

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION



BID PROPOSAL

CONTRACT T202707502

**OPEN END - STRUCTURE MAINTENANCE,
CENTRAL DISTRICT, FY27 - 29**

Advertisement Date: August 28, 2026

INCLUDED IN THIS DOCUMENT:

BID PROPOSAL:

*GENERAL DESCRIPTION
PROSPECTIVE BIDDER'S NOTES
GENERAL NOTICES
PREVAILING WAGES
SPECIAL PROVISIONS
QUANTITY SHEET SUMMARY*

ADDITIONAL BID PROPOSAL ITEMS:

ATTACHED OR POSTED DOCUMENTS:

*PROJECT PLANS
BREAKOUT SHEETS
QUESTIONS & ANSWERS (if posted)*

**PAPER BIDDERS CONTACT DELDOT
FOR BID SUBMITTAL DOCUMENTS:**

*DRUG TESTING AFFIDAVIT;
CERTIFICATION FORM;
BID BOND FORM;
CD FOR BID PRICE ENTRY & PRINTING*

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

Internet Bids for Bidders with Bid Express® accounts can be submitted at [BIDX.com/de](https://bidx.com/de/); **OR**;

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

ALL BIDS DUE PRIOR TO 2:00 P.M. Local Time, SEPTEMBER 29, 2026

DIGITAL ACCESSIBILITY NOTICE

The Delaware Department of Transportation (DelDOT) is committed to ensuring that its digital services, content, and documents are accessible to all users and is actively working to comply with applicable federal and state accessibility requirements. DelDOT continues to make improvements over time, with current efforts focused on programs, applications, content, and documents that are actively in use and available to the public.

Due to the nature and complexity of certain materials, including construction plans, technical drawings, historical documents, maps, and other graphic-intensive files, some documents may not currently be fully digitally accessible or compliant with current accessibility standards. In some cases, these documents are provided for historical, reference, informational, or procurement purposes only.

If you require an accessible version of a document or need assistance accessing any content, please contact DelDOT at (302) 760-2031 or DOT-ask@delaware.gov and reasonable efforts will be made to provide the information in an accessible format upon request. DelDOT appreciates your patience and understanding as accessibility improvements continue to be implemented.

GENERAL DESCRIPTION

A. BIDS DUE: SEPTEMBER 29, 2026 PRIOR TO 2:00 P.M. Local Time – unless changed via Addendum.

BIDS MUST BE SUBMITTED VIA:

(a) **Internet** - Bidders with DelDOT Bid Express® accounts can submit bids at bidx.com/de/.

OR:

(b) **Paper Bid Delivered To:** Delaware Department of Transportation, Administration Building
North Entrance, Bidders Room, 800 Bay Road, Dover, DE 19901

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

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

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

Attendance is not required. DelDOT offers a call-in number to hear the Bid Opening telephonically. The telephone number to call is (302) 504-8986.

When prompted, enter Meeting number (access code): 651 529 280#

It is anticipated the telephone access information will remain the same for all Bid Openings.

B. PRE-BID MEETING: No

C. LOCATION: Kent County

These improvements are more specifically shown on the Location Map(s) of the attached Plans.

D. DESCRIPTION: The improvements consist of furnishing all labor and materials for repairs to various bridges that need to be performed that cannot be accomplished by maintenance forces. Repairs can consist of structure backfilling, flowable fill, removal and replacement of guardrail and fencing, fog seal, crack and joint sealing, drainage inlets, FRP jacket and epoxy grout pile encasements, steel sheet piles, PCC masonry, concrete sealing, steel structure repairs, expansion joints, epoxy injections, spall repairs, deck repairs, riprap, pavement markings, topsoil, seeding, mulching. Follow other incidental construction in accordance with the location, notes and details shown on the plans, and as directed by the Engineer.

E. COMPLETION TIME: All work on this contract must be complete within 1,095 Calendar Days. Extensions of contract time due to weather are specified in the Standard Specifications Section 108.7F, weather days. The Department's intent is to issue a Notice to Proceed for work to start on or about December 2, 2026.

F. SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, DELAWARE DEPARTMENT OF TRANSPORTATION, JANUARY 2026 apply to this Bid Proposal and Project. The Contractor shall make himself aware of any revisions and corrections and apply them to the applicable item(s) of this contract. The Standard Specifications can be viewed [here](#). Units of Measure can be found at 101.4.

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

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

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I. QUESTIONS: E-MAIL TO; dot-ask@delaware.gov

Questions regarding this project are to be e-mailed to the above address no less than **six business days** prior to the bid opening date in order to receive a posted response. Please include the Contract number in the subject line. Questions and responses are posted at bids.delaware.gov, and bidx.com/de/. The date of the final posted Questions and Answers document must be entered on the submitted Certification Form.

J. FLAGGERS:

- A. Included in the Bid Proposal are the prevailing wages for highway construction 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.
- B. Flaggers must be bid at a minimum equal to the Laborer wage rate and may be bid up to, but not to exceed, 3 times the Laborer wage rate in accordance with the County where the Work is being performed.
- C. The Department will adjust the bid to the minimum for prices bid below the minimum acceptable bid and to the maximum for prices bid above the maximum allowable bid prior to award of the Contract.
 - 1. Flagger overtime must be bid at minimum of 1.45 times and may be bid up to a maximum of 4.35 times, the Laborer wage rate in accordance with the County where the Work is being performed.
 - 2. When a Contract for a Project contains both Federal Davis-Bacon and State of Delaware prevailing wage standards, the employer's minimum wage obligations are determined by whichever standards are higher.
- D. Overtime:
 - 1. Payment for overtime will be considered on a weekly basis for time worked in excess of 40 hours for a continuous 7-day period beginning Monday and ending Sunday inclusive.
 - 2. Time worked on other Projects or Work activities other than flagging will not be counted in the normal 40 hours or the overtime.
- E. The cost of the flagging operation when performed by others who are not the Contractor's employees will not be included in the 50% subcontracting limit as outlined in Section 108.1.

K. PROSPECTIVE BIDDERS NOTES:

- 1. **BIDDERS MUST BE REGISTERED** with DelDOT in order to submit a bid. Registrations are now completed online through SimpliGov. To complete registration or for more information, click [here](#).
- 2. **SURETY BOND** - Each proposal must be accompanied by a deposit of either surety bond or security for a sum equal to at least 10% of the amount bid.
- 3. **DELAWARE'S CONTRACTOR REGISTRATION ACT** - 19 Del.C. §§ 3601 *et seq.*, requires all contractors and subcontractors to register with the Delaware Department of Labor before performing construction services or maintenance. Refer to the GENERAL NOTICES section for further information.
- 4. **DRUG TESTING** - Regulation 4104; The state Office of Management and Budget has developed regulations that require Contractors and Subcontractors to implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds pursuant to 29 Del.C. §6908(a)(6). **Refer to the full requirements at the following link:**

<http://regulations.delaware.gov/register/december2017/final/21%20DE%20Reg%20503%2012-01-17.htm>

Note a few of the requirements;

- * At bid submission - Each bidder must submit with the bid a single signed affidavit certifying that the bidder and its subcontractors has in place or will implement during the entire term of the contract a Mandatory Drug Testing Program that complies with the regulation (*a blank affidavit form is attached*);
- * At least two business days prior to contract execution - The awarded Contractor shall provide to DelDOT copies of the Employee Drug Testing Program for the Contractor, each participating DBE firm, and all other listed Subcontractors;
- * Subcontractors - Contractors that employ Subcontractors on the job site may do so only after submitting a copy of the Subcontractor's Employee Drug Testing Program along with the standard required subcontractor information. A Subcontractor shall not commence work until **DelDOT** has approved the program in writing.

5. **PERFORMANCE-BASED RATING SYSTEM** - 29 Del.C. §6962 (c)(12)(a) requires DelDOT to include a performance-based rating system for contractors. The Performance Rating for each Contractor shall be used as a prequalification to bid at the time of bid. Refer to 'General Notices' for details.
6. **NO RETAINAGE** will be withheld on this contract unless through the Performance-Based Rating System.
7. **EXTERNAL COMPLAINT PROCEDURE** can be viewed on DelDOT's Website, [Contractor Compliance/EEO - Delaware Department of Transportation](#) or request a copy by calling (302) 760-2555.
8. **DELAWARE BUSINESS LICENSE**; a copy of your firm's Business License must be submitted with your bid.
9. **FLATWORK CONCRETE TECHNICIAN CERTIFICATION TRAINING**:
Section 501.3, 503.3, 505.3, 610.3, 701.3 and 702.3 of the 2026 Standard Specifications require contractors to provide an American Concrete Institute (ACI) or National Ready-Mix Concrete Association (NRMCA) certified concrete flatwork technician to supervise all finishing of flatwork concrete.
10. **BREAKOUT SHEETS MUST** be submitted with your bid documents. Attach the breakout sheet(s) to the proposal. Failure to submit the breakout sheet with the proposal will result in the Department declaring the proposal as non-responsive and rejecting the bid.
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.
17. **SIGNAGE LANGUAGE**:
In order to maintain effective communication with the traveling public, only place signs, banners, flags, or other displays within the projects limits that meet the requirements of the latest version of the Delaware Manual on Uniform Traffic Control Devices. Any signs or other materials which deviate from the MUTCD, must be preapproved by the Engineer. The only signage and materials which may be displayed upon vehicles and equipment within the Project area are signs denoting the name of the Contractor and any subcontractors and other signs and/or materials required and approved pursuant to the MUTCD and the Engineer. Contractor shall immediately remove any signs or materials within the

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Project that does not meet these requirements immediately upon notification by the Engineer. Failure to remove signs or other materials following notification from the Engineer will result in Liquidated Damages being assessed in the manner and amount specified in the Standard Specifications section 108.9.A.

18. REVISED SPEC LANGUAGE:

The Revised Inspection Framework – January 2026 ([2026 Inspection Framework](#)) shall apply to this contract.

Delete from Section 101.3

Primary inspection. The inspection (formerly referred to as Final Inspection) conducted by the engineer to determine if the contractor has satisfactorily completed the project, or a portion of the project, in accordance with the contract.

Insert within Section 101.3

Acceptance Inspection. The inspection (formerly referred to as Primary Inspection) conducted by the Administering Section, contractor, and accepting section confirming that primary inspection punch list items have been addressed.

Primary inspection. The inspection (formerly referred to as initial inspection) conducted by the Department to review all contract work has been completed in accordance with the Plans, Standard Specifications, Special Provisions, and Standard Construction Details. The inspection is confirmation of the work completed per the contract documents.

Project Acceptance. The Department's notification to the Contractor that the time charges will cease, and construction activities are completed, releasing the contractor from liability and repairs or maintenance to the completed work.

Revise Section 104.12.A as follows.

- A. Before **acceptance** inspection, clean rubbish, excess materials, temporary structures, and equipment from the project, from any publicly owned borrow source used to complete the work, and from areas affected by the contractor in connection with the work within the right-of-way. Cut all grass and weeds taller than 6-inches. The cost of the final cleanup is incidental to Item 763000, **Initial Expense, De-Mobilization**.

Revise Section 105.4.F as follows.

- F. Submit copies of manufacturer's catalog cuts, drawings, wiring diagrams, and other relevant documents with working drawings for electrical and mechanical equipment. After the Department has reviewed all items of a particular system, prepare an instruction book for the particular system. Fasten and bind the items listed below in a leather or heavy plastic cover book with a title clearly shown. Provide five copies of the book to the engineer before **acceptance** inspection. Make the books available when connecting and energizing electrical and mechanical systems. Ensure that the final bound copies reflect changes or adjustments made during the work. Include the following in the instruction book:
 - 1. An equipment list.
 - 2. A complete description of the equipment.
 - 3. The sequence of operation including inter-locking and protective features.
 - 4. The use of by-pass switches.
 - 5. A detailed description of all wiring circuits.
 - 6. A recommended spare parts list.
 - 7. Renewal parts bulletins.
 - 8. Instruction bulletins for the provided equipment.
 - 9. Diagrams and drawings of reduced size suitable for binding.
 - 10. An index listing all items.

Revise Section 105.13.D as follows.

- D. Include the cost of maintenance work during construction and before completion of the acceptance inspection punch list in the proposal. The Department will pay the cost of maintenance work occurring after completion of the acceptance inspection punch list.

Revise Section 105.14.A as follows.

