STATE OF DELAWARE

This Copy is for information only.
You must request a CD from
DelDOT in order to bid.

DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T201903401.01

SINKHOLE REPAIR, NORTH DISTRICT, OPEN END, FY20-22

NEW CASTLE COUNTY

ADVERTISEMENT DATE: April 1, 2019

COMPLETION TIME: 730 Calendar Days

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

Bids will be received in the Bidder's Room at the Delaware Department of Transportation's Administration Building, 800 Bay Road, Dover, Delaware prior to 2:00 P.M. local time **April 30, 2019**

Contract No.T201903401.01

SINKHOLE REPAIR, NORTH DISTRICT, OPEN END, FY20-22
NEW CASTLE COUNTY

GENERAL DESCRIPTION

LOCATION

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

DESCRIPTION

The improvements consist of furnishing all labor and materials for this Contract. The purpose of this contract is to repair storm drainage systems in North District, and other incidental construction in accordance with the location, notes and details shown on the plans and as directed by the Engineer.

COMPLETION TIME

All work on this contract must be complete within 730 Calendar Days. It is the Department's intent to issue a Notice to Proceed such that work starts on or about July 22, 2019.

PROSPECTIVE BIDDERS NOTES:

1. BIDDERS MUST BE REGISTERED with DelDOT and request a cd of the official plans and specifications in order to submit a bid. Contact DelDOT at dot-ask@state.de.us, or (302) 760-2031. Bids will be received in the Bidder's Room at the Delaware Department of Transportation's Administration Building, 800 Bay Road, Dover, Delaware prior to 2:00 P.M. local time April 30, 2019 unless changed via addendum.

2. QUESTIONS regarding this project are to be e-mailed to dot-ask@state.de.us no less than six business days prior to the bid opening date in order to receive a response. Please include T201903401.01 in the subject line. Responses to inquiries are posted on-line at http://www.bids.delaware.gov.

3. PREQUALIFICATION REQUIREMENT - 29 Del.C. §6962 (12)(a) requires DelDOT to include a performance-based rating system for contractors. The Performance Rating for each Contractor shall be used as a prequalification to bid at the time of bid. Refer to Contract ***'General Notices'*** for details. ***NEW***

4. THE BID PROPOSAL incorporates a cd containing **Expedite**, **version 5.9a** and its installation file. Bidders are to use the cd provided to enter their bid amounts into the Expedite file. The Expedite bid file must be printed and submitted in paper form along with the cd and other required documents prior to the Bid due date and time.

5. SURETY BOND - Each proposal must be accompanied by a deposit of either surety bond or security for a sum equal to at least 10% of the bid.

6. DRUG TESTING - Regulation 4104; The state Office of Management and Budget has developed regulations that require Contractors and Subcontractors to implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds pursuant to 29 **Del.C.** §6908(a)(6). **Refer to the full REVISED requirements at the following link:** http://regulations.delaware.gov/register/december2017/final/21 DE Reg 503 12-01-17.htm

   Note a few of the requirements;

   * At bid submission - Each bidder must submit with the bid a single signed affidavit certifying that the bidder and its subcontractors has in place or will implement during the entire term of the contract a Mandatory Drug Testing Program that complies with the regulation, *the form is attached*;

   * At least two business days prior to contract execution - The awarded Contractor shall provide to DelDOT copies of the Employee Drug Testing Program for the Contractor, and any other listed Subcontractors;

* Subcontractors - Contractors that employ Subcontractors on the job site may do so only after submitting a copy of the Subcontractor's Employee Drug Testing Program along with the standard required subcontractor information. A Subcontractor shall not commence work until **DelDOT** has approved the subcontractor in writing;

* Penalties for non-compliance are specified in the regulation.

7. No RETAINAGE will be withheld on this contract unless through the Prequalification Requirements.

8. EXTERNAL COMPLAINT PROCEDURE can be viewed on DelDOT's Website here, or you may request a copy by calling (302) 760-2555.

9. REMINDER; A copy of your firm's Delaware Business License must be submitted with your bid.

10. AUGUST 2016 STANDARD SPECIFICATIONS apply to this contract. The Contractor shall make himself aware of any revisions and corrections (Supplemental Specifications, if any) and apply them to the applicable item(s) of this contract. The 2016 Standard Specifications can be viewed here.

10a. FLATWORK CONCRETE TECHNICIAN CERTIFICATION TRAINING:
Section 501.03, 503.03, 505.03, 610.03, 701.03 and 702.03 of the 2016 Standard Specifications require contractor's to provide an American Concrete Institute (ACI) or National Ready Mix Concrete Association (NRMCA) certified concrete flatwork technician to supervise all finishingof flatwork concrete. Concrete flatwork certification will be effective starting on June 1, 2018.

11. No utility relocation involvement is anticipated. Should any conflicts be encountered during construction requiring adjustment and/or relocation of the agencies' existing facilities, the necessary relocation work shall be accomplished by the respective agencies' forces, as directed by the District Engineer. Any adjustments and/or relocations of municipally owned facilities shall be done by the State's contractor in accordance with the respective agencies' standard specifications as directed by the District Engineer.

12. No environmental permits are required for this work provided no jurisdictional wetlands or waters are impacted. If there is any question as to whether or not a water or wetland is jurisdictional, contact the DelDOT Environmental Section at 302-760-2264.

13. It is anticipated that all work will occur within DelDOT's existing right of way or easement areas. Should the need occur to trespass onto private property; it will be the responsibility of the Project manager to secure such trespass needs.

14. It is anticipated that all work will occur within DelDOT's right of way. Should the need occur to trespass onto railroad property, including the highway-rail crossing; it will be the responsibility of the Project Manager to contact the railroad Chief Engineer and obtain written authorization before entering.

15. The project manager shall be responsible for coordinating with the Traffic Section relating to any impacts to Traffic Section facilities (including but not limited to traffic loops, junction wells etc.) at least 4 weeks in advance of the start of the activity. Prior to initiating any work on this contract (or sites), the Project Manager shall be responsible for preparing and submitting for approval of the Safety Section, a Maintenance of Traffic Plan. Sufficient time shall be provided for the review and approval of the plan. The Maintenance of Traffic Plan shall include proposed time restrictions on the closure of travel lanes subject to the approval of the Safety Section.

16. The Project Manager is responsible for ensuring any required documents and analysis as part of the adopted Work Zone Safety and Mobility Procedures and Guidelines has been completed prior to any work starting on this contract.

STATE OF DELAWARE
CONSTRUCTION ITEMS UNITS OF MEASURE

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

*Not used for units of measurement for payment.

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GENERAL NOTICES

SPECIFICATIONS:

The specifications entitled "Standard Specifications for Road and Bridge Construction, August, 2016", hereinafter referred to as the Standard Specifications, and Supplemental Specifications, the Special Provisions, notes on the Plans, this Bid Proposal, and any addenda thereto shall govern the work to be performed under this contract. The Specifications and Supplemental Specifications can be viewed here.

CLARIFICATIONS:

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

ATTESTING TO NON-COLLUSION:

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

QUANTITIES:

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

PREQUALIFICATION REQUIREMENT

NEW

29 Del.C. §6962 (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 insure compliance.

LICENSE:

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

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

Upon written notification, the engineer will investigate the conditions, and if he/she determines that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding loss of anticipated profits, will be made and the

contract modified in writing accordingly. The engineer will notify the contractor of his/her determination whether or not an adjustment of the contract is warranted.

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

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

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

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

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

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

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

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

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

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

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

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 DEPARTMENT OF LABOR FOR SWORN PAYROLL INFORMATION

Title 29 Del.C. §6960 stipulates;

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

(c) Every contract based upon these specifications shall contain a stipulation that sworn payroll information, as required by the Department of Labor, be furnished weekly. The Department of Labor shall keep and maintain the sworn payroll information for a period of 6 months from the last day of the work week covered by the payroll.

Bidders are specifically directed to note the Department of Labor's prevailing wage regulations implementing §6960 relating to the effective date of the wage rates, at Section 6.3, 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."

Contractor may contact:

Department of Labor, Division of Industrial Affairs, 4425 N. Market Street, Wilmington, DE 19802
Telephone (302) 761-8200

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: (302) 761-8200

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

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

PREVAILING WAGES FOR **HIGHWAY CONSTRUCTION** EFFECTIVE MARCH 15, 2019

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

CERTIFIED: 03/26/2019 BY: on behalf of Mike Reed
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: T201903401.01 Sinkhole Repair North District , New Castle County

SUPPLEMENTAL SPECIFICATIONS TO THE STANDARD SPECIFICATIONS

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

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

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

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

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

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

SPECIAL PROVISIONS

CONSTRUCTION ITEM NUMBERS

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

Standard Item Number:

The first three digits of the construction item numbers indicates the Section number as described in the Standard Specifications, and all applicable requirements of the Section shall remain effective unless otherwise modified by the Special Provisions. The last three digits of the construction item identifies the item by sequential number under that Section. A comprehensive list of construction item numbers are listed in the Standard Specifications. Additions to this list will be made as required.

