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

JENNIFER COHAN
SECRETARY

VIA WEBSITE POSTING

October 16, 2020

Contract No. T201806003
Pavement Preservation, Open End, Sussex/Kent, FY21-22
Kent and Sussex Counties

Ladies and Gentlemen:

Enclosed is Addendum No. 2 for the referenced contract consisting of the following:

1. **The date for the receipt of bids has been moved to <u>Tuesday, October 27, 2020</u>**, prior to 2:00 p.m.
2. The Bid Proposal Cover, **revised**, to be substituted for the same page of the Proposal.
3. One (1) page, General Description, page 2 of 65, **revised**, to be substituted for the same page in the Proposal.
4. One (1) page, Special Provisions, page 10 of 65, **revised**, to be substituted for the same page in the Proposal.
5. Four (4) pages, Special Provision 401500 - Fog Seal, pages 11 of 65 through 14 of 65, **revised**, to be substituted for the same pages in the Proposal.
6. Five (5) pages, Special Provision 401580 - Ride Qualityof Bituminous Pavement, pages 29 of 65 through 33 of 65, **deleted** to be substituted for the same pages of he Proposal.
7. Nine (9) pages, Special Provision 403500 - Polymer-Modified High Performance Slurry Seal, (Ton) and 403501 - Polymer-Modified High Performance Slurry Seal, (Square Yards), pages 59A of 65 through 59I of 65, **new**, to be added to the Proposal.
8. Three (3) pages, Quantity Sheet Summary, page 1 through 3, **revised**, to be substituted for the same pages in the Proposal.

   <u>The following Item Number has been deleted</u>: 401005

   <u>The following Item Numbers have revised quantities</u>: 401530, 401532, 401533

   <u>The following Item Numbers have been added</u>: 403500 and 403501
9. The following plan sheets have been revised: 7 through 11.
10. Bid Express Amendment File No. 002x, **<u>added</u>**.

Please note the revisions listed above and submit your bid based upon this information.

Sincerely,
~signature on file~
Connie Ivins
Competitively Bid Contracts Coordinator
Delaware Department of Transportation

Addendum No. 2
October 16, 2020

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

CONTRACT T201806003

PAVEMENT PRESERVATION, OPEN END, SUSSEX/KENT, FY21-22

Advertisement Date: August 31, 2020

INCLUDED IN THIS DOCUMENT:

BID PROPOSAL:
GENERAL DESCRIPTION
PROSPECTIVE BIDDERS NOTES
GENERAL NOTICES
PREVAILING WAGES
SPECIAL PROVISIONS
SAMPLE AFFIDAVIT - CRAFT TRAINING
QUANTITY SHEET SUMMARY

ADDITIONAL BID PROPOSAL ITEMS:

ATTACHED OR POSTED DOCUMENTS:
PROJECT PLANS
QUESTIONS & ANSWERS (if posted)
GUARDRAIL END-TREATMENT INFO

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; **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, October 6 ~~20~~ 27, 2020

GENERAL DESCRIPTION

A. BIDS DUE: **OCTOBER 6 ~~20~~ 27, 2020 PRIOR TO 2:00 P.M. Local Time** – unless changed via Addendum.
LOCATION: Bidder's Room, DelDOT Administration Building, 800 South Bay Road, Dover, DE 19901.
OR: Bidders with Bid Express® accounts can submit bids at BIDX.com/de.

B. PRE-BID MEETING: No

C. LOCATION: KENT AND SUSSEX Counties
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 making general improvements to roadways throughout Sussex County and Kent County using various pavement preservation methods. These pavement preservation methods shall include, but not be limited to: bituminous overlays, bituminous patching, thin overlays, fog sealing, crack and joint sealing, replacing pavement markings, adjusting & repairing drainage inlets, manholes, water valves and other utilities, backfilling along the edge of roadways, and any other work needed to complete the work.

E. COMPLETION TIME: All work on this contract must be complete within 730 Calendar Days.
The Contract Time includes an allowance for 0 Weather Days.
The Department's intent is to issue a Notice to Proceed for work to start on or about November 9, 2020.

F. SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, DELAWARE DEPARTMENT OF TRANSPORTATION, AUGUST 2016 apply to this Bid Proposal and Project. The Contractor shall make himself aware of any revisions and corrections (Supplemental Specifications, if any) and apply them to the applicable item(s) of this contract. The Standard and Supplemental Specifications can be viewed here. Units of Measure can be found at 101.04.

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

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

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

Prospective Bidders Notes begin on the following page…

SPECIAL PROVISIONS

S.P. Code	SPECIAL PROVISION DESCRIPTION
401500-15	FOG SEAL
401501-15	BITUMINOUS ASPHALT TACK COAT
401502-15	ASPHALT CEMENT COST ADJUSTMENT
401504-15	FRICTION MASTIC FOG SEAL
401530-15	PAVING SURCHARGE, ZONE 11
401532-15	PAVING SURCHARGE, ZONE 13
401533-15	PAVING SURCHARGE, ZONE 14
401696-15	ENTRANCE, DRIVEWAY, AND INTERSECTING STREET PAVING SURCHARGE
401699-15	QUALITY CONTROL/QUALITY ASSURANCE OF BITUMINOUS CONCRETE
401756-15	RUBBER MODIFIED FOG SEAL
403500-15	POLYMER-MODIFIED HIGH PERFORMANCE SLURRY SEAL, (TON)
403501-15	POLYMER-MODIFIED HIGH PERFORMANCE SLURRY SEAL, (SQUARE YARDS)
763554-15	ROAD LOCATION MOBILIZATION, ZONE 11
763556-15	ROAD LOCATION MOBILIZATION, ZONE 13
763557-15	ROAD LOCATION MOBILIZATION, ZONE 14

401500 – FOG SEAL

Description:

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

Materials:

Materials for fog seal shall be CQS-1hP, which conforms to Section 1016 of the Standard Specifications, and water, which conforms to Section 1021 of the Standard Specifications. In addition, the CQS-1hP must meet the chart below. A Certificate of Analysis shall be submitted for each lot of CQS-1hP for approval. The emulsion should be diluted no more than 24 hours before its intended use. This is to avoid settlement of the diluted emulsion. The emulsion may be circulated using a centrifugal or other suitable pump to ensure uniformity.

Emulsion Tests	Method	Specification
Saybolt Viscosity, 25ºC, sfs	AASHTO T59	20-100
Saybolt Viscosity, 50ºC, sfs	AASHTO T59	NA
Quick Sieve Test	AEITM 4	Pass/Fail
Sieve Test, % by weight	AASHTO T59	max. 0.1
Particle Charge	AASHTO T59	Positive
Demulsibility, %	AASHTO T59	NA
Residue by Hot Plate Evaporation	AEITM 2,3	min. 62
Residue by Oven Evaporation	AASHTO T59	

Residue Tests	Method	Specification
Penetration, 25ºC, 100g, 5 sec	AASHTO T49	40-90
Softening Point, R&B, ºC	AASHTO T53	min. 60ºC/140ºF
Ductility, 25ºC, 5cm/min, cm	AASHTO 51	NA
Elastic Recovery, 10ºC, %	AASHTO T301	NA

Equipment:

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 (meters) 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.

   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 gal units. The gauge shall have adjustments for correction.

Tanks shall have a minimum capacity of 750 gal.

The rate of application of the distributer shall be calibrated by an approved method determined by the Engineer.

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.

Application of Fog Seal Material:

The fog seal shall be applied 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.

The nozzles of the spray bar shall be kept clean at all times. 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 methods.

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.

When applying bituminous materials adjacent to structures or curbs, the Contractor shall furnish and use effective means of protecting the structures or curbs from discoloration.