- A. The engineer may order opening of certain sections of the work to traffic or other use before the contractor completes the work or before the engineer accepts the work. The Department will not consider opening sections of the work as constituting acceptance of the work or a waiver of any contract provisions. The engineer will pay the cost of repairing damage to the work caused by opening work to vehicular traffic unless opening the roadway is due to the fault, or inactivity of, the contractor or the contractor caused the damage. All other maintenance costs including, but not limited to, mowing grass and general cleanup are the contractor's responsibility until completion of the acceptance inspection punch list to the Department's satisfaction. Maintenance costs for work involving landscaping and vegetative growth are the contractor's responsibility until final acceptance.

Revise Section 105.16 as follows.

- A. Partial Acceptance.
 - 1. The decision to partially accept a portion of the project is solely at the discretion of the engineer. The engineer may partially accept portions of the work. The Department will not consider partial acceptance as constituting acceptance of the work that has not been partially accepted or a waiver of any contract provisions. The Department will maintain the partially accepted portion of the project, including repairing damage caused by the public.
- B. Project Acceptance
 - 1. The Department will cease counting contract time when the project reaches substantial completion as defined in Section 101.3, Definitions.
 - 2. Substantial Completion Verification
 - a. Upon receiving the contractor's notice of substantial completion of the project, the Department will verify all contract items are complete as defined in Section 101.3, Definitions. Items not deemed complete shall be completed by contractor prior to Department issuance of Substantial Completion.
 - b. After issuance of Substantial Completion, request Primary Inspection from the Department.
 - c. The Department will schedule the Primary Inspection within 30 calendar days of the request.
 - 3. Primary Inspection
 - a. The Department/Administering Section will conduct a Primary Inspection with the completion of 105.16.2 Substantial Completion Verification. The Administering Section will note and provide a written punch list by stations and in detail identifying work or conditions requiring correction. The punch list will include ADA inspection deficiencies.
 - b. Perform the corrective work noted on the punch list within 30 calendar days upon receipt of the punch list created by the Administering Section, unless the parties mutually agree to extend the time frame.
 - c. Upon completion of the primary inspection punch list, request an acceptance inspection from the Department. Prior to acceptance inspection scheduling, the Administering Section will confirm and annotate the primary inspection punch list and ensure ADA Inspection deficiencies have been addressed and documented.
 - d. The Administering Section will schedule Acceptance inspection with the Maintenance District within 30 days of confirmation of primary punch list item completion.
 - 4. Acceptance (formerly primary) Inspection.
 - a. The Department will conduct an acceptance inspection with the completion of 105.16.B.3, primary inspection. The Administering Section will provide a written punch list identifying

- deficiencies not satisfactorily addressed from the primary inspection punch list within 7 calendar days of the acceptance inspection.
- b. Perform the corrective work noted on the punch list within 15 calendar days upon receipt of the punch list created by the Administering Section, unless the parties mutually agree to extend the time frame.
 - c. The Administering Section will verify remediation work and will provide a list with dates that remedial activities were resolved to the Maintenance District when requesting Project Acceptance.
- C. Project Acceptance
1. The Administering Section will notify the Maintenance District that acceptance inspection punch list items have been addressed.
 2. The Maintenance District and/or other accepting entities will verify acceptance inspection punch list items have been addressed within 30 calendar days of notice from the Administering Section.
- D. Final Acceptance
1. The engineer will provide final acceptance in writing that will state the acceptance date as defined in Section 101.3, Definitions.
- E. Project Closeout
1. Upon final acceptance, provide the exempted documents, certificates, or proofs of compliance within 90 calendar days.
 2. The Department will not issue the final payment until the contractor executes and delivers the required documents.

Revise Section 108.8.K as follows.

- K. Once the Department determines that the work is substantially complete, the Department will suspend time charges and the assessment of liquidated damages. Failure to complete all punch list work identified during the primary and acceptance inspections within the timeframes allotted, will result in the Department restarting liquidated damages in accordance with the chart specified in Section 108.9, Schedule of Liquidated Damages. The assessment of post-substantial-completion liquidated damages will continue until project completion.

Revise Section 610.3.9.A.2 as follows.

2. The engineer will measure the width, length, and depth of each crack and establish the precise location of the crack termination points relative to permanent reference points on the member. The engineer will monitor and document the growth of individual cracks at an inspection interval the engineer will choose to determine if cracks are active or dormant after acceptance inspection.

Revise Section 722.3.2.A as follows.

- A. Provide on-site field instruction by the system manufacturer, at a location determined by the engineer. Provide a minimum of 2 training sessions consisting of installation training before beginning cable barrier construction and maintenance training before acceptance inspection. The manufacturer shall establish the training duration and shall provide field training on all aspects of the system. Coordinate the training schedule and location with the engineer. The engineer will advise the appropriate department staff, including construction inspectors and maintenance personnel regarding the training location and schedule. Provide all training materials in both hard copy and electronic PDF format.

Revise Section 722.3.2.C.1 as follows.

1. Hold the maintenance training a minimum of 7 calendar days before acceptance inspection of the system. Submit the proposed training date to the engineer a minimum of 14 calendar days prior to the training session date for review and approval. Include the following participants:
 - a. District Maintenance Engineer, or designated representative;
 - b. District Maintenance Superintendent, or designated representative;
 - c. Area Yard Supervisor, or designated representative; and

- d. District maintenance personnel.

Revise Section 722.3.3.L as follows.

- L. Within 10 calendar days of the **primary** inspection, supply spare parts for the HTCB system. Deliver the parts to the DelDOT maintenance facility as directed by the engineer. Provide an extra supply of the following:
 - 1. Socketed-type line posts, including post hardware, caps, reflective sheeting, straps, spacers, and socket covers. Include 200 posts and accessories.
 - 2. Rigging screws and threaded terminals. Provide enough materials to complete 8 turnbuckle assemblies.
 - 3. Anchor posts including post hardware and caps, reflective sheeting, straps, fittings, spacers, and socket covers. Provide enough materials to complete 3 end anchor installations.
 - 4. Fitting gaskets or socket covers. Provide 100 socket covers.

Revise Section 843.3.5.C as follows.

- C. Repair defects identified by the Department during **periodic or primary** inspections in accordance with this specification, including all highway lighting systems and components within the project limits. Begin highway lighting system repairs immediately following notice of the lighting system defect unless weather limitations prevent the corrective work. Provide notification to the Department before beginning corrective work.

Revise Section 843.3.5.D as follows.

- D. The Department will not consider the highway lighting system as substantially complete until correction of the deficiencies noted during the primary and **acceptance** inspections. Provide a maintenance bond for item 843001 – Electrical Testing upon substantial completion. Provide a maintenance bond meeting the following requirements:
 - 1. A bond sum equal to 100 percent of the value of all highway lighting system items the Department paid to the contractor;
 - 2. With original signatures, in ink, and not mechanical reproductions or facsimiles of any kind, naming the contractor as the principle;
 - 3. term of 1-year beyond the completion of the highway lighting system work; and
 - 4. written by a surety or insurance company licensed to write surety bonds in the State of Delaware by the Delaware Department of Insurance.

Revise 911.3.6.G as follows.

- G. Water bi-weekly during the period June 15 through October 1. Continue watering, without interruption, until completing watering of all the plants on the project. Use water in accordance with Section 911.2.9. The Department will allow use of tree watering bags as a part of the watering operation. Remove the tree watering bags before **acceptance** inspection.

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GENERAL NOTICES**CONTRACTOR REGISTRATION ACT**

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

SPECIFICATIONS :

The Delaware specifications entitled "*Standard Specifications for Road and Bridge Construction January, 2026*", hereinafter referred to as the *Standard Specifications*; the *Supplemental Specifications* to the Standard Specifications effective as of the advertisement date of this Bid Proposal and hereby included by reference; the *Special Provisions*; *Notes on the Plans*; this *Bid Proposal* including referenced documents; any *Addenda* thereto; and any posted *Questions and Answers*; shall govern the work to be performed under this contract. The Contractor shall make itself aware of these specifications, revisions, and corrections, and apply them to the applicable item(s) of this contract.

CLARIFICATIONS :

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

The Department requires the use of various electronic applications for various documentation processes. These processes will be identified, and the Contractor's required use will be detailed during the Preconstruction Meeting. No additional payments will be made to the contractor to use or interface with the applications.

ATTESTING TO NON-COLLUSION :

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

QUANTITIES :

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

PERFORMANCE-BASED RATING SYSTEM

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

Bidders with Performance Rating scores equal to or greater than 85% shall be permitted to bid. Bidders with scores of less than 85% who comply with the retainage requirements of 29 Del.C. §6962 shall be permitted to bid provided the *Agreement to Accept Retainage* (located on the Certification Page) is executed and submitted with the bid. Lack of an executed *Agreement to Accept Retainage* will result in the rejection of the bid by the Department. Successful bidders awarded

Department contracts who have no performance history within the last five (5) years will be assigned a provisional Performance Rating of 85% at the date of advertisement.

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

PREFERENCE FOR DELAWARE LABOR:

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

EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS :

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

- a. As a condition of the awarding of any contract for public works financed in whole or in part by State appropriation, such contracts shall include the following provisions:

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex, sexual orientation, gender identity or national origin. The contractor will take positive steps to ensure that applicants are employed and that employees are treated during employment without regard to their race, creed, color, sex, sexual orientation, gender identity or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.
2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex, sexual orientation, gender identity or national origin.
3. The contractor will ensure employees receive equal pay for equal work, without regard to sex. Employee pay differential is acceptable if pursuant to a seniority system, a merit system, a system which measures earnings by quantity or quality of production, or if the differential is based on any other factor other than sex.

TAX CLEARANCE :

As payments to each vendor or contractor aggregate \$2,000, the Division of Accounting will report such vendor or contractor to the Division of Revenue, who will then check the vendor or contractor's compliance with tax requirements and take such further action as may be necessary to ensure compliance.

LICENSE :

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

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

- (b) No agency shall accept a proposal for a public works contract unless such contractor has provided a proper and current copy of its occupational and/or business license, as required by Title 30, to such agency.
- (c) Any contractor that enters a public works contract must provide to the agency to which it is contracting, within 30 days of entering such public works contract, copies of all occupational and business licenses of subcontractors and/or independent contractors that will perform work for such public works contract. However, if a subcontractor or independent contractor is hired or contracted more than 20 days after the contractor entered the public works contract the occupational or business license of such subcontractor or independent contractor shall be provided to the agency within 10 days of being contracted or hired.

DIFFERING SITE CONDITIONS:

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

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

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

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

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

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

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

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

If the alterations or changes in quantities significantly change the character of the work under the contract, whether or not changed by any such different quantities or alterations, an adjustment, excluding loss of anticipated profits, will be made to the contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be

agreed upon, then an adjustment will be made either for or against the contractor in such amount as the engineer may determine to be fair and equitable.

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

- (A) When the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction, or
- (B) When a major item of work, as defined elsewhere in the contract, is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed.

RIGHT TO AUDIT

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

PREVAILING WAGES

Included in this proposal are the minimum wages to be paid various classes of laborers and mechanics as determined by the Department of Labor of the State of Delaware in accordance with Title 29 Del.C. §6960, relating to wages and the regulations implementing that Section.

REQUIREMENT BY DELAWARE DEPARTMENT OF LABOR FOR SWORN PAYROLL INFORMATION

Title 29 Del.C. §6960 stipulates;

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

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

Bidders are specifically directed to note the Department of Labor's prevailing wage regulations implementing §6960 relating to the effective date of the wage rates, at Part VI., Section C., which in relevant part states:

"Public agencies (covered by the provisions of 29 Del.C. §6960) are required to use the rates which are in effect on the date of the publication of specifications for a given project. In the event that a contract is not executed within one hundred twenty (120) days from the date the specifications were published, the rates in effect at the time of the execution of the contract shall be the applicable rates for the project."

Contractors with questions may contact:

Department of Labor, Division of Industrial Affairs,
4425 N. Market Street, Wilmington, DE 19802

Telephone (302) 761-8200

<https://dia.delawareworks.com/labor-law/>

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: (302) 318-2769

Mailing Address:
252 Chapman Road
Suite 210
Newark, DE 19702

Located at:
252 Chapman Road
Suite 210
Newark, DE 19702

PREVAILING WAGES FOR HIGHWAY CONSTRUCTION EFFECTIVE MARCH 13, 2026

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
BRICKLAYERS	68.29	68.29	73.01
CARPENTERS	69.62	64.06	52.30
CEMENT FINISHERS	74.68	45.80	46.69
ELECTRICAL LINE WORKERS	37.71	60.93	29.82
ELECTRICIANS	86.87	86.87	86.87
IRON WORKERS	91.78	33.47	35.55
LABORERS	58.11	53.49	52.49
MILLWRIGHTS	22.60	21.94	18.96
PAINTERS	84.99	84.99	84.99
PILEDRIVERS	100.98	33.34	93.69
POWER EQUIPMENT OPERATORS	87.03	55.57	50.91
SHEET METAL WORKERS	31.93	28.51	25.80
TRUCK DRIVERS	54.70	39.63	48.26

CERTIFIED:

8-14-2026

BY:

Salina Choudhury
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) 318-2769.