Special Provisions Item Number:

The first three digits of the construction items, covered under Special Provisions, indicates the applicable Section number of the Standard Specifications, and shall be governed fully by the requirements of the Special Provisions. The last three digit of the items covered under Special Provisions identifies the item by sequential number.

Examples

Standard Item Number - 202000 Excavation and Embankment

202 Indicates Section Number

000 Indicates Sequential Number

Special Provision Item Number - 202500 Grading and Reshaping Roadway

202 Indicates Section Number

500 Indicates Sequential Number

401502 - ASPHALT CEMENT COST ADJUSTMENT

For Sections 304, 401, 402, 403, 404, and 405, payments to the Contractor shall be adjusted to reflect increases or decreases in the Delaware Posted Asphalt Cement Price when compared to the Project Asphalt Cement Base Price, as defined in these Special Provisions.

The Delaware Posted Asphalt Cement Price will be issued monthly by the Department and will be the industry posted price for Asphalt Cement, F.O.B. Philadelphia, Pennsylvania. The link for the posting is here.

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

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

Actual quantity of asphalt cement qualifying for any Asphalt Cement Cost Adjustment will be computed using the weight of eligible asphalt that is shown on the QA/QC pay sheets as a percentage for the delivered material.

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

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

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

The Asphalt cement cost adjustment will be calculated on grade PG 64-22 asphalt regardless of the actual grade of asphalt used. The Project Asphalt Cement Base Price per ton for the project will be the Delaware Posted Asphalt Cement Price in effect on the date of project advertisement.

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

NOTE:

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

5/05/15

211500 - TREE REMOVAL, 6" TO 15" DIAMETER
211501 - TREE REMOVAL, GREATER THAN 15" TO 25" DIAMETER
211502 - TREE REMOVAL, GREATER THAN 25" TO 37" DIAMETER
211503 - TREE REMOVAL, GREATER THAN 37" TO 49" DIAMETER
211504 - TREE REMOVAL, GREATER THAN 49" DIAMETER

Description:

This work consists of removing and disposing of trees with a diameter over 6".

Construction Methods:

The appropriate construction methods of Section 201 shall apply to this work. Final determination for removal of trees will be made by the Engineer during the construction operation.

Tree removal shall consist of cutting, bucking, and topping trees, the removal of stumps below the surrounding ground line, and the removal of all portions or remnants of the tree and stump from highway right-of-way and abutting properties. Trees shall be completely removed, including stumps and all roots or as directed by the engineer.

All portions or remnants of the tree shall become the property of the Contractor and shall be removed from the right-of-way and abutting properties at the close of each working day. All stumps, which cannot be removed the same day as cutting, shall be cut flush with the ground prior to the end of work that day. All right-of-way removal sites shall be restored to preconstruction condition, satisfactory to the Engineer, if ground disturbance, such as ruts or sod damage, occurs during removal in areas not to be disturbed by grading operations.

Method of Measurement"

The quantity of trees for removal will be measured as the actual number of trees acceptably removed. The trunk diameter of the tree will be measured at a point 4' - 6" above the ground, and, in the case of multi-trunk trees, the diameter will be measured at the point immediately below the branching split or juncture regardless of the branching height above the ground. The diameter of the tree will be determined from the circumference of the tree as measured above.

Basis of Payment:

The quantity of trees designated for tree removal will be paid for at the Contract unit price per each tree by category, as follows:

6" to 15" Diameter
Greater than 15" to 25" Diameter
Greater than 25" to 37" Diameter
Greater than 37" to 49" Diameter
Greater than 49" Diameter

Trees with a diameter of 6" and under will be removed under Section 201.

Price and payment will constitute full compensation for removal of designated trees; for restoration of ground disturbance in right-of-way removal sites; and for all labor, equipment, tools, and incidentals required to complete the work.

5/1/17

401699 - QUALITY CONTROL/QUALITY ASSURANCE OF BITUMINOUS CONCRETE

.01 Description

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

.02 Bituminous Concrete Production – Quality Acceptance

(a) Material Production - Tests and Evaluations.

All acceptance tests shall be performed by qualified technicians at qualified laboratories following AASHTO or DelDOT procedures, and shall be evaluated using Quality Level Analysis. The Engineer will conduct acceptance tests. The Engineer will directly base acceptance on the acceptance test results, the asphalt cement quality, the Contractor's QC Plan work, and the comparisons of the acceptance test results to the QC test results. The Engineer may elect to utilize test results of the Contractor in some situations toward judging acceptance.

Supply and capture samples, as directed by the Engineer under the purview of the Engineer from delivery trucks before the trucks leave the production plant. Hand samples to the Engineer to be marked accordingly. The sample shall represent the material produced by the Contractor, and shall be of sufficient size to allow the Engineer to complete all required acceptance tests. The Engineer will direct the Contractor when to capture these samples, on a statistically random, unbiased basis, established before production begins each day based upon the anticipated production tonnage. The captured sample shall be from the Engineer specified delivery truck. The Contractor may visually inspect the specified delivery load during sampling and elect to reject the load. If the contractor elects to reject the specified delivery truck, each subsequent load will be inspected until a visually acceptable load is produced for acceptance testing. All visually rejected loads shall not be sent to a Department project.

The first sample of the production day will be randomly generated by the Engineer between loads 0 and 12 (0-250 tons). Subsequent samples will be randomly generated by the Engineer on 500-ton sub-lots for the production day. Samples not retrieved in accordance with the Contractor's QC plan will be deemed unacceptable and may be a basis for rejection of material produced. Parallel tests or dispute resolution tests will only be performed on material captured at the same time and location as the acceptance test sample. Parallel test samples or Dispute Resolution samples will be created by splitting a large sample or obtaining multiple samples that equally represent the material. The Engineer will perform all splitting and handling of material after it is obtained by the Contractor.

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

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

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

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

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

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

- AASHTO T312 - Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor
- AASHTO T166, Method C (Rapid Method) - Bulk Specific Gravity of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface Dry Specimens
- AASHTO T308 - Determining the Asphalt Binder Content of Hot Mix Asphalt (HMA) by the Ignition Method
- AASHTO T30 - Mechanical Analysis of Extracted Aggregate
- AASHTO T209 - Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)
- ASTM D7227 - Standard Practice for Rapid Drying of Compacted Asphalt Specimens using Vacuum Drying Apparatus

(b) Pavement Construction - Tests and Evaluations.

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

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

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

The Engineer will evaluate and accept the compaction work on a daily basis. Payment for the compaction will be calculated by using the material production lots as referenced in **.02 Acceptance Plan (a) Material Production - B Tests and Evaluation** and analyzing the compaction results over the individual days covered in the material production lot. The compaction results will be combined with the material results to obtain a payment for this item.

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

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

Testing locations will be a minimum of 1.0 feet from the newly placed longitudinal joint and 50 feet from a new transverse joint.

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

Notify the Engineer prior to starting paving operations with approximate tonnage to be placed. The Contractor is then responsible for notifying the appropriate Engineer test personnel within 12 hours of material placement. The Engineer will mark core locations within 24 hours of notification. After determination of locations, the Contractor shall complete testing within two operational days of the locations being marked. If the cores are not cut within two operational days, the area in question will be paid at zero pay for compaction testing.

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

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

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

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

- AASHTO T166, Method C (Rapid Method) – Bulk Specific Gravity of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface Dry Specimens
- AASHTO T209 - Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt
- ASTM D7227 - Standard Practice for Rapid Drying of Compacted Asphalt Specimens using Vacuum Drying Apparatus

The Engineer will use the average of the last five test values of the same JMF (mixture ID) material at the production plant in order to calculate the average theoretical maximum specific gravity of the cores.

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

.03 Payment and Pay Adjustment Factors.

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

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

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

(a) Material Production - Pay Adjustment.

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

Table 2 - Material Parameter Weight Factors

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

Using the JMF target value, the single test tolerance (from Table 2), and the test values, the Engineer will use the following steps to determine the material pay adjustment factor for each lot of material:

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

8. From Table 4, locate the value of the Pay Adjustment Factor corresponding to the calculated PWL. When all properties of a single test are within the single test tolerance of Table 2, Pay Adjustment factors shall be determined by Column B. When any property of a single test is outside of the Single Test Tolerance parameters defined in Table 2, the Material Pay Adjustment factor shall be determined by Column C
9. For each lot, determine the final material price adjustment:

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

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

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

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

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

Table 3 – Quality Level Analysis by the Standard Deviation Method

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

90	1.10	1.20	1.23	1.24	1.25	1.25	1.26
89	1.09	1.17	1.19	1.20	1.20	1.21	1.21
88	1.07	1.14	1.15	1.16	1.16	1.16	1.17
87	1.06	1.11	1.12	1.12	1.12	1.12	1.12
86	1.04	1.08	1.08	1.08	1.08	1.08	1.08
85	1.03	1.05	1.05	1.04	1.04	1.04	1.04
84	1.01	1.02	1.01	1.01	1.00	1.00	1.00
83	1.00	0.99	0.98	0.97	0.97	0.96	0.96
82	0.97	0.96	0.95	0.94	0.93	0.93	0.93
81	0.96	0.93	0.91	0.90	0.90	0.89	0.89
80	0.93	0.90	0.88	0.87	0.86	0.86	0.86
79	0.91	0.87	0.85	0.84	0.83	0.82	0.82
78	0.89	0.84	0.82	0.80	0.80	0.79	0.79
77	0.87	0.81	0.78	0.77	0.76	0.76	0.76
76	0.84	0.78	0.75	0.74	0.73	0.73	0.72
75	0.82	0.75	0.72	0.71	0.70	0.70	0.69
74	0.79	0.72	0.69	0.68	0.67	0.66	0.66
73	0.75	0.69	0.66	0.65	0.64	0.63	0.63
72	0.74	0.66	0.63	0.62	0.61	0.60	0.60
71	0.71	0.63	0.60	0.59	0.58	0.57	0.57
70	0.68	0.60	0.57	0.56	0.55	0.55	0.54
69	0.65	0.57	0.54	0.53	0.52	0.52	0.51
68	0.62	0.54	0.51	0.50	0.49	0.49	0.48
67	0.59	0.51	0.47	0.47	0.46	0.46	0.46
66	0.56	0.48	0.45	0.44	0.44	0.43	0.43
65	0.52	0.45	0.43	0.41	0.41	0.40	0.40
64	0.49	0.42	0.40	0.39	0.38	0.38	0.37
63	0.46	0.39	0.37	0.36	0.35	0.35	0.35
62	0.43	0.36	0.34	0.33	0.32	0.32	0.32

Table 3 – Quality Level Analysis by the Standard Deviation Method

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

Table 4 - PWL Pay Adjustment Factors

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

97	+2	-3
96	+1	-4
95	0	-5
94	-1	-6
93	-2	-7
92	-3	-8
91	-4	-9
PWL<91	PWL - 100	PWL - 100

(b) Pavement Construction - Pay Adjustments.

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

- Degree of compaction of the in-place material

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

1. Calculate the core bulk specific gravity values from the sublot tests values, to the nearest 0.001 unit. Obtain the Theoretical maximum Specific Gravity values from the corresponding laboratory sublot tests.
2. Calculate the Degree of Compaction:
   Degree of Compaction =
   ((Core Bulk Specific Gravity) / (Theoretical Maximum Specific Gravity)) x 100% recorded to the nearest 0.1%.
3. The average compaction for the sublots shall be averaged together for the compaction level of the lot. The lots compaction test level shall be averaged and recorded to the nearest whole percent.
4. Locate the value of the Payment Adjustment Factor corresponding to the calculated degree of compaction from Table 5 or Table 5a.
5. Determine the pavement construction price adjustment by using the following formula:
   Construction Pay adjustment = (Lot Quantity) x (Bid Price) x (Pay Adjustment Factor) x 30%.

Table 5: Compaction Price Adjustment Highway Locations		
Degree of Compaction (%)	Range	Pay Adjustment Factor (%)
>= 97.0	>= 96.75	-100*
96.5	96.26 – 96.74	-5
96.0	95.75 – 96.25	-3
95.5	95.26 – 95.74	-2
95.0	94.75 – 95.25	0

94.5	94.26 – 94.74	0
94.0	93.75 – 94.25	1
93.5	93.26 – 93.74	3
93.0	92.75 – 93.25	5
92.5	92.26 – 92.74	3
92.0	91.75 – 92.25	0
91.5	91.26 – 91.74	0
91.0	90.75 – 91.25	-5
90.5	90.26 – 90.74	-15
90.0	89.75 – 90.25	-20
89.5	89.26 – 89.74	-25
89.0	88.75 – 89.25	-30
88.5	88.26 – 88.74	-50
=<88.0	=<88.25	-100*

* or remove and replace it at Engineer's discretion

Table 5A: Compaction Price Adjustment Other[1] Locations		
Degree of Compaction	Range	Pay Adjustment Factor (%)
>= 97.0	>= 96.75	-100*
96.5	96.26 – 96.74	-5
96.0	95.75 – 96.25	-3
95.5	95.26 – 95.74	-2
95.0	94.75 – 95.25	0
94.5	94.26 – 94.74	0
94.0	93.75 – 94.25	0
93.5	93.26 – 93.74	1
93.0	92.75 – 93.25	3
92.5	92.26 – 92.74	1
92.0	91.75 – 92.25	0
91.5	91.26 – 91.74	0
91.0	90.75 – 91.25	0
90.5	90.26 – 90.74	0
90.0	89.75 – 90.25	0
89.5	89.26 – 89.74	0

89.0	88.75 – 89.25	-1
88.5	88.26 – 88.74	-3
88.0	87.75 – 88.25	-5
87.5	87.26 – 87.74	-10
87.0	86.75 – 87.25	-15
86.5	86.26 – 86.74	-20
86.0	85.75 – 86.25	-25
85.5	85.26 – 85.74	-30
85.0	84.75 – 85.25	-40
84.5	84.26 – 84.74	-50
=< 84.0	=<84.25	-100*

* or remove and replace at Engineer's discretion

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

.04 Dispute Resolution.

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

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

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

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

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

If there is a discrepancy between the Engineer's acceptance test result and the Contractor's test result, the Contractor may ask for the Dispute Resolution sample to be tested. The Contractor may request up to two dispute resolution samples be tested per calendar year without charge. Any additional Dispute Resolution samples run at the Contractors request where the results substantiate the acceptance test result

will be assessed a fee of $125. Any additional Dispute Resolution samples that substantiate the Contractors test result will not be assessed the fee.

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

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

Appendix A - Repairing Core Holes in Bituminous Asphalt Pavement

Description.

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

Materials and Equipment.

The following material shall be available to complete this work:

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

The following equipment shall be available to complete this work:

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

Construction Method.

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

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

Performance Requirements.

The Engineer will judge the patch on the following basis:

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

Basis of Payment.

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

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

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

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

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

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

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

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

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

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

Structural Number Calculations

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

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

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

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

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

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

Example:

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

Calculation:

For the Type B lift the calculation would be:

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

For the Type C lift the calculation would be:

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

11/3/14

601500 - PIPE VIDEO INSPECTION

Description:

This work consists of the video inspection of the storm drain systems, and/or sanitary sewer systems (all pipe sizes included) in accordance with these Specifications, and the details and locations shown on the Plans and by the Engineer.

Construction Methods:

The entire system(s) involved shall be numbered and then inspected by means of a closed-circuit television. The inspection will be done one section at a time in the presence of the Department's inspector. This work shall not be performed until just prior to the placement of the final pavement surface in case repairs need to be done. But, shall be done no sooner than thirty days from the date of pipe placement. The contractor shall correct any deficiencies in the existing and newly constructed pipe run at their expense.

The television camera used for the inspection shall be specifically designed and constructed for such inspection, capable of producing color video. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera shall be operative in 100% humidity conditions. The camera shall be equipped with Pan and Tilt, capable of scanning 360° to view the entire joint. The camera, television monitor, and other components of the video system shall be capable of producing quality to the satisfaction of the Department. If unsatisfactory, the equipment shall be removed and replaced.

The condition of the entire pipe run shall be documented by moving the camera through the pipe in either direction. At each joint the camera shall stop and pan the entire circumference of the joint. Between joints, the camera shall move at a nominal speed of 10 to 15 feet per minute never exceeding 30 feet per minute. Manual winches, power winches, television cable and power rewinds or other devices shall not obstruct the camera view or interfere with proper documentation of the pipe condition.

The technician operating the camera shall be experienced and qualified in conducting video pipe inspections. The technician shall have the capability of controlling the movement of the television camera, adjusting the brightness of the built-in lighting system and focusing the television camera by remote control. The importance of accurate distance measurements is emphasized. A distance meter and location indicator shall appear on the monitor and video indicating the exact location of the camera in the pipe between (2) structures.

The view scanned by the television camera shall be transmitted to a color monitor of not less than 12 in., measured diagonally across the screen. The monitor shall be located such that the State inspector has full visual access.

Documentation:

Television Inspection Logs: Typed reports shall be submitted to the Department for each location clearly showing the relation to the video meter at each problem point observed during inspection. In addition, other points of significance such as locations of catch basins, junction boxes, manholes, open joints, areas of settlement, misaligned pipe, unplugged lift holes, unusual conditions such as a change of pipe size or type within a run, roots, laterals, storm sewer connections, broken or spalled pipe, presence of scale or corrosion and other discernible features shall be recorded and a copy of such records shall be supplied to the Department.

For the purposes of documentation of a storm drain system, the following criteria shall be used to determine if a joint shall be considered an open joint:

ALL PIPE TYPES	MAXIMUM JOINT OPENING ALLOWED
12-36" ROUND	0.75"
42" & LARGER	1.25"
ALL ELLIPTICAL	1.50"

DVD Recordings: The Contractor shall supply a minimum of two visual and audio recordings of the drainage and/or sanitary system that may be replayed. A minimum of one videos shall be submitted for each location but separate locations shall not be combined on the same DVD. Video recording playback shall be at the same speed that it was recorded. Good quality labeled DVDs in a hard plastic case shall be submitted and become the property of The Delaware Department of Transportation.