Construction Methods:

The surface upon which the fog seal is to be placed shall be cleaned thoroughly to the satisfaction of the Engineer. The fog seal shall be applied at a rate of 0.05 to 0.17 gal/yd^2 at ambient temperature. The application rate appropriate for the surface being sealed shall be determined by the Engineer. This rate will be determined by test strip. 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. The application shall not begin if rain or high winds are eminent. The Engineer will determine when weather conditions are suitable for application. The fog seal should be a thin, uniform coating sufficient to seal the underlying pavement. The fog seal shall be applied using pressurized distributing equipment with a spray bar or other approved distribution system. During the application of the fog seal, care shall be taken to prevent splattering of adjacent pavement, curb and gutter and structures. Surface preparation shall be completed by removing all vegetation and debris. The surface must be blown off using an approve industrial jet blower or with an approved vacuum broom truck. The preparation shall be done just prior to the application of the fog seal and be approved by the Engineer.

Method of Measurement:

The quantity of Emulsified Asphalt fog seal will be measured as the actual number of gallons of fog seal applied. The quantity will be determined by any or all of the following methods and should be 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:

The quantity of the fog seal will be paid for at the Contract unit price per gallon of diluted CQS-1hP. Price and payment will constitute full compensation for preparing the surface, mobilizing and furnishing all equipment, materials, and labor; placing the material; and for all labor, equipment, tools and incidentals necessary to complete the work. If contractor elects to dilute asphalt utilizing DelDOT's on-site water, a price shall be negotiated for the cost of water per gallon and deducted from the Contract unit price per gallon of diluted CQS-1hP.

4/1/2020

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.

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

Where: L = Length Segment (ft.)

W = Lane Width (ft.)

T = Plan Thickness (in.)

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

Where: UP = Contract Unit Price (Dollars)

PA = Pay Adjustment (Table A)

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

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

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

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

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

4/10/2019

403500 - POLYMER-MODIFIED HIGH PERFORMANCE SLURRY SEAL, (TON)
403501 - POLYMER-MODIFIED HIGH PERFORMANCE SLURRY SEAL, (SQUARE YARDS)

Description:

Furnish and construct a polymer-modified emulsion paving system on a prepared foundation as shown on the Plans and as directed by the Engineer.

In general, item 403500 is used where a variable thickness of material is required such as a leveling course; item 403501 is used where a uniform thickness of material is to be placed.

Materials:

A. Provide materials as specified:

Bituminous Materials:

	Type	*Quick-Setting*			
		CQS-2hL[g]		**CQS-2L[g]**	
	Grade	Min	Max	Min	Max
Test on emulsified asphalt:	Viscosity, Saybolt Furol at 50˚C (122˚F). S [b,c]	100	400	100	400
	Or				
	Viscosity, Rotational Paddle at 50˚C (122˚F). mPa. S [b,c]	200	800	200	800
	Storage Stability Test. 24 h. % b,c		1		1
Demulsibility:					
	35 mL. 0.8% Sodium Dioctyl Sulfosuccinate. % [b]	40		40	
	Particle charge test	Positive		Positive	
	Sieve test. % [b,c]		0.1		0.1
Distillation:					
	Residue. % [d]	65		65	
Test on residue from distillation:					
	Penetration. 25˚C (77˚F). 100 g. 5 s. 0.1 mm	40	90	90	200
	Elastic Recovery. 25˚C (77˚F). Straight Sided. 5 cm/min. 20 cm elongation. 5 min hold. %[f]	65	70	65	70
	Softening Point, Ring & Ball (˚F) (AASHTO T-53)	150	160	150	160
	Ash Content. %		1		1

[a] Refer to R 5 for typical applications

[b] This test requirement and associated specification limits are waived for emulsified asphalt products following dilution.

[c] This test requirement on representative samples may be waived if successful applications of the material has been achieved in the field.

[d] For emulsions that are diluted, the percent residue requirements must be adjusted accordingly.

[e] For information on residue from evaporation, See Section 5.1.2.

[f] Elastic Recovery at 50˚F may be used as an alternate if approved by the owner.