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

PROJECT: T202707502 Open End Structure Maintenance Central District FY27-29 Kent County, Kent County



SPECIAL PROVISIONS

S.P. Code	SPECIAL PROVISION DESCRIPTION
401500-25	FOG SEAL
401502-25	ASPHALT CEMENT COST ADJUSTMENT
401580-25	RIDE QUALITY OF BITUMINOUS CONCRETE PAVEMENT
401699-25	QUALITY CONTROL/QUALITY ASSURANCE OF BITUMINOUS CONCRETE
605504-25	FRP JACKET AND EPOXY GROUT PILE ENCASEMENT, 18" ROUND PILE
605514-25	EPOXY MASTIC PILE COLLAR, 18" ROUND PILE
613504-25	POTASSIUM SILICONATE CONCRETE SEALER
613508-25	SURFACE TREATMENT FOR CONCRETE DECKS
624502-25	SILICONE COATED FOAM JOINT SEAL
628507-25	SHALLOW OVERHEAD CONCRETE SPALL REPAIR
628508-25	DEEP OVERHEAD CONCRETE SPALL REPAIR
628509-25	EXPOSED REBAR AND STRAND PROTECTIVE COATING
628517-25	MAGNESIUM PHOSPHATE CEMENT (MPC) APPROACH AND BRIDGE DECK REPAIR, 2" TO LESS THAN FULL DEPTH
628518-25	REMOVAL OF PCC, 1" TO 3" DEPTH
628519-25	REMOVAL OF PCC, 3" TO FULL DEPTH
760503-25	PAVEMENT MILLING, PATCHING
763520-25	ELECTRONIC TICKETING
801500-25	MAINTENANCE OF TRAFFIC, REHABILITATION
806500-25	TRAFFIC OFFICERS

401500 - FOG SEAL**DESCRIPTION:**

This work consists of preparing the surface, providing, and applying an emulsified asphalt and water mixture as a surface seal.

MATERIALS:

A. Emulsified Asphalt Section 1016 (CQS-lhP)

1. The CQS-lhP must meet the chart below.

Emulsion Tests	Method	Specification
Saybolt Viscosity, 25°C, sfs	AASHTOT59	20-100
Saybolt Viscosity, 50°C, sfs	AASHTOT59	NA
Quick Sieve Test	AEITM4	Pass/Fail
Sieve Test, % by weight	AASHTOT59	max. 0.1
Particle Charge	AASHTOT59	Positive
Demulsibility, %	AASHTOT59	NA
Residue by Hot Plate Evaporation	AEITM 2,3	min. 62
Residue by Oven Evaporation	AASHTOT59	

Residue Tests	Method	Specification
Penetration, 25°C, 100g, 5 sec	AASHTOT49	40-90
Softening Point, R&B, °C	AASHTOT53	mm. 60°C/140°F
Ductility, 25°C, 5cm/min, cm	AASHTO 51	NA
Elastic Recovery, 10°C, %	AASHTO T301	NA

2. The contractor/supplier shall submit a Certificate of Analysis for each lot of CQS-lhP for approval.
3. The manufacturer shall dilute the emulsion no more than 24 hours before its intended use. This is to avoid settlement of the diluted emulsion. The dilution shall be completed at the manufacturer's facility.

4. The emulsion may be circulated using a centrifugal or other suitable pump to ensure uniformity.

B. Water

Section 1021

CONSTRUCTION METHODS:

A. Construction

1. Surface Preparation.

- a. Thoroughly clean the surface upon which the fog seal is to be placed to the satisfaction of the engineer. Remove all vegetation and debris prior to placing material.
- b. Blow off the surface using an approved industrial jet blower or with an approved vacuum broom truck.
- c. All preparation work shall be performed just prior to the application of the fog seal and be approved by the engineer.

2. Application Rate & Conditions

- a. Apply fog seal at a rate of 0.05 to 0.17 gal/yd² at ambient temperature.
- b. The engineer shall determine the appropriate application rate for the surface being sealed. This rate will be determined by test strip.
- c. The rate of application of the distributor shall be calibrated by an approved method determined by the engineer.
- d. Apply the fog seal when the air and surface temperature is 60°F and above. Measure the air and surface temperature in the shade away from artificial heat.
- e. The application shall not begin if rain or high winds are eminent. The engineer will determine when weather conditions are suitable for application.
- f. The fog seal should be a thin, uniform coating that is sufficient to seal the underlying pavement.
- g. Care must be taken to prevent splattering of adjacent pavement, curb and gutter, and structures during application.

B. Equipment:

1. Apply the fog seal using pressurized distributing equipment with a spray bar or other approved distribution system.
2. Distributors. The distributors used shall be capable of uniformly applying the bituminous material in liquid form. Devices to control the pressure, volume, and temperature shall be provided. Each distributor shall have an approved calibration chart, be equipped with an approved sampling device, and conform to the following:
 - a. *Pressure.* The pressure shall be supplied by a positive displacement pump or air compressor. The pressure shall be uniform throughout the entire width of spray. If pressure is supplied by an air compressor, automatic controls must be provided to maintain sufficient and even pressure throughout the application of an entire load.

- b. *Temperature.* The distributor shall be equipped with a heating system that applies heat uniformly across the width of the tank. Provisions shall be made for circulating or agitating the material whenever necessary while heating. The distributor shall be equipped with a thermometer marked in degrees Fahrenheit of sufficient range to determine the actual temperature of the material.
 - c. *Tachometer.* All distributors shall be provided with an approved tachometer recording feet per minute with a tabulation of feet per load with adjustments. Each load tabulation shall start at zero. There shall also be a totaling tabulation of this instrument.
 - d. *Volume.* A tachometer shall give correct readings of the speed, and the volumetric efficiency of the distributor shall ensure the correct volume at various speeds. Tests shall be required to prove the volumetric efficiency of the distributor at various speeds as directed by the engineer.
 - e. *Circulating System.* All pump distributors shall be equipped with a circulating system designed to maintain a homogenous liquid while circulating in the distributor tank. This circulating system shall also be arranged to circulate the material in the tank truck before application.
 - i. Air distributors shall be equipped with a device for agitating the bituminous material in the tank trucks when necessary.
 - f. *Tests.* Necessary tests shall be made to determine the accuracy of all pressure gauges, tachometers, and pump efficiencies. The tests shall be made by the Contractor when and as required by the engineer.
 - g. *Spray Bars.* Each distributor shall be equipped with spray bars capable of applying material uniformly throughout the entire length of the spray bars when they are extended. Spray bar extensions shall be provided for applying up to a 12' width in one operation. Spray bars shall be equipped with a cleaning device and a shut-off valve to prevent dribbling, dripping, or streaking.
 - h. *Tank Capacity Gauge.* A float or other approved type tank capacity gauge shall be furnished to indicate the volume in the tank in not less than 25-gallon units. The gauge shall have adjustments for correction.
- 3. Tanks shall have a minimum capacity of 750 gallons.
 - 4. If the engineer deems that the equipment applying the material is inadequate or fails to comply with all regulations, the engineer will order the equipment to be removed from the job and require that another unit be placed on the work.
- C. Application of Fog Seal Material:
- 1. Apply the fog seal in one application at the rates specified using the pressure distributor for the full width of the sealing operation, unless otherwise directed. Apply at the temperature that is recommended by the manufacture.
 - 2. The contractor must always keep the nozzles of the spray bar clean. If one or more nozzles becomes

blocked during the application of bituminous materials, the distributor shall be stopped immediately, and the nozzles shall be cleaned. The streaked areas shall be made uniform using a hand hose or other approved method.

3. If the Contractor is unable to keep the application uniform, the operation shall be discontinued until a more experienced operator or a better distributor, or both, can be provided; or, the Contractor shall take such other precautions as may be necessary to keep the application within specified limits.
4. The Contractor shall provide effective means of protecting the structures or curbs from discoloration when applying bituminous materials adjacent to structures or curbs.

METHOD OF MEASUREMENT:

- A. The Department will measure the quantity of Fog Seal in Gallons. The actual number of gallons of fog seal applied will be measured and paid. The quantity will be determined by any or all of the following methods and verified for accuracy by computations based on field measurements taken on and along the completed finished surfaces. Multiple layers will not be measured separately.
 1. **Truck Measurement:** If bituminous materials are delivered to the Project in tank trucks, distributor tanks, or drums, the Contractor shall not remove any bituminous material from the transporting vehicle or container until necessary measurements have been made, nor shall the transporting vehicle or container be released until final outage has been measured. If weighing is not convenient, the Contractor shall furnish the engineer with a certified chart showing the dimensions and volume of each container together with a gauge or calibrated measuring rod which will permit the volume of the material to be determined by vertical measurement.
 2. **Metering:** The volume may be determined by metering, in which case the metering device used and the method of using it shall be subject to the approval of the engineer.
 3. **Time of Deliveries:** The arrival and departure of vehicles delivering bituminous materials to the Project site shall be so scheduled that the engineer is afforded proper time for the measurements of delivered volume and final outage. The engineer will make the necessary measurements only during the Contractor's normal daily working hours.

BASIS OF PAYMENT:

- A. The quantity of fog seal will be paid for at the contract unit price per gallon (GAL) of diluted CQS- 1hP. Price and payment will constitute full compensation for:
 1. preparing the surface
 2. mobilization
 3. furnishing all equipment, materials, and labor
 4. placing the material
 5. all labor, equipment, tools, and incidentals necessary to complete the work.

12/16/2022

401502 - ASPHALT CEMENT COST ADJUSTMENT

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

The Delaware Posted Asphalt Cement Price will be issued monthly by the Department and will be the industry posted price for Asphalt Cement, F.O.B. Philadelphia, Pennsylvania. The link for the posting is https://deldot.gov/Business/bids/index.shtml?dc=asphalt_cement_english.

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

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

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

If the mix was not inspected and no QA/QC pay sheet was generated, then the asphalt percentage will be obtained from the job mix formula for that mix ID. The asphalt percentage eligible for cost adjustment shall only be the virgin asphalt cement added to the mix.

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

The Asphalt cement cost adjustment will be calculated on grade PG 64-22 asphalt regardless of the actual grade of asphalt used.

If the Contractor exceeds the authorized allotted completion time, the price of asphalt cement on the last authorized allotted workday, shall be the prices used for cost adjustment during the time

liquidated damages are assessed. However, if the industry posted price for asphalt cement goes down, the asphalt-cement cost shall be adjusted downward accordingly.

NOTE:

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

12/14/2020

401580 - RIDE QUALITY OF BITUMINOUS PAVEMENT

Description:

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

Definitions:

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

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

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

Deviation - a hump or depression that exceeds defined tolerances.

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

Equipment:

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

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

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

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

Testing:

The Contractor is responsible for testing the pavement surface using an approved inertial profiler in accordance to manufacturer and AASHTO R57 from the start of paving limits to the end of pavement

limits. Testing must be performed 3 times in each lane paved in the direction of traffic flow. Testing must be performed within seven (7) days of completion of project paving operations in each location.

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

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

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

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

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

Submission Requirements:

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

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

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

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

Acceptance and Payment:

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

thickness and widths using the average maximum specific gravity ("Rice") for all surface mix used at that location.

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

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

Where: L = Length Segment (ft.)

W = Lane Width (ft.)

T = Plan Thickness (in.)

$$\text{IRI Incentive / Disincentive} = \text{Estimated Tonnage} * \text{UP} * (\text{PA}-100)/100$$

Where: UP = Contract Unit Price (Dollars)

PA = Pay Adjustment (Table A)

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

$$(3 \text{ IRI adj for each section}) - \text{Total Deviations} * 200$$

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

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

Correction to the paving surface, such as diamond grinding with approved equipment, patching, or other measures may be taken at the Contractor's expense and at the Engineers discretion to correct pavement surfaces assessed a discount charge. The Engineer may require corrective actions including remove &

replace if the deviation discount charge exceeds 50% of the cost of materials or the IRI pay adjustment is 84%. Deviations must be corrected if it is determined that they are at a height or depth that may create a safety concern.