The report shall be submitted electronically in Excel format and list the Delaware State Plane NA D 83 Coordinates for each structure within the drainage system including catch basins, manholes and all inlet and outlet ends of pipes. This record shall be listed by structure number and record each structure's Northing and Easting coordinates along with street address. This Excel report is to be forwarded to the Department's NPDES electronically after review by the construction staff.

Method of Measurement:

The quantity of pipe video inspection will be measured by the linear feet as indicated on the video monitor and verified by the Engineer.

Basis of Payment:

The quantity of pipe video inspection will be paid for at the Contract unit price per linear foot. Price and payment will constitute full compensation for furnishing all materials and equipment, obtaining coordinate and elevations, typed reports, DVD recordings, safety equipment, correcting any deficiencies in the existing and newly constructed pipe run and for all labor, tools and incidentals necessary to complete the work.

6/13/2018

601506 - DIG AND WRAP PIPE FAILURES, PIPE SEPARATIONS, ETC

Description:

This work consists of providing all labor, material and equipment necessary to repair pipe failures and/or pipe separations.

Materials: Provide Materials as specified:

- Heavy gauge, 4 inch x 4 inch welded wire fabric
- Geotextile fabric
- Mortar
- Tie wire
- Cement Brick

Construction Methods:

Pipe failures and/or separations shall be repaired by plugging lift holes or joint/seams with an approved mortar and triple wrapping the pipe with a 3 foot wide strip of an approved geotextitle material fastened securely around the pipe with three wraps of tie wire. Pipes in the roadway, or in cases of severe joint or pipe dislocation, a concrete collar shall be placed after wrapping of the pipe with geotextile as stated above. The collar shall consist of a double wrap of heavy gauge 4 inch x 4 inch welded wire fabric offset a minimum of 2 inches from the pipe wall with cement brick, and an 8 inch thick concrete collar with a 24 inch lap on each side of the failure. The collar shall surround the length of the pipe that has failed (top, bottom, and sides).

Method of Measurement:

The quantity of Dig and Wrap Pipe Failures, Pipe Separations, Etc shall be measured as per each 3 foot repair as measured along the pipe.

Basis of Payment:

The quantity of Dig and Wrap Pipe Failures, Pipe Separations, Etc shall be paid at the Contract unit price per Each for the Dig and Wrap item as specified. Price and payment will constitute full compensation for excavation up to a depth of 12 feet, disposal of unsuitable material as determined at sole discretion by the Engineer, any necessary form work, furnishing and installing welded wire fabric, geotextile fabric, mortar, tie wire, or cement brick, and any other incidentals to complete the work.

Payment for removal of up to 8 ft of pipe is incidental to this item. Any removal beyond 8 feet shall be paid via Structural Excavation (207000).

Payment for Concrete shall fall under the applicable Concrete item.

Payment for furnishing and installing fill shall be paid under the appropriate item.

Payment for Excavation beyond 12 feet shall be paid for under 202000 (Excavation and Embankment).

3/14/2019

612552 - SPRAYED APPLIED CEMENTITIOUS MORTAR FOR PIPE, 24" - 48"
612553 - SPRAYED APPLIED CEMENTITIOUS MORTAR FOR PIPE, GREATER THAN 48"

Description:

The work specified herein consists of the repair of culverts by the installation of a cementitious lining centrifugally cast in place for the waterproofing, sealing, structural reinforcement and corrosion protection of existing concrete culvert pipe, corrugated steel culvert pipe, and other material culvert pipe. The centrifugally cast concrete pipe (CCCP) liner should extend over the specified length forming a continuous concrete pipe within a pipe. A Bi-Directional SpinCaster shall be used.

QUALITY ASSURANCE

A. The manufacturer shall have been in the business of manufacturing high performance cement-based repair mortars for over 10 years, maintain a strict quality assurance program in accordance with ISO 9001:2008, offer technical services and provide a representative at the project site for product training, prior to product installation.

DELIVERY, STORAGE, AND HANDLING

A. All materials shall be delivered to the jobsite in their original, unopened packages, clearly labeled with the manufacturer's identification, printed instructions and batch code for shelf life and traceability.
B. Store and condition the specified product as per the appropriate product data sheet.
C. For handling instructions, refer to the Material Safety Data Sheet.

Materials:

A. The repair means and methods shall be engineered for depth, diameter, shape, traffic loading, groundwater pressures, and condition of each culvert. A structural design shall be provided for each culvert.
B. This specification requires that no more than 5% fly ash be included in the material composition. This specification also references the following ASTM standards which are made a part hereof by such reference and shall be the latest edition and revision thereof. In the event that there are found to be conflicting requirements between this specification and these referenced documents, this specification will govern.

ASTM C-109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
ASTM C-157	Modified Standard Test Method for Length Change of Hardened Hydraulic Cement Mortar and Concrete
ASTM C-293	Standard Test Method for Flexural Strength of Concrete (Using Simple Beam With Center-Point Loading)
ASTM C-309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C-403	Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
ASTM C-469	Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression, with special attention and adherence to the following: the Modulus of Elasticity should be no greater than 5,000,000 psi. (To avoid overly brittle liner)
ASTM C-496	Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
ASTM C-882	Standard Test Method for Bond Strength of Epoxy Systems Used with Concrete by Slant Shear
ASTM C-666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing

ASTM C-1090	Standard Test Method for Measuring Changes in Height of Cylindrical Specimens of Hydraulic-Cement Grout 0 change in 28 days. (Eliminates concern over shrinkage)
ASTM D-4783	Standard Test Methods for Resistance of Adhesive Preparations in Container to Attack by Bacteria, Yeast, and Fungi (Modified)
ASTM C-1202	Standard Test Method for Electrical Indication of Concretes Ability to Resist Chloride Ion Penetration
ASTM C-1315	Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete

The materials of the cementitious lining work shall meet the following requirements:

C. Invert Repair Mortar: The material used in the repair of the missing or deteriorated pipe invert shall be an ultra-high strength, high build, abrasion resistant and corrosion resistant mortar, based on advanced cements and additives including rust inhibitors. This material shall be 12,000 PSI. It shall be mixed with the appropriate amount of water to create a self-consolidating free flowing material that develops a high 24-hour compressive strength and adhesion.

The finished, hardened material shall be dense and highly impermeable; the result of a complex formulation of mineral, organic and densifying agents and sophisticated chemical admixtures. Graded quartz sands shall be used to enhance particle packing and further improve the fluidity and hardened density. The composition shall possess excellent thin-section toughness, a high modulus of elasticity in flexure and strong self-bonding capability.

Physical Properties	
Set Time at 70 F ASTM C-403	
Initial Set	Approx. 150 minutes
Final Set	Approx. 240 minutes
Flexural Strength ASTM C-293	
24 hours	min. 1,200 psi
28 days	min. 1,530 psi
Compressive Strength ASTM C-109	
24 hours	5,000 psi
28 days	11,500 psi
Split Tensile Strength ASTM C-496	700 psi
Shear Bond ASTM C-882	1,720 psi
Modulus of Elasticity ASTM C-469	
28 days	min. 3.48 106 psi
Freeze Thaw ASTM C-666	300 Cycle Pass

D. Pipe Lining Mortar: The pipe lining material shall be a high strength, high build, abrasion resistant and corrosion resistant mortar, based on advanced cements and additives. Per ASTM C-76, in no case, however, shall the proportion of Portland cement, blended with hydraulic cement, or a combination of Portland cement and supplementary cementing materials be less than 470 pounds per cubic yard. When mixed with the appropriate amount of water, a paste-like material which can be sprayed, cast or pumped into areas ¼ inch and larger shall be obtainable. The pipe lining material shall be 8,000 PSI material, or approved equal that has at least five states with DOT approvals which must include NYS DOT. The centrifugal lining system, including Material and SpinCaster manufacturer shall be by the same company.

The hardened, finished liner shall be a dense and highly impermeable pipe within a pipe. The above stated performance shall be achieved by a complex formulation of mineral, organic and densifying agents and sophisticated chemical admixtures including rust inhibitors. Graded quartz sands are to be used to enhance particle packing and further improve the fluidity and hardened density. The resultant composition shall possess excellent thin-section toughness, a high modulus of elasticity in flexure and strong self-bonding capabilities. Fibers are to be added as an aid to the centrifugal casting process, for

increased cohesion and to enhance flexural strength. Additional additives shall be incorporated that enhance the autogenous healing process and this characteristic shall be documented.

The water content shall be adjusted to achieve consistencies ranging from plastic to modeling clay. The lining mortar shall be capable of being cast against soil, metals, wood, plastic or other normal construction materials.