[g] By certification of compliance, the minimum polymer solids by percent mass of residual asphalt content shall be 3% for latex and rubber.

Note: Latex may not be substituted by another polymer unless directed and approved by the Engineer.

Mineral Filler: AASHTO M 17, hydrated lime, or non-air-entrained portland cement Type I meeting AASHTO M 85

Field Control Additive: Liquid additive compatible with the Bituminous emulsion used to control the set time of the slurry mix in order to meet return to traffic time requirements

Tack Coat: Bituminous materials conforming to this specification that may be diluted in accordance with manufacturer recommendations at the rates in section C.8 of this specification

Water: Section 1021

Aggregate: Use mineral aggregate that is the type specified for the particular application requirements of the slurry mixture. The aggregate shall be a crushed stone such as granite, slag, limestone, chat, or other high-quality aggregate, or combination thereof. To assure the material is 100 percent crushed, the parent aggregate will be larger than the largest stone in the gradation used. The use of gravel or crushed gravel will not be permitted.

All aggregate should meet these minimum requirements:

TEST	AAHSTO TEST	SPECIFICATION
Sand Equivalent Value of Soils and Fine Aggregate	T 176	65 Minimum
Soundness of Aggregates by Use of Sodium Sulfate of Magnesium Sulfate	T 104	15% Maximum w/NA2SO4 25% Maximum w/MgSO4
Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine*	T 96	30% Maximum

*The abrasion test is run on the parent aggregate.

B. *Mix Design*. Prepare and submit a job mix formula (JMF) including all materials, methods and proportions to the Engineer for approval prior to the start of work. Submit test results for review a minimum of 10 days before application. Include aggregate type and gradation and percentages of polymer-modified emulsion, water, cement by dry aggregate weight, and the design cure time.

1. JMF acceptance is subject to satisfactory field performance;
2. Unsatisfactory field performance requires re-design and re-submittal of the JMF design for approval.
3. Formulate with a minimum polymer content, based on asphalt weight, of 3 percent;
4. Formulate so a 1-inch thick application, at a maximum 50 percent humidity and 75°F minimum ambient air temperature, supports rolling traffic without surface damage after a 1-hour cure
5. Submit a revised JMF design when changes occur in the source or the qualities of the component materials.
6. The exact proportions used in the preparation of the slurry seal shall be determined by a testing laboratory, experienced in slurry seal JMF design procedures. Identify the proportions and gradations of all component materials for the JMF design with a single percentage.

    a. *Bituminous Material.* Identify the type (such as natural latex rubber, styrene-butadiene rubber, styrene-butadiene-styrene, or ethylene-butadiene-styrene) and percentage of modifier on the certificate of analysis.
        i. Ensure the mixed emulsified asphalt will not separate;
        ii. Do not allow the temperature of the material to exceed 120°F;
        iii. Accompany each shipment of emulsified asphalt with a certificate of analysis/compliance from the manufacturer.
        iv. The emulsion modifier shall be adjusted at the emulsion manufacturer's facility.
        v. The specific gravity of each shipment of bituminous material shall be determined by the Contractor and provided with each shipment.

    b. *Field Control Additive*. An additive may be added to the mixture in order to provide an altered set time.
        i. The additive must be identified (such as the emulsifier type) and be included as part of the JMF design submission.
        ii. Ensure with the certification of analysis that the additive was tested and demonstrated compatible with all the other components of the mixture.

    c. *Gradation*. The JMF design aggregate gradation including the mineral filler must be within one of the following bands when tested in accordance with AASHTO T27 and AASHTO T11.

SCREEN SIZE	TYPE B (% Passing)	TYPE C (% Passing)	RUTFILLING (% Passing)
No.3/8	100	100	100
No.4	90-100	70-95	70-95
No.8	65-90	45-70	45-70
No.16	45-70	32-54	32-54
No.30	30-50	23-38	23-38
No.50	18-33	16-29	16-29
No.100	10-21	9-20	9-20
No.200	5-15	5-12	5-12

The JMF gradation shall be within the gradation band for the desired type. After the target gradation has been submitted (this should be the gradation that the JMF is based on), then the percent passing each sieve shall not vary by more than the stockpile tolerance shown in the above table for each individual sieve, and still remain within the gradation band. It is recommended that the percent passing shall not go from the high end to the low end of the range for any two consecutive screens.