4/10/2019

401699 - QUALITY CONTROL/QUALITY ASSURANCE OF BITUMINOUS CONCRETE

.01 Description

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

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

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

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

The target size of sub-lots within each lot, except for the first sample of the production day, is equal-sized 500 ton sub lots and will be based upon anticipated production, however, more or fewer sublots, with differing sizes, may result due to the production schedule and conditions. If the actual production is less than anticipated, and it's determined a sample will not be obtained (based upon the anticipated tonnage), a new sample location will be determined on a statistically random, unbiased basis based upon the new actual production. If the actual production is going to be 50 tons or greater over the anticipated sub lot production, a new sample location will be determined on a statistically random, unbiased basis based upon the new actual production. The Engineer will combine the evaluation and test results for all of the applicable sublots in order to evaluate each individual lot.

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

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

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

(b) Pavement Construction - Tests and Evaluations.

The Engineer will directly base acceptance on the compaction acceptance test results, and on the inspection of the construction, the Contractor's QC Plan work, ride smoothness as referenced in the contract

documents, lift thickness as referenced in the contract documents, joint quality as referenced in the contract documents, surface texture as referenced in the contract documents, and possibly the comparisons of the acceptance test results to the independent test results. For the compaction acceptance testing, the Engineer will sample the work on a statistically random basis and will test and evaluate the work based on daily production.

Notify the Engineer of any locations within that road segment that may not be suitable to achieve minimum (93%) compaction due to existing conditions prior to paving the road segment. Schedule and hold a meeting in the field with the Engineer in order to discuss all areas that may potentially be applicable to Table 5a before paving starts. Areas that will be considered for Table 5a will be investigated in accordance with 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 from cold joint to cold joint, 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) B Bulk Specific Gravity of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface Dry Specimens
- AASHTO T209 - Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt
- ASTM D7227 - Standard Practice for Rapid Drying of Compacted Asphalt Specimens using Vacuum Drying Apparatus

The Engineer will use the average of the last five test values of the same JMF (mixture ID) material at the production plant in order to calculate the average theoretical maximum specific gravity of the cores. The average will be based on the production days test results and as many test results needed from previous days' production to have an average of five samples. If there are less than five values available, the Engineer will use the JMF design value in addition to the available values to calculate the average theoretical maximum specific gravity.

.03 Payment and Pay Adjustment Factors

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

Pay Adjustment factors will only be calculated on in place material. Removed material will not be used in payment adjustment calculations. Material Production Pay Adjustments will be calculated based upon 70% of the contract unit price and calculated according to section .03(a) of this specification. Pavement construction Pay Adjustments will be calculated based upon 30% of the contract unit price and calculated according to section .03(b) of this specification.

(a) Material Production - Pay Adjustment.

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

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

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

1. For each parameter, calculate the mean value and the standard deviation of the test values for the lot to the nearest 0.1 unit.
2. For each parameter, calculate the Upper Quality Index (QU):

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

$$QL = ((\text{mean value}) - (\text{JMF target}) + (\text{single test tolerance})) / (\text{standard deviation}).$$
4. For each parameter, locate the values for the Upper Payment Limit (PU) and the Lower Payment Limit (PL) from Table 3 - Quality Level Analysis by the Standard Deviation Method. (Use the column for An@ representing the number of sublots in the lot. Use the closest value on the table when the exact value is not listed).
5. Calculate the PWL for each parameter from the values located in the previous step:

$$PWL = PU + PL - 100.$$
6. Calculate each parameter's contribution to the payment adjustment by multiplying its PWL by the weight factor shown in Table 2 for that parameter.
7. Add the calculated adjustments of all the parameters together to determine the Composite PWL for the lot.
8. From Table 4, locate the value of the Pay Adjustment Factor corresponding to the calculated PWL. When all properties of a single test are within the single test tolerance of Table 2, Pay Adjustment factors shall be determined by Column B. When any property of a single test is outside of the Single Test Tolerance parameters defined in Table 2, the Material Pay Adjustment factor shall be determined by Column C.
9. For each lot, determine the final material price adjustment:

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

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

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

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

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

Table 3 B Quality Level Analysis by the Standard Deviation Method							
PU or PL	QU and QL for An@ Samples						
	n = 3	n = 4	n = 5	n = 6	n = 7	n = 8	n = 9
100	1.16	1.50	1.79	2.03	2.23	2.39	2.53
99	-	1.47	1.67	1.80	1.89	1.95	2.00
98	1.15	1.44	1.60	1.70	1.76	1.81	1.84
97	-	1.41	1.54	1.62	1.67	1.70	1.72
96	1.14	1.38	1.49	1.55	1.59	1.61	1.63
95	-	1.35	1.44	1.49	1.52	1.54	1.55

94	1.13	1.32	1.39	1.43	1.46	1.47	1.48
93	-	1.29	1.35	1.38	1.40	1.41	1.42
92	1.12	1.26	1.31	1.33	1.35	1.36	1.36
91	1.11	1.23	1.27	1.29	1.30	1.30	1.31
90	1.10	1.20	1.23	1.24	1.25	1.25	1.26
89	1.09	1.17	1.19	1.20	1.20	1.21	1.21
88	1.07	1.14	1.15	1.16	1.16	1.16	1.17
87	1.06	1.11	1.12	1.12	1.12	1.12	1.12
86	1.04	1.08	1.08	1.08	1.08	1.08	1.08
85	1.03	1.05	1.05	1.04	1.04	1.04	1.04
84	1.01	1.02	1.01	1.01	1.00	1.00	1.00
83	1.00	0.99	0.98	0.97	0.97	0.96	0.96
82	0.97	0.96	0.95	0.94	0.93	0.93	0.93
81	0.96	0.93	0.91	0.90	0.90	0.89	0.89
80	0.93	0.90	0.88	0.87	0.86	0.86	0.86
79	0.91	0.87	0.85	0.84	0.83	0.82	0.82
78	0.89	0.84	0.82	0.80	0.80	0.79	0.79
77	0.87	0.81	0.78	0.77	0.76	0.76	0.76
76	0.84	0.78	0.75	0.74	0.73	0.73	0.72
75	0.82	0.75	0.72	0.71	0.70	0.70	0.69
74	0.79	0.72	0.69	0.68	0.67	0.66	0.66
73	0.75	0.69	0.66	0.65	0.64	0.63	0.63
72	0.74	0.66	0.63	0.62	0.61	0.60	0.60
71	0.71	0.63	0.60	0.59	0.58	0.57	0.57
70	0.68	0.60	0.57	0.56	0.55	0.55	0.54
69	0.65	0.57	0.54	0.53	0.52	0.52	0.51
68	0.62	0.54	0.51	0.50	0.49	0.49	0.48
67	0.59	0.51	0.47	0.47	0.46	0.46	0.46
66	0.56	0.48	0.45	0.44	0.44	0.43	0.43
65	0.52	0.45	0.43	0.41	0.41	0.40	0.40
64	0.49	0.42	0.40	0.39	0.38	0.38	0.37
63	0.46	0.39	0.37	0.36	0.35	0.35	0.35

62	0.43	0.36	0.34	0.33	0.32	0.32	0.32
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Table 3 B Quality Level Analysis by the Standard Deviation Method							
PU or PL	QU and QL for An@ Samples						
	n = 3	n = 4	n = 5	n = 6	n = 7	n = 8	n = 9
61	0.39	0.33	0.31	0.30	0.30	0.29	0.29
60	0.36	0.30	0.28	0.27	0.27	0.27	0.26
59	0.32	0.27	0.25	0.25	0.24	0.24	0.24

Table 4 - PWL Pay Adjustment Factors		
PWL	Pay Adjustment Factor (%) Column B	Pay Adjustment Factor (%) Column C
100	+5	0
99	+4	-1
98	+3	-2
97	+2	-3
96	+1	-4
95	0	-5
94	-1	-6
93	-2	-7
92	-3	-8
91	-4	-9
PWL<91	PWL - 100	PWL - 100

(b) Pavement Construction - Pay Adjustments.

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

- Degree of compaction of the in-place material

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

1. Calculate the core bulk specific gravity values from the subplot tests values, to the nearest 0.001 unit. Obtain the Theoretical maximum Specific Gravity values from the corresponding laboratory subplot tests.
2. Calculate the Degree of Compaction:
Degree of Compaction =
 $((\text{Core Bulk Specific Gravity}) / (\text{Theoretical Maximum Specific Gravity})) \times 100\%$ 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	1
96.5	96.26 B 96.74	1
96.0	95.75 B 96.25	1
95.5	95.26 B 95.74	1
95.0	94.75 B 95.25	1
94.5	94.26 B 94.74	1
94.0	93.75 B 94.25	1
93.5	93.26 B 93.74	3
93.0	92.75 B 93.25	5
92.5	92.26 B 92.74	3
92.0	91.75 B 92.25	0
91.5	91.26 B 91.74	0
91.0	90.75 B 91.25	-5
90.5	90.26 B 90.74	-15
90.0	89.75 B 90.25	-20
89.5	89.26 B 89.74	-25
89.0	88.75 B 89.25	-30

88.5	88.26 B 88.74	-50
=<88.0	=<88.25	-100*

*remove and replace it at Engineer's discretion for Pay adjustment factor equal to -100% or breaking the mat by crushing aggregate or displacing mixture.

Table 5A: Compaction Price Adjustment Other ¹ Locations		
Degree of Compaction	Range	Pay Adjustment Factor (%)*
>= 97.0	>= 96.75	1
96.5	96.26 B 96.74	1
96.0	95.75 B 96.25	1
95.5	95.26 B 95.74	1
95.0	94.75 B 95.25	1
94.5	94.26 B 94.74	1
94.0	93.75 B 94.25	1
93.5	93.26 B 93.74	1
93.0	92.75 B 93.25	3
92.5	92.26 B 92.74	1
92.0	91.75 B 92.25	0
91.5	91.26 B 91.74	0
91.0	90.75 B 91.25	0
90.5	90.26 B 90.74	0
90.0	89.75 B 90.25	0
89.5	89.26 B 89.74	0
89.0	88.75 B 89.25	-1
88.5	88.26 B 88.74	-3
88.0	87.75 B 88.25	-5
87.5	87.26 B 87.74	-10
87.0	86.75 B 87.25	-15
86.5	86.26 B 86.74	-20
86.0	85.75 B 86.25	-25
85.5	85.26 B 85.74	-30
85.0	84.75 B 85.25	-40
84.5	84.26 B 84.74	-50

=< 84.0	=<84.25	-100*
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* remove and replace at Engineer's discretion for Pay adjustment factor equal to -100% or breaking the mat by crushing aggregate or displacing mixture.

¹This 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
			<u>1.62</u>

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
			<u>2.52</u>

4/21/2026

605504 - FRP JACKET AND EPOXY GROUT PILE ENCASEMENT, 18" ROUND PILE
605511 - FRP JACKET AND EPOXY GROUT PILE ENCASEMENT, 16" ROUND PILE
605512 - FRP JACKET AND EPOXY GROUT PILE ENCASEMENT, 18" U-SHAPED PILE
605513 - FRP JACKET AND EPOXY GROUT PILE ENCASEMENT, 18" X 18" SQUARE PILE

Description.

This work consists of constructing a protective pile encasement. If piles to be encased were coated with coal tar epoxy when originally installed, cleaning the piles will require special attention.

Materials.