The physical properties of the lining mortar shall be as follows:

Physical Properties

Set Time at 70 F ASTM C-403	
Initial Set	Approx. 150 minutes
Final Set	Approx. 240 minutes
Compressive Strength ASTM C-109	
24 hours	4,000 psi
28 days	10,000 psi
Modulus of Rupture 28 days	Min 1,340 psi
Split Tensile Strength ASTM C-496	800 psi
Shear Bond ASTM C-882	2,100 psi
Modulus of Elasticity ASTM C-469 28 days	min. 3.56 106 psi
Not to exceed 5.0 106 psi	
Chloride Ion Penetration	Less than 75 Coulombs
Freeze Thaw ASTM C-666	300 Cycle Pass

WALL THICKNESS DESIGN

A. The wall thickness design shall be based upon the compressive and bending strength of the liner material The design loading shall be the sum of any changes in the cover depth after the liner's installation and the appropriate highway truck loading for the culvert pipe taking into account the type of soil used for the road's fill and the type of pavement structure (rigid or flexible). The calculated minimum finished thickness of the liner shall be based on a maximum possible crack width of 0.0625-inches with a factor of safety of 2.0.

B. The Liner thickness shall be applied to the thickness specified by the engineer but at no point shall it be less than the required minimum of ½-inch. For structural plate culvert materials, the cover over the projecting bolts shall be a minimum of ½-inch, making the minimum applied thickness for these culverts 1.0-inch. This thickness is to be measured from the I.D. of the pipe, or top of the inward corrugation's crest. . As Per ASTM A979 this thickness is to be measured from the I.D. of the pipe, or top of the inward corrugation's crest.

Construction:

A. Safety: The Contractor shall carry out his operations in strict accordance with all applicable OSHA standards. Particular attention is drawn to those safety requirements involving entering confined spaces.

B. Flow Control: The Contractor, when required, shall provide for the flow of water around the culvert where the rehabilitation is located. The bypass shall be made by damming the line at the upstream end and diverting the flow into an adjacent pipe barrel or by pumping.

C. TV Inspection: Inspection of pipelines shall be performed by experienced personnel trained in locating breaks and obstacles by closed-circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation,

and it shall be noted so that these conditions can be corrected. A videotape and suitable log shall be kept for later reference by the owner.

D. Obstruction Removal: It shall be the responsibility of the Contractor to clear the line of obstructions such as solids, dropped joints, roots or collapsed pipe that will prevent installation of the liner. If an internal inspection reveals an obstruction that cannot be removed by conventional cleaning equipment, then the Contractor shall notify the Project Engineer. The Project Engineer may delete the work, or instruct the Contractor to make a point repair excavation to remove or repair the obstruction. Such excavation shall be approved in writing by the Project Engineer prior to the commencement of the work and shall be considered as a separate pay item.

E. Soil Stabilization: All voids behind the pipe wall must be filled with an engineer approved slurry or chemical grout. Small voids less than one cubic yard shall be included in the per foot price for the pipeline rehabilitation. Voids larger than one cubic yard shall be paid for under a separate bid item by the cubic yard of material required to fill the void to prevent future collapse of the pipeline. The flowable fill minimum compressive strength shall be 400 psi.

F. Infiltration Control: Areas of water seepage shall be sealed off by an approved method. Pools of water shall be removed; however, a dry surface is not required. The Contractor shall patch holes and fill voids in and around existing pipe as directed by the Engineer.

G. Cleaning: It shall be the responsibility of the owner to remove all debris from the sewer. The interior surface shall be cleaned with a high-pressure water-blast sufficient to remove all laitance and loose material and flush debris from the pipe. Upon final inspection the pipe shall be free of sand, dirt and all other laitance that may impeded the placement of the lining material.

Centrifugally Cast Concrete Pipe (CCCP) Installation:

A. Equipment: Mortar mixers, compressors and pumps are standard commercial models. The high-speed, rotating applicator device is used to provide a densely compacted liner of uniform thickness and thorough coverage.

B. Mixing: The Contractor shall combine 50 pounds of the packaged dry mix with the Manufacturer's specified amount of potable water with mixing to be accomplished with a high-speed shear type mixer until proper consistency is obtained. The Contractor shall continue to agitate the mortar to prevent thickening beyond the desired fluidity. The working time is approximately 30 minutes depending upon the ambient conditions.

C. Application: The Contractor shall position the bi-directional rotating casting applicator within the culvert pipe as required by the Manufacturer and commence pumping the mortar. As the mortar begins to be centrifugally cast evenly around the interior, the Contractor shall retrieve the applicator head at the best speed for applying the thickness that has been specified. If the mortar flow is interrupted for any reason, the Contractor shall arrest the retrieval of the applicator head until the mortar flow is restored. Throughout the application process the Contractor shall verify the thickness using an appropriate tool.

D. Hot Weather Application (Above 80 F): The Contractor shall not apply the mortars when the ambient air and/or surface temperature of the culvert pipe is 100 F or higher. Shade the material and prepared the surface to keep it cool.

To extend the working time of the mortar when the ambient air temperature is 80 F or higher, but below 100 F, the Contractor is advised to combine the mortar mix material with cool or ice-cooled water. When working at these elevated temperatures, the Contractor shall make certain that the substrate is saturated surface-dry (SSD) before the mortar lining application begins.

E. Cold Weather Application (Above 45 F): The Contractor shall not apply the mortars when ambient air temperatures are expected to fall below 45 F within 72 hours of placement. Both the ambient air and substrate temperatures must be at least 45 F at the time of placement.

Low substrate and ambient air temperatures will slow down the rate of set and strength development. At temperatures below 65 F, the Contractor is advised to warm the material, water, and substrate. Properly ventilate the area when heating. Protect the new liner from freezing.

F. Curing/Finishing: The Contractor shall use an ASTM C309 conforming curing compound such as 1315 Sealer or other approved equal.

MIXING
Mortar Mixer (Stationary Barrel with Moving Paddles)

A. Provide an adequate number of mortar mixers in good operating condition for uninterrupted placement. Do not exceed one-half the maximum capacity of the mortar mixer.

B. Pre-wet mortar mixer, empty excess water.

C. Start by adding the minimum amount of premeasured potable water to mixer. While mixing, slowly add pipe lining rehabilitation material and mix to a uniform consistency.

D. Mix thoroughly for approximately 3 to 4 minutes. To achieve desired consistency, add remaining water if necessary. Do not exceed maximum water content as stated on product packaging or an amount that will cause segregation.

E. Do not mix more material than can be placed within the working time of the repair material. Do not retemper the mix by adding additional water.

F. A trial mix should be considered to optimize water content and application ability.

APPLICATION

A. Position spray cast equipment within pipe center and begin pumping material to nozzle. Commence application of material around pipe. As material is cast around pipe, move applicator head accordingly so as to provide the necessary thickness and uniformity specified.

B. Movement of the applicator head may be adjusted at any time to ensure proper coverage, thickness, and uniformity.

C. Coverage thicknesses may be verified at any point during installation to ensure movement rate of applicator head is correct.

D. Placement shall create a continuous monolithic structure with no joints.

CURING

A. Wet cure for 24-48 hours after placement of apply curing compound meeting the requirements of ASTM C 309 immediately after placement.

B. Repair material shall be protected from freezing, hydrostatic pressure, and vibration as recommended by the manufacturer.

Submittals:

All submittals shall conform to the requirements in this and other sections of the Contract Documents. If not required elsewhere, the following minimum submittals shall be required:

REFERENCE SUBMITTALS

Contractor certification

A. Sealed project specific design calculations by third party Consulting PE for lining material thickness and any additional additives or reinforcement materials necessary to achieve project goals set forth by the Project shall be provided prior to award and/or beginning the project

B. The Contractor shall have a minimum of five years' experience installing this type of pipe lining system in culverts prior to beginning any project with regards to this specification and/or Statement of Work
C. The Contractor must be certified by the manufacturer prior to beginning any project with regards to this specification and/or Statement of Work

MATERIALS DATA SUBMITTALS
A. Repair mortar material; including technical data sheet
B. Lining mortar material; including technical datasheet and third-party testing completed.

Materials Handling:

The bags of the mortar materials shall be stored in a cool, dry location until the Contractor is ready to use the material.

Quality Assurance and Acceptance:

A minimum of two test cubes of the mortar material shall be taken randomly as directed by the inspector at owner's expense to verify strengths. Thickness can be verified with a wet gage at any random point of the new interior surface. Any areas found to be thinner than the specified minimum shall immediately receive additional material. Visual inspection should verify a leak-free, uniform appearance.

Measurement for Payment:

Payment will be made at the Contract bid price per linear foot, which shall be payment in full for all costs to complete the installation in place, including but not limited to excavation, cleaning, pipe liner, liner reinforcement, fittings, seals, specified joint system, filling embankment voids and backfilling, which shall be compensation in full for all removal, excavation, material and labor costs relative thereto, including restoration of existing structure bottoms.

3/15/2019

763501 - CONSTRUCTION ENGINEERING

Description:

This work consists of construction lay out including; stakes, lines and grades as specified below. Subsection 105.10 Construction Stakes, Lines and Grades of the Standard Specifications is voided.

Based on contract plans and information provided by the Engineer, the Contractor shall stake out right-of-way and easements lines, limits of construction and wetlands, slopes, profile grades, drainage system, centerline or offset lines, benchmarks, structure working points and any additional points to complete the project.

The Engineer will only establish the following:

(a) Original and final cross-sections for borrow pits.
(b) Final cross-sections for all excavation items.
(c) Line and grade for extra work added on to the project plans.