Screen the stockpile prior to delivery to the paving machine. Screen through a 3/8-inch sieve.

Submit laboratory test results ensuring that the proposed mixture conforms to the requirements of the following referenced International Slurry Surfacing Association standard test methods:

Test Method	Property	Requirements
TB100	Wet Track Abrasion Loss - 1 hour soak Wet Track Abrasion Loss - 6 day soak	50 g/sq ft max 75 g/sq ft max
TB102	Mixing, Setting, and Water Resistance	10 minute, maximum, clear water set time
TB113	Mix Time 77°F	Controllable to 120 seconds, minimum
TB114	Wet Stripping	Pass, 90% minimum
TB139	Wet Cohesion - 30 Minutes Wet Cohesion - 60 Minutes	12 kg-cm, minimum 20 kg-cm, minimum
TB144	Classification Compatibility	11 grade points, minimum
TB147A	Loaded Wheel Test	5% lateral displacement, maximum 2.10 compacted specific gravity

Proportioning of the mix design shall be within the following limits:

	Type B	Type C	Rutfilling
% Residual Asphalt (by wt. of dry aggr.)	5.5-10	5.5-10	4.5-10
% Mineral Filler	0.26-3.00	0.25-3.00	0.25-3.00
% Latex Modified-Solids (by wt. of residual asp.)	3.0 Min.	3.0 Min.	3.0 Min.
Additive	As Required	As Required	As Required

The amount of field control additive, when used, shall be identified with a specific percentage value. If the amount is expected to change to another value for specific conditions anticipated on the project site, the mix proportions and the auxiliary value shall be considered a separate JMF. The specific conditions that will cause a change to the auxiliary JMF shall be identified with the submission of the proposed JMF. The allowable production tolerance for the amount of field control additive shall be based on acceptable performance in the field.

Water shall be added during the material mixing to produce the needed mix consistency. The optimum amount of water can be determined during mix design, however, it is understood that this value may be changed in the field due to ambient humidity, wind, air temperature, moisture absorbed by the pavement, etc. The mixture shall be homogeneous, free of excess water or emulsion, free of segregation of emulsion, and free of segregation of aggregate sizes.

The mixture shall also have satisfactory workability and performance when placed in a test strip. Requirements for the test strip construction are in the Equipment section of this specification. If a change occurs in the source or the qualities of the component materials, a revised JMF shall be submitted. When unsatisfactory results or other conditions make it necessary, a revised JMF shall be developed and submitted by the Contractor.

Construction Methods:

A. *Weather Limitations*. Place slurry seal material when the following conditions apply:
   1. Minimum air temperature is 50°F and rising;
   2. The surface must be dry;
   3. 24 hour forecast predicts temperatures above 40°F after application;
   4. Surface temperature is at least 50°F; and
   5. Rain is not imminent within 24 hours.

   If the temperature is expected to be over 95 degree F the contractor must inform the Engineer of their methods to control set times and must obtain approval from the Engineer prior to placing material.

B. *Aggregate and Asphalt*. Weigh aggregate before delivery to roadway. Proportion emulsified asphalt by weight.

   Submit the following signed, written reports to the Engineer for each staging location:

   1. A report indicating the amount of aggregate and emulsion delivered, aggregate and

emulsion used on the project, and the amount of area in square yards completed.

2. A report indicating the percentage of emulsion used to aggregate used and the application rate in pounds of aggregate applied per square yard of area covered. This report will verify compliance with the mixture of materials to the mix design and the specified aggregate application rate.

Submit to the Engineer, from the aggregate and emulsion suppliers, an original copy of the bill of lading weekly for each delivery of material to be used on the project. Submit with each emulsion bill of lading a certificate of analysis from the emulsion supplier verifying that each delivery of emulsion is in compliance with the contract requirements.