- A. Jackets - The fiber reinforced plastic (FRP) jackets shall have interlocking joints. The jackets shall be fabricated from fiberglass and polyester resins and shall be a minimum thickness of 1/8 inch, unless otherwise shown on the plans. The inside face of the jacket shall be textured similar to a sandblasted surface and the surface shall have no bond-inhibiting agents that will come into contact with the epoxy grout. The jackets shall be provided with non-corrosive standoffs, which will maintain the jackets in the required positions (away from the face of the pile) to provide the specified void. The jacket shall be capable of being opened, placed around a pile and then returned to its original shape without damaging the jacket. Compressible sealing strips shall be installed at the bottoms of the jackets to seal the annular space between the pile and the jacket.
1. The jacket shall meet the following physical-characteristics:
 - a. Water Absorption (ASTM D570) 1% Max.
 - b. Ultimate Tensile Strength (ASTM D638) Longitudinal, transverse and diagonal . . 15,000 psi Min.
 - c. Flexural Strength (ASTM D796) 25,000 psi Min.
 - d. Flexural Modulus of Elasticity (ASTM D7790) 700,000 psi Min.
 - e. Barcol Hardness (ASTM D2583) 45 ± 5
 - f. Color Grey or Brown as noted in the Plans
- B. Pourable Epoxy Grout - The epoxy grout shall be a 100% solids pourable epoxy grout. The epoxy grout shall consist of an epoxy binder and epoxy extender as follows:
1. Binder - The binder shall be a 2 component 2:1 ratio 100% solids pourable epoxy material. It shall be moisture insensitive for application both above and below water and it shall adhere to wet wood, steel, concrete and the FRP jacket.
 2. Epoxy Extender - The filler shall be an epoxy extender compatible with and supplied by the manufacturer of the epoxy.
 3. Mixing - The binder shall be mechanically mixed in strict accordance with manufacturer's instructions. 1 - 3 gallon unit of the mixed binder shall be combined with the designated volume of epoxy extender to achieve the following consistencies:

- i. Pourable 3 gallons epoxy plus, 3 - 48# bags epoxy extender
- 4. Mortar Strength - When mixed on a ratio of one part binder to one part epoxy extender, 2 inch cubes of this material at 7 days, curing at 66°F to 74°F, shall be 8,000 psi when tested according to ASTM C 109 Modified.
- C. Trowelable Epoxy Mortar - The trowel grade epoxy shall be composed of 100% solids trowel grade epoxy binder and epoxy extender as follows:
 - 1. Binder - The binder shall be a 2 component 2:1 ratio trowel grade epoxy material. It shall be moisture insensitive for application both above and below water. It shall adhere to wet concrete, steel and the FRP jacket.
 - 2. Epoxy Extender - The epoxy extender shall be an epoxy extender compatible with and supplied by the manufacturer of the epoxy.
 - 3. Mixing - The binder shall be machine mixed in strict accordance with manufacturer's instructions. One part of binder shall be combined with a maximum of one part of epoxy extender.
 - 4. Mortar Strength - When mixed on a ratio of one part binder to one part filler, 2 inch cubes of this material at 7 days, curing at 60°F to 74°F, shall be 8,000 psi when tested according to ASTM C 109 Modified.
- D. All materials shall be compatible and shall be supplied from a single source.

Construction.

- A. Prepare and submit prior to installation to the engineer for approval:
 - 1. Shop drawings, showing location of stand-off spacers;
 - 2. method of fastening jacket form to piling;
 - 3. sealing the jacket after installation; and
 - 4. bracing during placement of materials in the annular space between the jacket and the pile.
- B. Clean the surface of the piles to remove all marine growth, loose rust, scale and old loose coating. Existing tight coating does not require removing. Any sharp edges or metal burrs must be removed. If present, coal tar epoxy coating is classified as a hazardous waste under the USEPA Comprehensive Environmental Response, Compensation and Liability Act.
- C. Submit, for approval, a method for cleaning the piles in accordance with the manufacturer's recommendations and for the collection and proper disposal of all material removed. If coal tar epoxy is present, include in the submitted method the disposal facility to be used. Cleaning the piles may be done under wet or dry conditions. If under wet conditions, the area must be contained to collect all removed materials. Under dry conditions, all removed materials shall be collected prior to entering the stream or soil.
- D. Disposal of all coal tar epoxy waste shall be in accordance with federal, state and local regulations including but not limited to:

DRGHW

40 CFR Part 261
40 CFR Part 262
40 CFR Part 263
40 CFR Part 264

Delaware Regulations Governing Hazardous Waste

Identification and Listing of Hazardous Waste
Standards Applicable to Generators of Hazardous Waste
Standards Applicable to Transporters of Hazardous Waste
Standards for Owners and Operators of Hazardous Waste
Treatment, Storage, and Disposal Facilities
Occupational Safety and Health Regulations
Safety and Health regulations for Construction

- E. Obtain a hazardous waste generator identification number from DNREC Hazardous Waste Management Branch to dispose of hazardous waste. When disposing of hazardous waste, preparation of all notification and shipping/disposal manifests shall include, but not limited to, submittal of EPA Form 8700-12, Notification of Regulated Waste Activity to DNREC Hazardous Waste Management Branch.
- F. The pile jacket shall be spread open by disengaging the interlocking joint. Then placed in position around the pile and fitted together and the bottom of the jacket form shall be sealed against the pile surface. Filling of the annular void between the pile and the pile jacket shall be done in accordance with the material manufacturer's instructions. External bracing materials shall be removed after completion of the work and the exterior surfaces of the jackets shall be cleaned of any filler material or other extraneous material deposited on the pile jackets. Around the top of the jacket a bevel shall be constructed with the trowel grade epoxy mortar to prevent water from ponding on the pile jacket tops.

Method of Measurement.

The Department will measure FRP jacket and epoxy grout pile encasement as the total number of linear feet of piling encased and accepted. Measurement will be made parallel to the axis of the pile from bottom of FRP jacket to top of FRP jacket.

Basis of Payment.

- A. The Department will pay FRP jacket and epoxy grout pile encasement at the contract unit price per linear foot. Price and payment will constitute full compensation for:
1. Providing and placing all materials;
 2. cleaning and preparing the piles;
 3. collecting and disposing of material removed;
 4. handling and disposal of hazardous waste; and
 5. excavating and backfilling.

06/25/2021

605514 - EPOXY MASTIC PILE COLLAR, 18" ROUND PILE

Description.

This work consists of providing all materials and constructing an epoxy mastic pile collar.

Materials.

- A. Trowelable Epoxy Mastic - The trowel grade epoxy shall be composed of 100 percent solids trowel grade epoxy binder and epoxy extender as follows:
- B. Binder - The binder shall be a 2 component 2:1 ratio trowel grade epoxy material. It shall be moisture insensitive for application both above and below water. It shall adhere to wet concrete, steel and the FRP jacket.
- C. Epoxy Extender - The epoxy extender shall be an epoxy extender compatible with and supplied by the manufacturer of the epoxy.
- D. Mixing - The binder shall be machine mixed in strict accordance with manufacturer's instructions. One part of binder shall be combined with a maximum of one part of epoxy extender.
- E. Mastic Strength - When mixed on a ratio of one part binder to one part filler, 2-inch cubes of this material at 7 days [curing at 60 degrees F to 74 degrees F] shall be 8,000 psi when tested according to ASTM C 109 Modified.
- F. All materials shall be supplied from a single source.

Construction.

- A. Inspect the site to become familiarized with the work required and means of access.
- B. Clean the surface of the piles to remove all marine growth, loose rust, scale, old loose coating, and any sharp edges or metal burrs. Existing tight coating does not require removal work.
- C. If present, coal tar epoxy coating is classified as a hazardous waste under the USEPA Comprehensive Environmental Response, Compensation and Liability Act. After cleaning and before applying the epoxy mastic collar, coat the exposed steel with a corrosion inhibiting material such as POR 15 or approved equal.
- D. Submit, for approval, a method for cleaning the piles in accordance with the manufacturer's recommendations and for the collection and proper disposal of all material removed. If coal tar epoxy is present, include in the submitted method the disposal facility to be used. Cleaning the piles may be done under wet or dry conditions.
- E. Under wet conditions, the area must be contained to collect all removed materials.
- F. Under dry conditions, all removed materials shall be collected prior to entering the stream or soil.
- G. Disposal of all coal tar epoxy waste shall be in accordance with Federal, state, and local regulations as follows:

DRGHW

40 CFR Part 261
40 CFR Part 262
40 CFR Part 263

Delaware Regulations Governing Hazardous Waste

Identification and Listing of Hazardous Waste
Standards Applicable to Generators of Hazardous Waste
Standards Applicable to Transporters of Hazardous Waste

40 CFR Part 264 Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

29 CFR Part 1910 Occupational Safety and Health Regulations

20 CFR Part 1926 Safety and Health regulations for Construction

- H. For disposal of hazardous waste, obtain a hazardous waste generator identification number from DNREC Hazardous Waste Management Branch. When disposing of hazardous waste, prepare all notification and shipping/disposal manifests including submittal of EPA Form 8700-12, Notification of Regulated Waste Activity to DNREC Hazardous Waste Management Branch.
- I. Filling of the void between the bottom of the pile cap and the top of pile jacket shall be done in accordance with the material manufacturer's instructions. The exterior surfaces of the jackets shall be cleaned of any filler material or other extraneous material deposited on the pile jackets. The mastic shall be installed in a clean and neat fashion so that the final surface is smooth and completely fills the void to match the outer face to the outer pile jacket.

Method of Measurement:

The Department will measure the quantity of epoxy mastic in square feet accepted. Measurement will be made parallel to the axis of the pile from top of FRP jacket to bottom of the pile cap.

Basis of Payment:

The Department will pay for epoxy mastic pile collar at the contract unit price per square foot. Price and payment will constitute full compensation for, providing and placing all materials, cleaning and preparation of piles, and collection and disposal of materials removed.

03/25/2022

613504 - POTASSIUM SILICONATE CONCRETE SEALER

Description

This work consists of providing and applying Potassium Silicate Concrete Sealer to waterproof concrete surfaces.

Materials

A. Potassium Silicate Concrete Sealer. CAS Registry No. 31795-24-1

1. Provides excellent water-resistant properties – the surfaces do not absorb water.
2. Water resistant properties remain for minimum of 10 years.
3. Does not prevent air exchange – Breathable
4. Active ingredient potassium silanetriolate 30 to 40% by weight concentrate.
5. Water based – can be applied to dry or damp surfaces
6. Can be applied after the initial set of concrete, can be used as a curing compound
7. Eliminates mildew growth.
8. Can be applied to vertical and horizontal surfaces.
9. Nontoxic – Non-Caustic – Non-Flammable – Low VOCs
10. Cures within 2 hours
11. Can be painted or coated.
12. Conditions and seals existing flat paint coated surfaces

Construction

A. Submittals.

1. Submit a manufacturer's letter of certification for an approved installer or arrange to have a manufacturer's representative on site during surface preparation and coating application.
2. Supply a MSDS and a certificate of compliance of the batch and lot for each shipment of concrete sealer materials. Provide a manufacturer's analysis report of the materials used with the specified batch shipped to the job site.
3. Provide the manufacturer's instructions for installing the system at least 2 weeks before beginning surface preparation.

B. Surface preparation and coating application.

1. Cure concrete in accordance with Section 610 or the time specified in the manufacturer's recommendations, whichever is longer. Complete texturing, saw cutting, grooving, and repointing on new concrete surfaces before preparing the surface for sealer. Complete repairs on existing concrete surfaces in accordance with Section 628.
2. Remove loose material, grease, dirt, salt, efflorescence, laitance, curing compound, previous sealers and paints, and other matter from concrete surfaces in accordance with ASTM D4258 and SSPC-SP-13. The curing compound may remain in place If the coating is compatible with the curing compound, according to the manufacturer. Do not use sandblasting or shot-blasting on textured or form-lined concrete surfaces or on surfaces to receive aesthetic staining.
3. High-pressure-wash new and existing concrete with water at a flow rate and pressure sufficient to clean, but not damage the concrete surface. Repair concrete surface damage resulting from the high-pressure wash.
4. Blow the surface area clean with oil-free compressed air immediately before coating application.
5. Protect private and public property, pedestrians, workers, and vehicles on, beneath, or adjacent to the structure from the effects of surface preparation and sealer applications.
6. Apply coatings and membranes when the range of surface and ambient temperatures and weather conditions recommended by the manufacturer are forecast to continue until the coating cures. After high-pressure washing or a rain event, allow the surface to dry in accordance with the manufacturer's recommendations before applying the coating.
7. Do not begin applying coating until the engineer approves the surface preparation work.

Method of Measurement.

The Department will measure the quantity of concrete coatings as the number of square feet of concrete surface area coated and accepted. The Department will not measure the quantity of sealer for precast concrete elements.

Basis of Payment.

- A. The Department will pay for potassium silicate concrete sealer at the contract unit price per square feet. Price and payment for concrete coatings will constitute full compensation for.
1. The technical representative
 2. providing all materials

3. providing and removing scaffolding or access equipment
 4. surface preparation
 5. application of coating material
 6. disposal of discarded materials; and
 7. recoating due to low application rates
- B. The Department will pay for.
1. Sealers applied to precast concrete elements in accordance with Section 612; and
 2. Concrete patching and repair in accordance with Section 628.

6/28/2022

613508 – SURFACE TREATMENT FOR CONCRETE DECKS**Description.**

This work consists of providing and installing a two-component, epoxy-resin coating system with aggregate for application to PCC bridge decks for crack sealant and bridge deck waterproofing.

Materials.

