24"	EACH	3
601194	PVC PIPE, 12"	LF	1575
602502	CONVERTING EXISTING CATCH BASIN TO MANHOLE	EACH	1
701013	PCC CURB, TYPE 1-8	LF	1028
701032	CURB OPENING, 4' OPENING	EACH	2
705001	PCC SIDEWALK, 4"	SF	6378

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Delaware Department of Transportation
Quantity Sheet Summary

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Project Descripton: Boyds Corner Maintenance Yard

NOT TO BE USED FOR BIDDING

Item Number	Description	Unit	Quantity
707001	RIPRAP, R-4	SY	331
707002	RIPRAP, R-5	SY	9
708003	GEOTEXTILES, RIPRAP	SY	340
708002	GEOTEXTILES, SEPARATION	SY	1487
720021	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	116
720028	CURVED GUARDRAIL SECTION	LF	110
721000	GUARDRAIL END TREATMENT, TYPE 1-31, TEST LEVEL 2	EACH	2
720557	BOLLARD, STEEL	EACH	33
727000	CHAIN LINK FENCE	LF	4651
727010	CHAIN LINK FENCE GATE	EACH	6
760008	RUMBLE STRIPS, CENTER LINE, BITUMINOUS PAVEMENT	LF	2050
401016	SUPERPAVE TYPE B, PG 76-22	TON	5734
817031	REMOVAL OF PAVEMENT STRIPING	SF	5000
801000	MAINTENANCE OF TRAFFIC	LS	1

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