C. *Preparing Existing Surface.*

1. Clean/clear the roadway surface of all loose aggregate, rubber from skid marks, vegetation, dirt, mud, free water, and any other foreign material.
2. Clear vegetation and debris from edges of road.
3. Scrub and remove extensive grease spots or saturated oil from the pavement surface with industrial detergent and/or use acrylic sealers for severe problem areas.
4. Fill/seal cracks greater than 1/4-inch.
5. Completely remove thermoplastic markings.
6. Grind all traffic paint lines to remove paint not tightly bonded to the surface or to reduce the thickness of paint lines with excessive build up. Care should be taken to not damage crack sealing.
7. Where necessary use the slurry material to fill potholes, utility cuts, and ruts with the mixture to restore roadway cross section.
   a. Use of a rut-filling box is required to fill ruts/cuts of 1/2-inch, or greater in depth.
   b. Ruts in excess of 1 1/2-inch in depth require multiple applications with the rut-filling box to restore the cross-section.
   c. When rutting or deformation is less than 1/2-inch, a full width scratch course may be applied with the spreader box using a metal or stiff rubber strike-off. Apply at a sufficient rate to level the pavement surface.
   d. All rut-filling and level-up material should cure under traffic for at least twenty-four (24) hours before additional material is placed.
8. Apply tack coat on each location to receive slurry seal. The emulsified asphalt should be the slurry emulsion (CQS-2hL). Other grades of emulsion may be considered but it is the contractor's responsibility to demonstrate and ensure the tack emulsion is compatible with the slurry emulsion prior to use. The tack coat may consist of one part emulsified asphalt/one part water. Consult with the slurry emulsion supplier to determine dilution stability. Apply tack with a standard distributor capable of applying the dilution evenly at a rate of 0.10 gal/SY minimum. Allow tack to cure sufficiently before the application of slurry.

D. *Equipment.* The mixing and placement equipment must be approved prior to use. The material shall be mixed by an automatically sequenced, self-propelled machine; it shall be capable of accurately proportioning and delivering all component materials to a revolving multi blade twin shaft pug mill type mixer; thoroughly mixing the component materials; and it shall be capable of discharging the mixture on a continuous flow basis.

The rate of water and field control additive shall be easily adjusted. Sufficient storage capacity shall be provided on the equipment for aggregates, bituminous material, mineral filler, field control additive, and water of adequate supply to the proportioning devices to maintain a

continuous operation.

Calibrate and properly mark proportioning controls for easy verification, at a DelDOT approved location; to the JFM proportion targets in the presence and to the satisfaction of the Engineer prior to the start of the work. Check calibration whenever there is a question about the accuracy of the proportioning. Documentation is to be generated for the Engineer, including individual calibrations of each material at various settings. A minimum of 3 runs for each material shall be performed. During calibration of the aggregate and the asphalt emulsion a minimum of 250 pounds of each material shall be dispensed continuously for each of the calibration runs. The controls for proportioning the mixture, including the components of water and field control additive, shall be readily visible to the Engineer in order evaluate whether a change to the calibrated settings has occurred.

For each combination of equipment and JMF, prior to performing work measured for payment, an approved test strip shall be constructed. The minimum size of the test strip for each combination must be of 100 ft long and 12 ft wide and demonstrate the required specification conformance. It shall be placed in the same equipment, methods, mixes, and number of passes and spread rate specified for each location. If a test section proves to be unsatisfactory, the necessary adjustments to the mix design, equipment, and placement methods shall be made and a new test strip shall be made to verify conformance.

Proportion emulsified asphalt by weight.

Equip the mixing machine with a pressure water system and nozzle-type spray bars to provide a water spray to the tacked surface immediately ahead of and outside the spreader box.

Add filler at the loading facility or at the roadway. Provide a documented record of filler weight. Add Field Control additives according to the manufacturer's recommendations to meet field conditions and/or return to traffic times.