A. Provide a two-component epoxy urethane binder meeting the requirements of Table 1 below.

Table 1

Property	Requirement	Test Method
Gel Time, 70° Fahrenheit	15 min	ASTM C881
Viscosity	1500 cp	ASTM D2556
Shore D Hardness	65-80	ASTM D2240
Tensile Strength	2,800 psi	ASTM D638
Tensile Elongation	40% ± 5%	ASTM D638
Bond Strength	2,000 psi @ 2 days; 2,800 psi @ 14 days	ASTM C882
Shrinkage	0.2%	ASTM D2566
Thermal Compatibility	Pass	ASTM C884
Absorption	0.2% (24 hours)	ASTM D570
Chloride Ion Permeability	0.0 Coulombs	AASHTO T277
Compressive Strength	1,500 psi @ 3 hours; 5,000 psi @ 24 hours	ASTM C579

B. Provide aggregate conformant with DelDOT Standard Specifications, Section 1046.2

Construction

A. Submittals

1. Affirmation that manufacturer's representative or technical specialist for the epoxy product will be present during surface preparation and coating application.
2. Manufacturer's installation instructions
3. Product Source
4. Product certifications showing conformance to specifications
5. Materials Safety Data Sheet for all components

B. Surface Preparation and Treatment Containment

1. Protect natural features, property, pedestrians, workers, and vehicles on, beneath, or adjacent to the structure from the effects of surface preparation and treatment activities.

2. Remove loose material, grease, dirt, salt, efflorescence, residues, curing compound, previous sealers and paints, and other matter from concrete surfaces that will prevent bonding of the epoxy resin per manufacturer's recommendations.

C. Weather and Placement Limitations

1. Structure surface temperatures must be equal to or greater than 50 degrees Fahrenheit.
2. Structure must be dry with a maximum moisture content of 5%.
3. Do not apply material when ambient temperature is anticipated to go below freezing or precipitation is forecast for the anticipated curing period.

D. Mixing

1. Provide a lot, batch number, and certificate of analysis for each epoxy component to the Engineer prior to mixing on site.
2. Mix epoxy components at a temperature range of 65 - 85 degrees Fahrenheit or the manufacturer's recommended mixing temperature.
 - a. Heat the components if necessary to meet required cure times.
3. Mix epoxy at a 1:1 ratio or per manufacturer recommendations. Mixing activities, whether by hand tool or automated mixing, must be within the gel times cited AASHTO or ASTM standards noted in the product specifications.

E. Installation

1. Apply the epoxy resin at a rate conforming to the manufacturer's recommended rates.
2. Apply the epoxy product, with approval from the engineer, when the range of surface and ambient temperatures and weather conditions recommended by the manufacturer are forecast to continue until the coating cures.
3. Squeegee, roll or broom out the epoxy resin uniformly.
4. Ensure all surfaces are fully wetted with resin.
5. Broadcast aggregate uniformly across all wetted surfaces ensuring full coverage of the epoxied surface.

F. Curing

1. Cure the surface treatment in accordance with manufacturer recommendations.
2. Allow the overlay to reach final cure and a minimum of 4-hours after final finishing, before subjecting the overlay to traffic and equipment.
3. Sweep or vacuum excess aggregate that is in the surrounding area. Sweep or vacuum 30 days following opening to traffic to remove traffic-loosened aggregate.

Method of Measurement

- A. The Department will measure the quantity of epoxy resin surface treatment for concrete decks in square feet of concrete surface area coated and accepted.

Basis of Payment

- A. The Department will pay for epoxy resin surface treatment for concrete decks at the contract unit price per square feet. Price and payment will constitute full compensation for:

1. Submittals;
2. the technical representative;
3. surface preparation;
4. providing all materials;
5. falsework to contain product during the application process;
6. application of epoxy resin and broadcast aggregate material;
7. disposal of discarded materials; and,
8. all incidentals required to complete the work.

624502 – SILICONE COATED FOAM JOINT SEAL

Description.

This work consists of fabricating, providing, and installing joint seals.

Materials.

Pre-compressed silicone coated, self-expanding foam bonded to joint substrate by adhesive

Construction.

- A. Prior to ordering the joint material, measure the joint opening to confirm the required size. If the required size conflicts with the contract, notify the engineer immediately. Fully remove the existing seal/gland and adhesive.
- B. Fully remove and dispose of the existing seal/gland and adhesive.
- C. Prepare the surface of the concrete/steel substrates in accordance with the manufacturer's recommendations prior to installing joint material. Install joint material and use bonding agent in accordance with the manufacturer's recommendations.

Method of Measurement.

The Department will measure the quantity of silicone coated foam joint seal as the number of linear feet of joints fabricated, installed, and accepted.

Basis of Payment.

- A. The Department will pay for silicone coated joint seal at the contract unit price per linear foot. Price and payment will constitute full compensation for:
 - 1. Pre-measuring;
 - 2. providing and placing all materials;
 - 3. cleaning and preparing the joint; and
 - 4. for all labor, equipment, tools, and incidentals necessary to complete the work.

04/01/2021

628507 – SHALLOW OVERHEAD CONCRETE SPALL REPAIR
628508 – DEEP OVERHEAD CONCRETE SPALL REPAIR
628509 – EXPOSED REBAR AND STRAND PROTECTIVE COATING

Description

This work consists of repairing overhead shallow and deep spalls in the underside of decks, soffits, and overhangs. Exposed rebar and prestressing strands are repaired with a protective coating during the spall repairs or as a standalone operation.

A. Definitions:

1. Shallow overhead concrete spall repairs are spalls that do not extend above the bottom mat of reinforcement.
2. Deep overhead concrete spall repairs are spalls that extend above the bottom mat of reinforcement.

Materials

A. Epoxy Mastic Grout:

1. 2-component 1:1 ratio trowel grade epoxy material composed of 100% solids trowel grade epoxy binder and epoxy extender. All materials compatible and supplied from a single source.
2. Moisture insensitive for application both above and below water and adheres to wet concrete and steel.
3. Machine mix the binder and extender in accordance with manufacturer's instructions. One part binder combined with a maximum of one part of epoxy extender.
4. Testing:

Test	Test Method	Result
Compression	ASTM C109	4500 psi
Adhesion to dry steel	ASTM D4541	1200 psi
Adhesion to dry concrete	ASTM C1583	800 psi

- B. Reinforcing Steel Protective Coating. Provide a material specifically designed to apply directly on rusted or seasoned surfaces and concrete. Non-porous and an effective anti-corrosive and rust preventative coating.

Construction

A. Submittals:

1. Submit qualifications for each of the respective repair and rehabilitation operations verifying successful completion of at least 3 separate repair or rehabilitation projects within the last 5

years using the proposed products. The engineer may accept a manufacturer's letter of certification for an approved installer. Ensure that qualifying personnel oversee repair and rehabilitation operations.

2. Submit equipment used in all aspects of concrete repair and rehabilitation operations.
3. Submit formal meeting minutes from a pre-construction meeting held 14 calendar days before the start of work to brief personnel performing the work and the engineer on the operations. Submit a concrete repair work plan to document the proposed repair means and methods discussed during the preconstruction meeting.
4. Submit protection of traffic and debris collection plan.
5. Submit all materials for review and approval.
6. Select one location as a test patch to verify that means and methods are acceptable and approved by the engineer.

B. Repair Methods:

1. Repair to the depth noted in the contract. The dimensions may change in field if the engineer deems it necessary.
2. Remove spalled, disintegrated, delaminated, deteriorated, loose, honeycombed, and unsound concrete. Collect debris and prevent material from falling on the roadway, waterway, or railroad area below. Remove material from site and dispose in accordance with Section 106.8.
3. Do not remove concrete above the bottom mat of reinforcement unless approved by the engineer.
 - a. Saw cutting around the patched area is not required.
 - b. Removing sound concrete from around exposed rebar or strand is not required.
4. Clean exposed rebar to bright metal for black bars or to visible epoxy coating for epoxy-coated bars using grit-blast, wire-brushing, or other approved means.
5. Apply reinforcing steel protective coating. Apply two coats in accordance with the manufacturer's recommendations.
6. Clean and prepare the concrete surface area in accordance with the epoxy mastic grout manufacturer's recommendations.
7. Apply the epoxy mastic grout in multiple lifts as required. Apply each lift no thicker than the manufacturer's recommendation for overhead applications or the maximum thickness that will adhere and cure without sagging.
8. Apply the epoxy mastic grout to completely fill the spall and provide 1-inch minimum cover over exposed rebar or strand.
9. Epoxy mastic grout shall be feathered and smooth to a neat troughed finish.

Method of Measurement:

A. The Department will measure the quantity of:

1. Shallow overhead concrete spall repair as the number of square feet of repair.

2. Deep overhead concrete spall repair as the number of square feet of repair.
3. Exposed rebar and strand protective coating as the number of linear feet coated.

Basis of Payment:

- A. The Department will pay for shallow and deep overhead concrete spall repair at the contract unit price per square foot. Price and payment will constitute full compensation for:
 1. providing and placing all materials;
 2. providing and erecting temporary protective structure and access equipment;
 3. deteriorated concrete removal and disposal;
 4. surface preparation of any exposed rebar, strand, and concrete surface; and
 5. exposed reinforcing bar and strand protective coating.
- B. The Department will pay for exposed rebar and strand protective coating at the contract unit price per linear feet where spall repairs are not required. Price and payment will constitute full compensation for:
 1. providing and placing all materials;
 2. providing and erecting temporary protective structure and access equipment; and
 3. reinforcement bar and strand cleaning.

**628517 – MAGNESIUM PHOSPHATE CEMENT (MPC) APPROACH AND BRIDGE DECK REPAIR, 2”
TO LESS THAN FULL DEPTH**

Description:

This work consists of repairing both full and partial depth bridge deck and approaches with Magnesium Phosphate Cement (MPC).

Materials:**A. MPC**

1. Pre-packaged and pre-measured dry mix
 - a. Consisting of: magnesium oxide, aggregate and rigid fibers.
 - b. Activated with liquid phosphate provided in pre-measured containers.
2. MPC that bonds chemically and mechanically to both PCC and to itself.
3. Capable of being placed at temperatures of –5 degrees F to 105 degrees F.
4. Provides a final product that is capable of opening to traffic within 1-hour of placement.
5. Meets the following performance properties:

Performance Properties

Requirement	Test Method	MPC Performance
Time of Setting* (maximum)	ASTM C191 AASHTO T131	Initial: 20 minutes Final: 30 minutes
Compressive Strength (minimum)	ASTM C109	3500 psi @ 1 hours 5000 psi @ 24 hours 7250 psi @ 28 days
Bond Strength by Slant Shear, MPC over Concrete and MPC over MPC (minimum)	ASTM C882	1000 psi @ 1 hours 2000 psi @ 24 hours 2900 psi @ 28 days
Freeze / Thaw Resistance @ 300 Cycles (minimum)	ASTM C666 Procedure A	Durability: 90% @ 300 cycles
Resistance to Chloride Ion Penetration	ASTM C1202 AASHTO T277	1500 Coulombs

* Setting time may be controlled in varying ambient temperature to achieve the required performance properties by heating or cooling the activator and dry mix components, and by using admixtures to speed or slow the reaction.

Construction:

A. Submittals:

1. Provide the engineer with a copy of the Safety Data Sheets (SDS) for MPC Concrete components to be used on site.
2. Provide certifications stating conformity of the material with local, state, federal, environmental and worker safety laws and regulations, as requested.
3. Provide Technical Data Guide for MPC concrete: report yield, mechanical and environmental performance properties. Confirm compliance with performance properties.
4. Provide Installation Guide for MPC concrete: include storage, handling, surface preparation, mixing, placing, and finishing guidelines.

B. Installation:

1. Provide a technical representative from the Manufacturer of MPC concrete at the start of work for a minimum of one full working day. Alternatively, provide a written statement by the Manufacturer stating that the Contractor is qualified to install MPC concrete.
 - a. The written statement must be dated within the last 12 months. It must include the names of key personnel who will perform and supervise the installation of MPC concrete. The engineer may suspend work if unauthorized personnel are substituted for authorized personnel during construction.

C. Delivery, Storage and Disposal:

1. Deliver the material in original, unopened, undamaged, factory-sealed packaging. Verify Manufacturer's labels are intact and legible. Labels must include brand, product name, weight, system identification number, and batch number, with verification of date of manufacture and shelf life.
2. Store the material components in a clean, dry location, out of direct sunlight. Maintain storage temperature required by the Manufacturer. Avoid contact with moisture.
3. Do not use components that have exceeded their shelf life.
4. Dispose of expired material in accordance with Manufacturer's recommendations and local environmental regulations.