Equipment:

The Contractor shall use adequate equipment/instruments in a good working order. He/she shall provide written certification that the equipment/instrument has been calibrated and is within manufacturer's tolerance. The certification shall be dated a maximum of 9 months before the start of construction. The Contractor shall renew the certification a minimum of every 9 months. The equipment/instrument shall have a minimum measuring accuracy of [3mm+2ppmxD] and an angle accuracy of up to 2.0 arc seconds or 0.6 milligons. If the Contractor chooses to use GPS technology in construction stakeout, the Contractor shall provide the Engineer with a GPS rover for the duration of the contract. The GPS rover shall be in good working condition and of similar make and model used by the Contractor. The Contractor shall provide up to 8 hours of formal training on the Contractor's GPS system to a maximum of four Engineer's appointees. At the end of the contract, the Engineer will return the GPS rover to the Contractor. If any of the equipment/instruments are found to be out of adjustment or inadequate to perform its function, such instrument or equipment shall be immediately replaced by the Contractor to the satisfaction of the Engineer.

Engineering/Survey Staff:

The Contractor shall provide and have available for the project an adequate engineering staff that is competent and experienced to set lines and grades needed to construct the project. The engineering personnel required to perform the work outlined herein shall have experience and ability compatible with the magnitude and scope of the project. Additionally, the Contractor shall employ an engineer or surveyor licensed in the State of Delaware to be responsible for the quality and accuracy of the work done by the engineering staff. When individuals or firms other than the Contractor perform any professional services under this item, that work shall not be subject to the subcontracting requirements of Subsection 108.01 of the Standard Specifications. The Contractor shall assume full responsibility for any errors and/or omissions in the work of the engineering staff described herein. If construction errors are caused due to erroneous work done under Construction Engineering the Contractor accepts full responsibility, no matter when the error is discovered. Consideration will not be given for any extension of contract time or additional compensation due to delays, corrective work, or additional work that may result from faulty and erroneous construction stakeout, surveying, and engineering required by this specification.

Construction Methods:

Performance Requirements:

(a) Construction Engineering shall include establishing the survey points and survey centerlines; finding, referencing, offsetting the project control points; running a horizontal and vertical circuit to check the accuracy of given control points. Establishing plan coordinates and elevations marks for culverts, slopes, subbase, subsurface drains, paving, subgrade, retaining walls, and any other stakes required for control lines and

grades; and setting vertical control elevations, such as footings, caps, bridge seats and deck screed. The Contractor shall be responsible for the preservation of the Department's project control points and benchmarks. The Contractor shall establish and preserve any temporary control points (traverse points or benchmarks) needed for construction. Any project control points (traverse points) or benchmarks conflicting with construction of the project shall be relocated by the Contractor. The Contractor as directed by the Engineer must replace any or all stakes that are destroyed at any time during the life of the contract. The Contractor shall re-establish centerline points and stationing prior to final cross-sections by the Engineer. The Vertical Control error of closure shall not exceed 0.05 ft times [Square root of number of miles in the level run] (0.01 m times [square root of number of kilometers]). The Horizontal Control accuracy ratio shall not exceed an error of closure of 1 foot per 20,000 feet (1 meter per 20,000 meters or 1:20,000) of distance traversed prior to adjustment.

(b) The Contractor shall perform construction centerline layout of all roadways, ramps and connections, etc. from project control points set by the Engineer. The Contractor using the profiles and typical sections provided in the plans shall calculate proposed grades at the edge of pavement or verify information shown on Grades and Geometric sheets.

(c) The Contractor shall advise the Engineer of any horizontal or vertical alignment revisions needed to establish smooth transitions to existing facilities. The Contractor shall immediately bring to the attention of the Engineer any potential drainage problem within the project limits. The Engineer must approve any proposed variation in profile, width or cross slope.

(d) The Contractor shall establish the working points, centerlines of bearings on bridge abutments and on piers, mark the location of anchor bolts to be installed, check the elevation of bearing surfaces after they are ground and set anchor bolts at their exact elevation and alignment as per Contract Plans. Before completion of the fabrication of beams for bridge superstructures, the Contractor shall verify by accurate field measurements the locations both vertically and horizontally of all bearings and shall assume full responsibility for fabricated beams fitting and bearing as constructed. After beam erection and concurrently with the Department project surveyors, the Contractor shall survey top of beam elevations at a maximum of 10-ft (3.0-meter) stations and compute screed grades. These shall be submitted to the Engineer for review and approval before the stay in place forms are set. Construction stakes and other reference control marks shall be set at sufficiently frequent intervals to assure that all components of the structure are constructed in accordance with the lines and grades shown on the plans. The Contractor will be responsible for all structure alignment control, grade control and all necessary calculations to establish and set these controls.

(e) The Contractor, using contract plans, shall investigate proposed construction for possible conflicts with existing and proposed utilities. The Contractor shall then report such conflicts to the Engineer for resolution. All stakes for advanced utility relocation, which will be performed by others, shall be paid for under item 763597 - Utility Construction Engineering.

(f) The Contractor shall be responsible for the staking of all sidewalk and curb ramp grades in accordance with the plans and the Departments Standard Construction Details. The Contractor shall review the stakeout with the Engineer prior to construction. The Engineer must approve any deviation from plans, Department Standard Construction Details and Specifications in writing. The Contractor shall be responsible for any corrective actions resulting from problems created by adjustments if they fail to obtain such approval.

(g) If wetland areas are involved and specifically defined on the Plans the following shall apply:

i. It is the intent of these provisions to alert the Contractor, that he/she shall not damage or destroy wetland areas, which exist beyond the construction limits.

These provisions will be strictly enforced and the Contractor shall advise his/her personnel and those of any Subcontractor of the importance of these provisions.

ii. All clearing operations and delineation of wetlands areas shall be performed in accordance with these Special Provisions. Before any clearing operation commences the Contractor shall demarcate wetlands at the Limits of Construction throughout the entire project as shown on the Plans labeled as Limits of Construction or Wetland Delineation to the satisfaction of the Engineer.

iii. The material to be used for flagging the limits of construction shall be orange vinyl material with the wording "Wetland Boundary" printed thereon. In wooded areas, the flagging shall be tied on the trees, at approximate 20-foot (6.1 meter) intervals through wetland areas. In open field and yard areas that have been identified as wetlands, 3 foot (one meter) wooden grade stakes shall be driven into the ground at approximate 20 foot (6.1 meter) intervals and tied with the flagging.

iv. If the flagging has been destroyed and the Engineer determines that its use is still required, the Contractor shall reflag the area at no cost to the Department. If the Contractor, after notification by the Engineer that replacement flagging is needed, does not replace the destroyed flagging within 48 hours, the Engineer may proceed to have the area reflagged. The cost of the reflagging by the Engineer will be charged to the Contractor and deducted from any monies due under the Contract.

v. At the completion of construction, the Contractor shall remove all stakes and flagging.

vi. The Contractor shall be responsible for any damages to wetlands located beyond the construction limits, which occurs from his/her operations during the life of the Contract. The Contractor shall restore all temporarily disturbed wetland areas to their preconstruction conditions. This includes restoring bank elevations, streambed and wetland surface contours and wetlands vegetation disturbed or destroyed. The expense for this restoration shall be borne solely by the Contractor.

Submittals:

All computations necessary to establish the exact position of all work from the control points shall be made and preserved by the Contractor. All computations, survey notes and other records necessary to accomplish the work shall be made available to the Department in a neat and organized manner at anytime as directed by the Engineer. The Engineer may check all or any portion of the stakeout survey work or notes made by the Contractor and any necessary correction to the work shall be made as soon as possible. The Contractor shall furnish the Engineer with such assistance as may be required for checking all lines, grades, and measurements established by the Contractor and necessary for the execution of the work. Such checking by the Engineer shall not relieve the Contractor of his/her responsibility for the accuracy or completeness of the work.

The Contractor shall submit any of the following at the Engineer's request:

(a) Proposed method of recording information in field books to ensure clarity and adequacy.

(b) A printout of horizontal control verification, as well as coordinates, differences and error of closure for all reestablished or temporary Control Points.

(c) A printout of vertical control verification, with benchmark location elevation and differences from plan elevation.

(d) Sketch of location of newly referenced horizontal control, with text printout of coordinates, method of reference and field notes associated with referencing control.

(e) Description of newly established benchmarks with location, elevation and closed loop survey field notes.

(f) All updated electronic and manuscript survey records.

(g) Stakeout plan for each structure and culvert.

(h) Computations for buildups over beams, screed grades and overhang form elevations.

(i) A report showing differences between supplied baseline coordinates and field obtained coordinates, including a list of preliminary input data.

(j) Any proposed plan alteration to rectify a construction stakeout error, including design calculations, narrative and sealed drawings.

(k) Baseline for each borrow pit location.

(l) Detailed sketch of proposed overhead ground mounted signs or signals showing obstructions that may interfere with their installation.

(m) Copies of cut sheets.

Method of Measurement:

The quantity of Construction Engineering will not be measured.

Basis of Payment:

Payment will be made at the Lump Sum price bid for the item "Construction Engineering". The price bid shall include the cost of furnishing all labor, equipment, instruments, stakes and other material necessary to satisfactorily complete the work as herein described under this item for all roads and structures that are a part of the contract. Adjustment in payment will be made for the deletion or addition of work not shown in the contract documents.