The mixing equipment shall also have an attached spreader box which is equipped with augers that agitate and spread the material evenly throughout the box. A front seal shall be provided to insure no loss of the mixture at the road contact point. A rear seal shall act as primary strike off and shall be height adjustable. The spreader box and rear strike off shall be designed so that a uniform pavement surface consistency is achieved; these shall be clean and not excessively worn. The spreader box shall be kept clean and buildup of asphalt and aggregate on the box shall not be permitted.

A secondary strike off shall be provided to improve surface texture. The secondary strike off shall have the same adjustments as the spreader box.

Roller
Pneumatic rollers with all tires inflated to manufacturer recommended pressures. Tires will be clean, smooth, and free of any deformation that would leave marks in the finished surface.

E. *Applying Mixture.* The mixture shall be uniformly spread at a final total mix application rate of a minimum of 30 lbs/SY. This may be accomplished by placing two separate layers of material with each layer being placed on the same or successive days at the sole discretion of the Engineer. When necessary, the materials shall be spread in variable thick cross sections, to fill in ruts and

minor deformations, and to create a smooth riding, high skid resistant, roadway surface having a well draining cross slope.

Any area of the constructed surface which has a deviation, higher or lower that is greater than 3/16-inch from a 10 ft straightedge placed on the surface is unacceptable. No streaks, scratch marks, drag marks, tears, rippling, streaks, lumps, segregation, or other surface irregularities will be acceptable.

Handwork will be permitted only for those areas that cannot be reached with the mixing machine. Handwork must produce a surface finish and appearance similar to that produced by the spreader box.

No excess buildup, uncovered areas, or unsightly appearance shall be permitted on longitudinal or transverse joints. Transverse joints shall appear neat and uniform. The contractor shall provide suitable width spreading equipment to produce a minimum number of longitudinal joints throughout the project. Partial width passes will only be used when necessary and shall not be the last pass of any paved area. A maximum of 3-inch shall be allowed for overlap of longitudinal joints. Also, the joint shall have no more than a 1/4-inch difference in elevation when measured by placing a 10 ft straight edge over the joint and measuring the elevation difference. The edge lines shall be straight, no more than 2-inch variance in any 100 ft length.

The mix shall be placed to allow traffic on the constructed pavement surface within one hour without any pick up of material by the traffic. At intersections, or other points requiring earlier opening, the Contractor shall shorten the road closure time to a maximum of 15 minutes; a different amount of field control additive in the mixture may be used by the Contractor to meet this requirement.

Slurry seal shall be compacted with a smooth pneumatic tire roller with a minimum weight of 10 tons. Allow the slurry to set sufficiently that it does not pick up on the pneumatic tires. Roll all areas a minimum of 3 passes or until a uniform surface profile meeting the requirements of this specification is obtained.

F. *Maintaining Traffic*. Meet traffic control plan.

Protect the slurry material from traffic damage until the mixture cures and will not be damaged by traffic. Repair traffic damage to the slurry application before acceptance and at no cost to the Department.

Method of Measurement:

The quantity of item 403501 - Polymer-Modified High Performance Slurry Seal, will be measured as the actual number of square yards of polymer-modified High Performance Slurry Seal placed and accepted. The quantity will be determined by computations based on field measurements taken on and along the completed finished surfaces and verified by items 1 and 2 in part B. of the Construction Methods section of this specification. Multiple layers will not be measured separately.

The quantity of item 403500 - Polymer-Modified High Performance Slurry Seal will be measured as the actual number of tons of polymer-modified High Performance Slurry Seal placed and accepted. The quantity will be based on the combined tonnage of aggregate, mineral filler, and emulsion used and

accepted in place. The quantities will be computed as follows:

1. Aggregate. Measure the quantity of aggregate using the calibrated, dry weight of aggregate control device.
2. Mineral Filler. Compute this quantity from a count off the calibrated metering device for mineral filler.
3. Emulsion. Compute the quantity of polymer-modified asphalt emulsion by weight used, as determined by the calibrated metering device.