D. Surface Preparation:

1. The engineer will inspect the entire deck surface, or milled areas of exposed deck surface, to indicate the type and extent of repairs, if any.
2. During surface preparation take precautions to protect traffic from construction activities.
3. Saw cut in accordance with Section 628.3.4.D.3 except that the minimum depth of a vertical face is 1/2-inch.
4. Remove deteriorated deck areas down to sound concrete, in accordance with Section 628.3.4.D. Do not operate mechanical chipping tools at an angle in excess of 45 degrees measured from the surface of the deck.

For spalls on riding surfaces, chip down the perimeter of the patch to make a 1/2-inch minimum depth vertical face from the top of the adjacent riding surface.

5. When the removal depth of an existing concrete deck spanning over a roadway, waterway, or railroad reaches 1/2 of the existing concrete deck thickness, and deeper removal is anticipated, provide and erect temporary protective shielding under the deck to prevent falling material from reaching the roadway, waterway, or railroad area below.
6. After completely removing deteriorated concrete, clean the concrete surface and rebar in accordance with Section 628.3.4.D.
7. Apply MPC concrete to dry surfaces only. Do not apply over Saturated Surface Dry (SSD) concrete surfaces unless permitted by the manufacturer. Clean all slurry and dust from saw-cutting and demolition prior to application. Do not apply to surfaces contaminated with oil, or on unsound concrete.
8. Follow Manufacturer's Installation Guide for preparing the surface prior to placing MPC concrete. Follow Manufacturer's application-specific installation and repair guidelines for additional surface preparation requirements.

E. Mixing Instructions:

1. Mix MPC concrete in accordance with the Manufacturer's Installation Guide.

F. Placement and Finishing:

1. Place, and finish MPC concrete in accordance with the Manufacturer's Installation Guide.
2. Provide a minimum patch depth on bridge decks of at least 1-inch below the top mat of rebar.
3. Refer to Manufacturer's Installation Guide for usage of Admixtures, and for best practices to speed or slow set time.

G. Curing Treatment:

1. Cure MPC concrete in accordance within the Manufacturer's Installation Guide.

H. Grinding:

1. Grind the MPC concrete patch flush with adjacent pavement if required, to maintain a continuous riding surface, and as directed by the engineer

I. Sealing:

1. Seal in accordance with the Sealant Manufacturer's Installation Guide for application of joint seal and for MPC concrete sealants.

Method of Measurement:

The Department will measure MPC patching by the cubic foot.

Basis of Payment:

- A. The Department will pay for MPC patching at the contract unit price per cubic foot. Price and payment will constitute full compensation for:

1. Providing all submissions as required;
2. providing MPC concrete representative;
3. existing concrete removal, disposal, and surface preparations;
4. providing, storing, and placing all materials;
5. finishing, curing, and sealing MPC concrete;
6. grinding surface; and
7. all incidentals required to complete the Work.

B. The Department will pay for:

1. Temporary works in accordance with Section 604; and
2. Concrete reinforcement in accordance with Section 611

10/19/2023

628518 – REMOVAL OF PCC, 1” TO 3” DEPTH
628519 – REMOVAL OF PCC, 3” TO FULL DEPTH

Description.

A. This work consists of:

1. Removing existing PCC on bridge decks, abutment backwall headers, approach slabs, and other elements where milling of the PCC surface has been performed and additional depth, which is unable to be obtained by milling, is determined necessary by the engineer.
2. Removal of concrete to remove and replace a bridge's expansion joint system.

Materials.

None

Construction.

- A. Use a 15-pound pneumatic hammer unless otherwise noted in the contract. The engineer may approve use of alternative tools.
1. Do not use machine mounted equipment.
- B. Remove all unsound concrete as part of the removal operation, and as directed by the engineer.
- C. Remove concrete to at least 1-inch below and around reinforcing steel.
- D. Take care not to damage existing reinforcing steel.
1. Report areas of damaged reinforcing steel or corroded reinforcing steel to the engineer.
 2. Repair reinforcing steel as directed by the engineer.
- E. Blast-clean the removed area prior to placement of formwork.

Method of Measurement.

- A. The Department will measure the quantity of Removal of PCC, 1” to 3” Depth, as the number of square feet completed and accepted.
- B. The Department will measure the quantity of Removal of PCC, 3” to Full Depth, as the number of cubic yards completed and accepted.

Basis of Payment.

- A. The Department will pay for Removal of PCC, 1” to 3” Depth at the contract unit price per square foot. The Department will pay for Removal of PCC, 3” to Full Depth at the contract unit price per cubic yard. Price and payment will constitute full compensation for:
1. Providing and erecting temporary protective measures not already in place for other work;
 2. unsound concrete removal operations;
 3. replacing or repairing any reinforcing steel not damaged due to PCC removal operations;
 4. blast cleaning and covering of the removed area in preparation for final repair procedures;
and
 5. all incidentals required to complete the Work.
- B. The department will pay for:
1. Bar reinforcement in accordance with Section 611.
 2. Drilling holes and installing dowels in accordance with Section 628.
 3. Shielding installed over the travel lanes in accordance with Section 604.
- C. The Department will make no additional payments for the repair of any reinforcing steel damaged during the PCC removal.

5/2/2024

760503 - PAVEMENT MILLING, PATCHING

Description:

This work consists of milling the existing bituminous concrete pavement patch areas at the locations and to the depths shown on the plans and/or as directed by the engineer.

Construction Methods:

Section 760 Pavement Milling of the Standard Specifications shall be applicable to this item, except the milled patch areas must be paved with material designated on the plans flush with the adjacent pavement prior to opening to traffic.

Method of Measurement:

- A. The Department will measure the quantity of pavement milling, patching in square yard per inch of depth.
- B. Any additional depth, not approved by the engineer in writing, will not be measured.

Basis of Payment:

- A. The Department will pay for pavement milling, patching at the contract unit price per square yard per inch of depth. Price and payment will constitute full compensation for:
 - 1. Milling or planning the existing pavement;
 - 2. removing and disposing of milled material; and
 - 3. all labor, tools, equipment, and incidentals to complete the Work.

10/03/2022

763520 - ELECTRONIC TICKETING**Description:**

This work consists of providing electronic data for material weight tickets delivered to the project. This work also consists of placing an identifying vehicle number on the driver side and the passenger or rear sides of the delivery vehicle. This does not preclude or dismiss any requirement for paper tickets required by the Standard Specifications or other rules and regulations.

General Requirements:

- A. Send electronic tickets (eTicket) to the Department's Electronic Ticketing Portal <https://tickets.deldot.gov> as they are generated. The Department will reject any load that does not have a corresponding eTicket unless the cause is beyond the contractor's control. In such circumstances paper tickets may be permitted at the discretion of the engineer.
- B. Payment for material weight delivered to the project will be based upon the eTickets marked "*Delivered*", less waste, excess material weight as noted in 105.12 of the Standard Specifications, and any audit corrections.
- C. Do not reissue or reprint tickets that have been marked "*Delivered*" or "*Rejected*" without first notifying the engineer. The engineer may reject a reissued or reprinted ticket at their discretion. When a reissued or reprinted ticket is rejected, payment will be based upon the original ticket.

Data Integration:

Request a list of the Department's naming nomenclature. Include in the request an identification of what system the supplier utilizes for its load read-out weighing system. If necessary, create an Application Programming Interface (API) to integrate with the Department's eTicketing Portal. Utilize the API to provide electronic data from the load read-out weighing system at the material source that is readable by the Department's eTicketing Portal. Update the load read-out weighing system and API as necessary to maintain connection the Department's eTicketing Portal.

The data shall be provided as follows:

Reference Field No.	Description	Examples	Data Type	Required
1	Ticket Number	5126349, 101R, 539-19	String	Yes
2	Contract Number	T202011001	String	Yes

3	Contract Name (Job)	Walnut Street Streetscape Improvements	String	Yes
4	Contractor Name (Customer)	Mumford & Miller, Inc.; A Del Construction	String	Yes
5	Supplier Name	River Asphalt; Allan Myers Materials	String	Yes
6	Supplier Plant	Plant #1 Dagsboro; Dover Asphalt	String	Yes
7	Job Number (Location)	Task 1; Location 5	String	Yes
8	Weigh Master Name	Johnny Scales	String	Yes
9	Weigh Master ID	1234567	String	Yes
10	Left Intentionally Blank			No
11	Mix Design ID (Product)	1628p; AM-WILM-29 76-22	String	Yes
12	Material Type (Product Description)	9.5mm top; 19MM 76-22 NON CARB	String	Yes
13	Item No. (Product Code)	401005; 401016	String	Yes
14	Load Number	75	Number	Yes
15	Identifying Vehicle Number	T-1	String	Yes
16	Hauler	John Doe Trucking	String	Yes
17	Legal Gross Vehicle Weight	73,280	Number	Yes
18	Loading Date & Time	2020-06-15T13:45:30	String	Yes
19	Gross Weight	72,980	Number	Yes
20	Net Weight	27,900	Number	Yes
21	Truck Tare Weight	45,080	Number	Yes
22	Void	280	Number	No
23	Daily Running Total	44.43	Number	Yes

All provided weights shall be accurate to 0.01 tons.

Loads which do not have the required data shall be rejected.

Setup and Calibration:

Conduct a test of each supplier's integration with the Department's eTicketing Portal prior to shipping material. Complete test at least 14 days prior to shipping material unless otherwise approved by the engineer. The test must involve at least four calibration eTickets from each supplier approved for use on the project. The calibration eTickets must accurately reflect the categories 1-7 shown above; all other categories shall be marked "TEST". After the engineer confirms the calibration eTickets have been entered into the Department's eTicket Portal, void the eTickets with the reason "*Calibration Testing*".

Uptime:

Uptime reliability of the material supplier's ticketing system must be 99.5% over any 30-day rolling period. Uptime is defined as the ability for the Department to receive electronic tickets within a maximum of 10 minutes from when the ticket was created.

Load Identification:

Ensure the identifying vehicle numbers on the delivery vehicle correspond to the ticket. Place the numbers on the delivery vehicles such that at least one can be safely read from within the work area. Delivery vehicles without identifying vehicle numbers shall be rejected.

Method of Measurement:

The Department will not measure electronic ticketing.

Basis of Payment:

- A. The cost associated with creating and maintaining an API, providing electronic ticketing data, and placing identifying vehicle numbers on the delivery vehicles is incidental to the item being placed.
- B. The Department will make no payment for material that is rejected.

01/18/2022

801500 – MAINTENANCE OF TRAFFIC, REHABILITATION

DESCRIPTION:

This work consists of providing temporary traffic control to maintain vehicular, bicycle, and pedestrian traffic through the project work zone where roadway and/or full sidewalk detours are specified to be used for completion of repair work.

MATERIALS:

- A. Crashworthy temporary traffic control devices in accordance with current AASHTO MASH standards.
- B. Category I through Category III temporary traffic control devices - Certification of compliance with MASH required.
 - 1. Category I devices - The manufacturer or contractor may self-certify that the devices meet the MASH criteria.
 - 2. Category II and III devices - MASH eligibility letter, including all applicable attachments required for each type of device.
- C. Submit documentation requesting approval of temporary traffic control devices 14 days before the start of work. Submission requirements and instructions for source information are listed on DelDOT's website: <https://deldot.gov/Business/prodlists/index.shtml>. The Department approves temporary traffic control devices based on:
 - 1. Self-Certification
 - 2. Approved products lists

CONSTRUCTION:

- A. Place temporary traffic control devices in accordance with the contract and DE MUTCD. Follow the manufacturer's installation instructions.
- B. Maintain temporary traffic control devices throughout the project duration. Replace damaged temporary traffic control devices within 24 hours of notification or when directed by the engineer.
- C. Maintain temporary traffic control devices at a minimum in a "marginal" condition in accordance with the brochure entitled "Quality Guidelines for Temporary Traffic Control Devices," available from the American Traffic Safety Services Association (ATSSA). The engineer may reject a temporary traffic control device that does not meet the "marginal" condition.
- D. Temporary traffic control devices are the contractor's property unless otherwise indicated in the contract.
- E. General Temporary Traffic Control and Traffic Maintenance.
 - 1. Maintain a work zone that protects the travelling public and persons working on the project. If

necessary, implement additional safety measures not expressly required by the contract to ensure the safety of all persons.