Monthly payment will be made under this item in proportion to the amount of work done as determined by the Engineer.

3/14/2019

763544 - ROAD LOCATION MOBILIZATION, ZONE 1
763545 - ROAD LOCATION MOBILIZATION, ZONE 2
763546 - ROAD LOCATION MOBILIZATION, ZONE 3
763547 - ROAD LOCATION MOBILIZATION, ZONE 4
763548 - ROAD LOCATION MOBILIZATION, ZONE 5
763549 - ROAD LOCATION MOBILIZATION, ZONE 6
763550 - ROAD LOCATION MOBILIZATION, ZONE 7
763551 - ROAD LOCATION MOBILIZATION, ZONE 8
763552 - ROAD LOCATION MOBILIZATION, ZONE 9
763553 - ROAD LOCATION MOBILIZATION, ZONE 10
763554 - ROAD LOCATION MOBILIZATION, ZONE 11
763555 - ROAD LOCATION MOBILIZATION, ZONE 12
763556 - ROAD LOCATION MOBILIZATION, ZONE 13
763557 - ROAD LOCATION MOBILIZATION, ZONE 14
763558 - ROAD LOCATION MOBILIZATION, ZONE 15
763559 - ROAD LOCATION MOBILIZATION, ZONE 16
763560 - ROAD LOCATION MOBILIZATION, ZONE 17
763561 - ROAD LOCATION MOBILIZATION, ZONE 18
763562 - ROAD LOCATION MOBILIZATION, ZONE 19

Description:

This Pay Item consists of compensating the Contractor for each re-mobilization of all equipment and accessories between work locations.

This Pay Item for Road Location Mobilization is only payable for work related to patching and associated material removal operations. Mobilization for all other work shall be incidental to their respective pay items.

Method of Measurement:

"One mobilization fee shall be paid for each move into a mobilization zone, which shall cover all locations within that mobilization zone, and all work orders issued within that zone. A separate mobilization fee **will not** be paid for each individual location. No mobilization fee will be paid if a new work order is issued while work on a previous work order is ongoing in that zone. A separate mobilization fee will only be paid if the Contractor is directed by the Department to move from the mobilization zone in which he is presently working, or inclement weather causes a substantial delay in work. A substantial delay due to inclement weather shall be defined as fourteen or more calendar days. Payment of any mobilization fees shall be agreed upon between the Contractor and the Department, in writing, prior to commencement of work.

Basis of Payment:

The number of Road Location Mobilizations shall be paid at the Contract unit price per each. Price and payment shall constitute full compensation for all material, labor, equipment, tools and incidentals required to complete the work.

5/10/17

BID PROPOSAL FORMS

CONTRACT T201903401.01

UNLESS OTHERWISE DIRECTED, SUBMIT ALL FOLLOWING PAGES TO:

DEPARTMENT OF TRANSPORTATION
BIDDERS ROOM
800 BAY ROAD
DOVER, DELAWARE 19901

Identify the following on the outside of the sealed envelope:
- Contract Number T201903401.01
- Name of Contractor

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 SINKHOLE ITEMS					
0010	202000 EMBANKMENT	850.000 CY				
0020	202002 ROCK EXCAVATION FOR UTILITY TRENCHES	35.000 CY				
0030	203000 CHANNEL EXCAVATION	200.000 CY				
0040	204000 TEST HOLE	50.000 CY				
0050	207000 STRUCTURAL EXCAVATION	1000.000 CY				
0060	208000 FLOWABLE FILL	30.000 CY				
0070	209005 FURNISHING BORROW, TYPE C FOR PIPE AND UTILITY TRENCH BACKFILL	1200.000 CY				
0080	209006 BORROW, TYPE F	50.000 CY				
0090	211001 REMOVAL OF PORTLAND CEMENT CONCRETE PAVEMENT, CURB AND SIDEWALK	1650.000 SY				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0100	211500 TREE REMOVAL, 6" TO 15" DIAMETER	38.000 EACH				
0110	211501 TREE REMOVAL, GREATER THAN 15" TO 25" DIAMETER	20.000 EACH				
0120	211502 TREE REMOVAL, GREATER THAN 25" TO 37" DIAMETER	10.000 EACH				
0130	211503 TREE REMOVAL, GREATER THAN 37" TO 49" DIAMETER	10.000 EACH				
0140	211504 TREE REMOVAL, GREATER THAN 49" DIAMETER	5.000 EACH				
0150	301001 GRADED AGGREGATE BASE COURSE, TYPE B	700.000 CY				
0160	302002 DELAWARE NO. 3 STONE	125.000 TON				
0170	302005 DELAWARE NO. 57 STONE	700.000 TON				
0180	401026 BITUMINOUS CONCRETE, SUPERPAVE TYPE C, 160 GYRATIONS PG 64-22 PATCHING	625.000 TON				
0190	401027 BITUMINOUS CONCRETE, SUPERPAVE TYPE B, 160 GYRATIONS PG 64-22 PATCHING	425.000 TON				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0200	402000 BITUMINOUS CONCRETE PATCHING	6500.000 SYIN				
0210	601000 CLEANING DRAINAGE PIPE, 15"-24" DIAMETER	3200.000 LF				
0220	601001 CLEANING DRAINAGE PIPE, GREATER THAN 24" DIAMETER	1850.000 LF				
0230	601002 HEAVY CLEANING OF DRAINAGE PIPE	60.000 HOUR				
0240	601003 PRESSURE GROUTING PIPE JOINTS, 15"-24" DIAMETER	30.000 EACH				
0250	601004 PRESSURE GROUTING PIPE JOINTS, GREATER THAN 24" DIAMETER	15.000 EACH				
0260	601032 REINFORCED CONCRETE PIPE, 15", CLASS IV	375.000 LF				
0270	601033 REINFORCED CONCRETE PIPE, 18", CLASS IV	300.000 LF				
0280	601035 REINFORCED CONCRETE PIPE, 24", CLASS IV	300.000 LF				
0290	601037 REINFORCED CONCRETE PIPE, 30", CLASS IV	250.000 LF				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0300	601039 REINFORCED CONCRETE PIPE, 36", CLASS IV	375.000 LF				
0310	601040 REINFORCED CONCRETE PIPE, 42", CLASS IV	70.000 LF				
0320	601041 REINFORCED CONCRETE PIPE, 48", CLASS IV	70.000 LF				
0330	601042 REINFORCED CONCRETE PIPE, 54", CLASS IV	70.000 LF				
0340	601043 REINFORCED CONCRETE PIPE, 60" CLASS IV	70.000 LF				
0350	601220 CORRUGATED POLYETHYLENE PIPE, TYPE S, 15"	1050.000 LF				
0360	601221 CORRUGATED POLYETHYLENE PIPE, TYPE S, 18"	1050.000 LF				
0370	601223 CORRUGATED POLYETHYLENE PIPE, TYPE S, 24"	850.000 LF				
0380	601225 CORRUGATED POLYETHYLENE PIPE, TYPE S, 36"	850.000 LF				
0390	601227 CORRUGATED POLYETHYLENE PIPE, TYPE S, 48"	450.000 LF				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0400	601229 CORRUGATED POLYETHYLENE PIPE, TYPE S, 60"	450.000 LF				
0410	601500 PIPE VIDEO INSPECTION	3200.000 LF				
0420	601506 DIG AND WRAP PIPE FAILURES, PIPE SEPARATIONS, ETC	35.000 EACH				
0430	602001 DRAINAGE INLET, 24" X 24"	5.000 EACH				
0440	602002 DRAINAGE INLET, 34" X 18"	9.000 EACH				
0450	602003 DRAINAGE INLET, 34" X 24"	9.000 EACH				
0460	602004 DRAINAGE INLET, 48" X 30"	9.000 EACH				
0470	602005 DRAINAGE INLET, 48" X 48"	9.000 EACH				
0480	602006 DRAINAGE INLET, 66" X 30"	5.000 EACH				
0490	602009 DRAINAGE INLET, 72" X 24"	5.000 EACH				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0500	602010 DRAINAGE INLET, 72" X 48"	5.000 EACH				
0510	602031 MANHOLE, 48" X 48"	9.000 EACH				
0520	602100 REPLACE DRAINAGE INLET GRATE(S)	5.000 EACH				
0530	602101 REPLACE DRAINAGE INLET FRAME(S)	5.000 EACH				
0540	602130 ADJUSTING AND REPAIRING EXISTING DRAINAGE INLET	105.000 EACH				
0550	602131 ADJUSTING AND REPAIRING EXISTING DOUBLE DRAINAGE INLET	60.000 EACH				
0560	602132 ADJUSTING AND REPAIRING EXISTING MANHOLE	10.000 EACH				
0570	602133 REPAIRING EXISTING JUNCTION BOX	10.000 EACH				
0580	610009 PORTLAND CEMENT CONCRETE MASONRY, CLASS B	20.000 CY				
0590	610019 HIGH EARLY STRENGTH CONCRETE	50.000 CY				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0600	612552 SPRAYED APPLIED CEMENTITIOUS MORTAR FOR PIPE, 24"- 48"	80.000 LF				
0610	612553 SPRAYED APPLIED CEMENTITIOUS MORTAR FOR PIPE, GRETAER THAN 4 8"	30.000 LF				
0620	701004 PORTLAND CEMENT CONCRETE VALLET GUTTER, 8"	200.000 SY				
0630	701013 PORTLAND CEMENT CONCRETE CURB, TYPE 1-8	345.000 LF				
0640	701018 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 1-8	1050.000 LF				
0650	701019 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 2	1050.000 LF				
0660	701023 INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 3-8	300.000 LF				
0670	701031 CURB OPENING, 2' OPENING	9.000 EACH				
0680	701032 CURB OPENING, 4' OPENING	9.000 EACH				
0690	705001 PORTLAND CEMENT CONCRETE SIDEWALK, 4"	2750.000 SF				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0700	705002 PORTLAND CEMENT CONCRETE SIDEWALK, 6"	2300.000 SF				
0710	705007 SIDEWALK SURFACE DETECTABLE WARNING SYSTEM	25.000 SF				
0720	705008 PEDESTRIAN CONNECTION, TYPE 1	40.000 SF				
0730	705009 PEDESTRIAN CONNECTION, TYPE 2, 3, AND/OR 4	20.000 SF				
0740	707001 RIPRAP, R-4	275.000 SY				
0750	707002 RIPRAP, R-5	275.000 SY				
0760	707003 RIPRAP, R-6	100.000 SY				
0770	707004 RIPRAP, R-7	50.000 SY				
0780	708003 GEOTEXTILES, RIPRAP	750.000 SY				
0790	709001 PERFORATED PIPE UNDERDRAINS, 6"	100.000 LF				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0800	720030 RELOCATING GUARDRAIL	100.000 LF				
0810	727006 TEMPORARY CONSTRUCTION FENCE	500.000 LF				
0820	727030 FENCE RELOCATION	300.000 LF				
0830	762000 SAW CUTTING, BITUMINOUS CONCRETE	6500.000 LF				
0840	762001 SAW CUTTING, CONCRETE, FULL DEPTH	700.000 LF				
0850	763000 INITIAL EXPENSE/DE-MOBILIZATION	LUMP	LUMP			
0860	763501 CONSTRUCTION ENGINEERING	LUMP	LUMP			
0870	763544 ROAD LOCATION MOBILIZATION, ZONE 1	5.000 EACH				
0880	801000 MAINTENANCE OF TRAFFIC	LUMP	LUMP			
0890	802003 ARROW PANELS TYPE C	60.000 EADY				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0900	803001 FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	75.000 EADY				
0910	804001 FURNISH AND MAINTAIN PORTABLE LIGHT ASSEMBLY (FLOOD LIGHTS)	20.000 EADY				
0920	805001 PLASTIC DRUMS	10000.000 EADY				
0930	806001 TRAFFIC OFFICERS	50.000 HOUR	75.00000		3750.00	
0940	808002 FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	50.000 EADY				
0950	810001 TEMPORARY WARNING SIGNS AND PLAQUES	3000.000 EADY				
0960	811001 FLAGGER, NEW CASTLE COUNTY STATE	1100.000 HOUR				
0970	811013 FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	10.000 HOUR				
0980	813001 TEMPORARY BARRICADES, TYPE III	4000.000 LFDY				
0990	817003 TEMPORARY MARKINGS, PAINT, 4"	1750.000 LF				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1000	817013 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	250.000 LF				
1010	817031 REMOVAL OF PAVEMENT STRIPING	500.000 SF				
1020	819018 INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON SINGLE SIGN POST	10.000 EACH				
1030	905001 SILT FENCE	800.000 LF				
1040	905004 INLET SEDIMENT CONTROL, DRAINAGE INLET	10.000 EACH				
1050	905005 INLET SEDIMENT CONTROL, CURB INLET	10.000 EACH				
1060	906002 DEWATERING BAG	8.000 EACH				
1070	906003 SUMP PIT	10.000 EACH				
1080	908003 TOPSOIL, 4" DEPTH	6300.000 SY				
1090	908016 PERMANENT GRASS SEEDING, SUBDIVISION	6300.000 SY				