2. The contractor may adjust longitudinal dimensions for maintenance of traffic configurations to fit field conditions.
3. Inventory existing signs within the contract limits
 - a. Maintain existing signs that must remain in place during the project as noted in the contract or as directed by the engineer.
 - b. Remove other existing signs and store.
4. Always maintain access within the project limits for businesses and residences
 - a. Coordinate temporary driveway or entrance closures for tie-in purposes with the engineer and the property owner in advance of the closures.
5. Regarding bus stops, unless otherwise directed by the contract or the engineer:
 - a. Maintain an area for the bus vehicle to safely pick-up and drop-off passengers.
 - b. Provide an accessible path for pedestrians to safely access the bus stop.
6. Maintain existing access for bicycles and pedestrians. If temporary sidewalk closures are necessary, install pedestrian detours in accordance with the DE MUTCD. Damage to existing sidewalk will be repaired at the Contractor's expense. Clear sidewalks of all construction debris at the end of each workday.
7. Conduct construction operations in a manner that minimizes delays to traffic.
 - a. Follow the requirements of the memorandum titled, "Temporary Traffic Control within Intersections," of the DE MUTCD for work within intersections or in close proximity to intersections.
 - b. Schedule work in the vicinity of traffic signals to minimize the time during which the signal operates without detection.
 - c. Set temporary traffic control devices on the work zone side of the pavement marking, if possible, when closing a lane adjacent to an open lane.
 - d. Do not close lanes unless a construction activity requiring a lane closure is taking place or will take place within 1 hour of closure, except for buffer lanes on high volume or high-speed roadways. Reopen lanes immediately upon completing the work. Shorten the lane closure for moving operations as work progresses, and as traffic conditions warrant, to keep the length of the closure to a minimum. Conduct construction operations in a manner that minimizes disruption to traffic during peak hours and periods of heavy traffic flow. The Department will stop the contractor's operations if, in the opinion of the engineer, such operations are unnecessarily impeding traffic.

- F. Notification to the engineer for road closures and detours.
 - 1. Submit notification no less than 14 calendar days before the start of detours and road closures.
 - 2. Obtain the approval of the chief traffic engineer, or designee, a minimum of 48 hours in advance of proposed restrictions beyond those specified in the contract.
- G. Written notice to property owners, businesses, and residents.
 - 1. Provide written notice 48 hours in advance of the start of construction work including the following:
 - a. The scope of work, working hours, anticipated start and completion dates, and a summary of construction activities that might interfere with property access.
 - b. A schedule and access coordination plan.
 - c. The contractor's name, address, and a Department contact phone number.
- H. Provide written verification to the engineer that the property owners and residents were notified.
- I. Failure to give proper notice may result in suspension of work in accordance with Section 104.8 of the standard specifications.
- J. Before obstructing a fire hydrant, notify the local 911 center and provide the engineer with written confirmation of the notice.
- K. Keep lanes open for a period of time that depends on the day of the week that the legal or observed holiday falls. The following schedule determines the periods of time the lanes must remain open, unless otherwise allowed by the contract:

TABLE 1: DAY OF HOLIDAY LANE CLOSURES

<i>Day of holiday or event</i>	<i>Time all lanes must be open to traffic</i>
Sunday	12:00 PM Friday through 5:59 AM Monday
Monday	12:00 PM Friday through 11:59 PM Monday
Tuesday	12:00 PM Monday through 11:59 PM Tuesday
Wednesday	12:00 PM Tuesday through 11:59 PM Wednesday
Thursday	12:00 PM Wednesday through 11:59 PM Thursday
Thursday (Thanksgiving)	6:00 AM Wednesday through 11:59 PM Sunday
Friday	12:00 PM Thursday through 5:59 AM Monday
Saturday	12:00 PM Friday through 5:59 AM Monday

- L. Do not close travel lanes or roads within 1 mile of a designated polling place during the primary and general elections that fall during an even numbered year.
- M. Follow all additional restrictions that may apply as noted in the contract or as directed by the engineer.
- N. The Department will consider failure to comply with the requirements of this section as justification for suspension of work in accordance with Section 104.2.D of the standard specifications. The Department will continue assessing time charges until the contractor corrects the deficiencies.
- O. Non-compliance includes:

1. Failure to correct deficiencies within 24 hours of written deficiency notices related to temporary traffic control.
2. Non-compliance with the DE MUTCD or the contract.
3. Unsafe operations.
4. Placement of non-compliant temporary traffic control devices.

METHOD OF MEASUREMENT:

The Department will not measure this item.

BASIS OF PAYMENT:

- A. The Department will pay for temporary traffic control at the lump sum contract price. Price and payment will constitute full compensation for:
 1. Maintenance of traffic activities accepted by the engineer;
 2. supply, installation, maintaining, and removing maintenance of traffic devices, including, but not limited to:
 - a. temporary warning signs and plaques;
 - b. plastic drums;
 - c. traffic cones;
 - d. arrow panels; and
 - e. truck mounted attenuators.
 3. submitting TTCPs;
 4. submitting certifications;
 5. correcting edge drop-offs; and
 6. a certified ATSSA traffic control supervisor.
- B. No additional payment will be made to move temporary traffic control devices in accordance with the TTCPs or as necessary to address safety issues as included in this item.

04/29/2026

806500 – TRAFFIC OFFICERS

Description:

In accordance with Section 806.1.

Materials:

Not applicable.

Construction:

In accordance with Section 806.3.

Method of Measurement:

In accordance with Section 806.4.

Basis of Payment:

- A. The Department will pay for traffic officers at the contract unit price per hour. Price and payment constitute full compensation for providing traffic officers, vehicles, and equipment.
- B. For bidding purposes, the Department has fixed the unit price at \$180.00 per hour. The Department will pay for traffic officers based on a submitted invoice from the police department plus 10 percent.

07/17/2025



**Delaware Department of Transportation
Quantity Sheet Summary**

Proposal ID: T202707502

Project Description: Open End, Structure Maintenance, Central District, FY27 - 29

NOT TO BE USED FOR BIDDING

Item Number	Description	Unit	Quantity
207003	STRUCTURE BACKFILLING	CY	95
202000	EXCAVATION AND EMBANKMENT	CY	52
207004	STRUCTURE EXCAVATION	CY	95
207023	STRUCTURAL BACKFILL, BORROW TYPE C, PROVIDING ONLY	CY	90
208000	FLOWABLE FILL	CY	15
209002	BORROW, TYPE B	CY	75
211001	REMOVAL OF PORTLAND CEMENT CONCRETE PAVEMENT, CURB AND SIDEWALK	SY	120
211002	REMOVAL OF GUARDRAIL AND FENCE	LF	130
301001	GABC	CY	100
301002	GABC, PATCHING	CY	120
302002	DELAWARE NO. 3 STONE	TON	45
401005	SUPERPAVE TYPE C, 9.5 mm, PG 64-22 (CARBONATE STONE)	TON	100
401014	SUPERPAVE TYPE B, PG 64-22	TON	95
401029	SUPERPAVE TYPE C, 9.5 mm, PG 64-22, PATCHING	TON	71
401030	SUPERPAVE TYPE B, PG 64-22, PATCHING	TON	85
401500	FOG SEAL	GAL	800

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Item Number	Description	Unit	Quantity
504001	CRACK AND JOINT SEALING LESS THAN 3/4 INCH WIDE	LF	1000
504002	CRACK AND JOINT SEALING, 3/4 INCH TO 1 3/4 INCH WIDE	LF	500
602100	DRAINAGE INLET GRATE(S)	EACH	5
602101	DRAINAGE INLET FRAME(S)	EACH	5
602130	ADJUSTING AND REPAIRING EXISTING DRAINAGE INLET	EACH	5
604001	PROTECTIVE SHIELD	LS	1
605504	FRP JACKET AND EPOXY GROUT PILE ENCASEMENT, 18" ROUND PILE	LF	150
605514	EPOXY MASTIC PILE COLLAR, 18" ROUND PILE	SF	375
608000	STEEL SHEET PILES, PZ 22	SF	600
610000	PCC MASONRY, CLASS A	CY	100
610009	PCC MASONRY, CLASS B	CY	50
610016	PCC MASONRY, CLASS D	CY	50
613001	SILICONE-BASED ACRYLIC CONCRETE SEALER	SF	3500
613002	SILANE-BASED CONCRETE SEALER	SF	3500
613004	WATERPROOFING MEMBRANE, TRAFFIC BEARING	SF	3200
613504	POTASSIUM SILICONATE CONCRETE SEALER	SF	3200
613508	SURFACE TREATMENT FOR CONCRETE DECKS	SF	3200

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Item Number	Description	Unit	Quantity
615007	WELDING REPAIR	LF	242
624000	PREFABRICATED EXPANSION JOINT SYSTEM, 3"	LF	175
624009	ASPHALTIC PLUG JOINT	LF	175
624502	SILICONE COATED FOAM JOINT SEAL	LF	175
628001	REPAIR OF CONCRETE STRUCTURE BY EPOXY INJECTION	LF	500
628011	CRACK SEALING BRIDGE DECKS, APPROACH SLABS, SIDEWALKS, ETC	LF	525
628040	SHALLOW SPALL REPAIR	CF	60
628041	DEEP SPALL REPAIR	CF	30
628042	REHABILITATION OF PORTLAND CEMENT CONCRETE MASONRY	CY	5.5
628051	DECK REPAIR, 1" TO 3" DEPTH	SF	210
628052	DECK REPAIR, 3" TO < FULL DEPTH	SF	190
628053	DECK REPAIR, FULL DEPTH	SF	100
628070	DRILLING HOLES AND INSTALLING DOWELS	EACH	100
628507	SHALLOW OVERHEAD CONCRETE SPALL REPAIR	SF	175
628508	DEEP OVERHEAD CONCRETE SPALL REPAIR	SF	87.5
628509	EXPOSED REBAR AND STRAND PROTECTIVE COATING	LF	300
628517	MAGNESIUM PHOSPHATE CEMENT (MPC) APPROACH AND BRIDGE DECK REPAIR, 2" TO LESS THAN FULL DEPTH	CF	50

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Item Number	Description	Unit	Quantity
628518	REMOVAL OF PCC, 1" TO 3" DEPTH	SF	200
628519	REMOVAL OF PCC, 3" TO FULL DEPTH	CY	10
707015	RIPRAP, R-4	TON	40
707016	RIPRAP, R-5	TON	40
708003	GEOTEXTILES, RIPRAP	SY	220
720021	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	65
720034	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-27	LF	65
760010	PAVEMENT MILLING, BITUMINOUS CONCRETE PAVEMENT	SYIN	900
760503	PAVEMENT MILLING, PATCHING	SYIN	2100
762000	SAW CUTTING, BITUMINOUS CONCRETE	LF	450
762001	SAW CUTTING, CONCRETE, FULL DEPTH	LF	450
763000	INITIAL EXPENSE/DE-MOBILIZATION	LS	1
801500	MAINTENANCE OF TRAFFIC, REHABILITATION	LS	1
802003	ARROW PANELS TYPE C	EADY	100
803001	PROVIDE AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	EADY	60
804001	PROVIDE AND MAINTAIN PORTABLE LIGHT ASSEMBLY (FLOOD LIGHTS)	EADY	50
805001	PLASTIC TRAFFIC CONTROL DRUMS	EADY	1502

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NOT TO BE USED FOR BIDDING

Item Number	Description	Unit	Quantity
806500	TRAFFIC OFFICERS	HOUR	50
807021	RELOCATE TEMPORARY SAFETY BARRIER	LF	1100
807023	INSTALL TEMPORARY SAFETY BARRIER PINS, IN BITUMINOUS PAVEMENT	LF	550
807024	INSTALL TEMPORARY SAFETY BARRIER PINS, IN CONCRETE	LF	550
807025	REMOVE TEMPORARY SAFETY BARRIER PINS, FROM BITUMINOUS PAVEMENT	LF	550
807026	REMOVE TEMPORARY SAFETY BARRIER PINS, FROM CONCRETE	LF	550
808002	PROVIDE AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	60
809001	INSTALL TEMPORARY IMPACT ATTENUATOR	EACH	3
809005	PROVIDE TEMPORARY IMPACT ATTENUATOR - NON-GATING, REDIRECTIVE, TEST LEVEL 3	EACH	3
810001	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	1500
811002	FLAGGER, KENT COUNTY	HOUR	320
811014	FLAGGER, KENT COUNTY, OVERTIME	HOUR	40
813001	TEMPORARY BARRICADES, TYPE III	LFDY	1200
861001	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, 6"	LF	1700
862006	PERMANENT PAVEMENT STRIPING, ALKYD-THERMOPLASTIC, SYMBOL/LEGEND	SF	500
868001	PAVEMENT MARKING, REMOVAL	SF	900

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Item Number	Description	Unit	Quantity
868002	PAVEMENT MARKING TAPE, REMOVAL	SF	900
908001	TOPSOIL	TON	60
908016	PERMANENT GRASS SEEDING, SUBDIVISION	SY	394
908020	EROSION CONTROL BLANKET MULCH	SY	260