CONTRACT ID: T201903401.01 PROJECT(S): T201903401

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1100	908020 EROSION CONTROL BLANKET MULCH	3500.000 SY				
1110	909002 SANDBAG DIVERSION	800.000 CF				
	SECTION 0001 TOTAL					
	TOTAL BID					

Contract No. T201903401.01

AFFIDAVIT

OF

EMPLOYEE DRUG TESTING PROGRAM

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite, including subcontractors, that complies with this regulation:

Contractor Name: _____

Contractor Address: _____

_____

_____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED, NOTARIZED, AND RETURNED WITH YOUR BID.

(This form is required from the prime contractor only, not required from subcontractors)

CA 02/2019

CERTIFICATION
Contract No. T201903401.01

The undersigned bidder, _____

whose address is _____

and telephone number is _____ hereby certifies the following:

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

The foregoing quantities are considered to be approximate only and are given as the basis for comparison of bids. The Department of Transportation may increase or decrease the amount of any item or portion of the work as may be deemed necessary or expedient. Any such increase or decrease in the quantity for any item will not be regarded as a sufficient ground for an increase or decrease in the unit prices, nor in the time allowed for the completion of the work, except as provided in the contract.

Accompanying this proposal is a surety bond or a security of the bidder assigned to the Department of Transportation, for at least ten (10) percentum of total amount of the proposal, which deposit is to be forfeited as liquidated damages in case this proposal is accepted, and the undersigned shall fail to execute a contract with necessary bond, when required, for the performance of said contract with the Department of Transportation, under the conditions of this proposal, within twenty (20) days after date of official notice of the award of the contract as provided in the requirement and specifications hereto attached; otherwise said deposit is to be returned to the undersigned.

I/We are licensed, or have initiated the license application as required by Section 2502, Chapter 25, Title 30, of the Delaware Code.

By submission of this proposal, each bidder and each person signing on behalf of any bidder, certifies as to its own organization, under penalty of perjury, that to the best of each signer's knowledge and belief:

1. The prices in this proposal have been arrived at independently without collusion, consultation, communication, or Agreement with any other bidder or with any competitor for the purpose of restricting competition.
2. Unless required by law, the prices which have been quoted in this proposal have not been knowingly disclosed and will not knowingly be disclosed by the bidder, directly or indirectly, to any other bidder or competitor prior to the opening of proposals.
3. No attempt has been made or will be made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a proposal for the purpose of restricting competition.

==========

I/We acknowledge receipt and incorporation of addenda to this proposal as follows:

No.	Date	No.	Date	No.	Date	No.	Date	No.	Date
_____		_____		_____		_____		_____	

BIDDERS MUST ACKNOWLEDGE RECEIPT OF ALL ADDENDA

MUST INSERT DATE OF FINAL QUESTIONS AND ANSWERS ON WEBSITE: _____

==========

AFFIRMATION:

Within the past five (5) years, has your firm, any affiliate, any predecessor company or entity, owner, Director, officer, partner or proprietor been the subject of a Federal, State, Local government suspension or debarment?

YES_____ **NO**_____ if yes, please explain _____

Agreement to Accept Retainage

"Bidder acknowledges that if its Performance-Based Rating as defined in 29 Del.C. §6962 and section 2408 of Title 2 of Delaware's Administrative Code is below the required minimum threshold, as a condition to bid, Bidder acknowledges, consents and agrees to the Department withholding retainage of up to 5% from the monies due at the time of each progress payment under the contract." ***NEW***

Sealed and dated this _____ day of _____ in the year of our Lord two thousand _____(20___).

_____
Name of Bidder (Organization)

Corporate Seal

By: _____
Authorized Signature

Attest _____ _____
Title

SWORN TO AND SUBSCRIBED BEFORE ME this ___ day of _____, 20____.

Notary Seal

_____
Notary

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That:_____

of_____ in the County of _____ and State of _____

as **Principal**, and _____ of _____ in the County of

_____ and State of _____ as **Surety**, legally authorized to do business in the State of Delaware ("**State**"), are held and firmly bound unto the **State** in the sum of _____

_____ Dollars ($_____), or _____ percent not to exceed _____

_____ Dollars ($_____) of amount of bid on Contract No. T201903401.01 , to be paid to the **State** for the use and benefit of its Department of Transportation ("**DelDOT**") for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden **Principal** who has submitted to the **DelDOT** a certain proposal to enter into this contract for the furnishing of certain materiel and/or services within the **State**, shall be awarded this Contract, and if said **Principal** shall well and truly enter into and execute this Contract as may be required by the terms of this Contract and approved by the **DelDOT**, this Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with _____ seal and dated this _____ day of _____ in the year of our Lord two thousand and _____ (20___).

SEALED, AND DELIVERED IN THE presence of

_____
Name of Bidder (Organization)

Corporate Seal

By: _____
Authorized Signature

Attest _____

_____
Title

_____
Name of **Surety**

Witness:_____

By: _____

_____
Title