The amount of field control additive will not be measured separately.

Basis of Payment:

The quantity of item 403501 - Polymer-Modified High Performance Slurry Seal, will be paid for at the Contract unit price per square yard. The quantity of item 403500 - Polymer-Modified High Performance Slurry Seal will be paid for at the Contract unit price per ton. Price and payment will constitute full compensation for designing the mixture; mobilizing and furnishing all equipment, materials, and labor; preparing the foundation, cleaning the roadway surface, and clearing the debris from the edge of the road; placing the materials; protecting and repairing damage to the surface; and for all labor, equipment, tools and incidentals necessary to complete the work.

Unsatisfactory test strips will not be measured for payment.

Required repairs will not be measured for payment.

Grinding of striping is incidental

Tack coat is incidental.

Thermoplastic marking removal will be paid under the respective items.

NOTE:

The Asphalt Cement Cost Adjustment for this item will be applied when the total emulsified asphalt used exceeds 15,850 gal. This note supersedes the Note with item 401502 - Asphalt Cement Cost Adjustment.

Slurry seal will not be placed between September 30th and May 1st without approval from the engineer.

10/13/2020

DelDOT

Delaware Department of Transportation
Quantity Sheet Summary

Proposal ID: T201806003

Project Descripton: PAVEMENT PRESERVATION, OPEN END, SUSSEX/KENT, FY21-22

NOT TO BE USED FOR BIDDING

Item Number	Description	Unit	Quantity
811014	FLAGGER, KENT COUNTY, STATE, OVERTIME	HOUR	80
811015	FLAGGER, SUSSEX COUNTY, STATE, OVERTIME	HOUR	80
813001	TEMPORARY BARRICADES, TYPE III	LFDY	110
817003	TEMPORARY MARKINGS, PAINT, 4"	LF	100000
817009	TEMPORARY MARKINGS, TAPE, 4"	LF	10000
817013	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	LF	110000
817026	PAINTING OF WHITE OR YELLOW, 5" LINE	LF	100000
817027	RAISED/RECESSED PAVEMENT MARKER	EACH	75
908001	TOPSOIL	TON	450
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	9000
908020	EROSION CONTROL BLANKET MULCH	SY	9000
403500	POLYMER-MODIFIED HIGH PERFORMANCE SLURRY SEAL, (TON)	TON	2000
403501	POLYMER-MODIFIED HIGH PERFORMANCE SLURRY SEAL, (SQUARE YARD)	SY	200000
401029	SUPERPAVE TYPE C, PG 64-22, PATCHING	TON	4000
401030	SUPERPAVE TYPE B, PG 64-22, PATCHING	TON	4000
401053	SUPERPAVE TYPE C, PG 64-22, THIN LIFT	TON	10000
401054	SUPERPAVE TYPE C, PG 70-22, THIN LIFT	TON	10000

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NOT TO BE USED FOR BIDDING

Item Number	Description	Unit	Quantity
401500	FOG SEAL	GAL	40000
401501	BITUMINOUS ASPHALT TACK COAT	GAL	7000
401504	FRICTION MASTIC FOG SEAL	SY	200000
401530	PAVING SURCHARGE, ZONE 11	TON	14000
401532	PAVING SURCHARGE, ZONE 13	TON	8000
401533	PAVING SURCHARGE, ZONE 14	TON	8000
401696	ENTRANCE, DRIVEWAY, AND INTERSECTING STREET PAVING SURCHARGE	TON	1000
401756	RUBBER MODIFIED FOG SEAL	GAL	9000
402000	BITUMINOUS CONCRETE PATCHING	SYIN	24000
602130	ADJUSTING AND REPAIRING EXISTING DRAINAGE INLET	EACH	200
602132	ADJUSTING AND REPAIRING EXISTING MANHOLE	EACH	200
710002	ADJUST WATER VALVE BOXES	EACH	150
760010	PAVEMENT MILLING, BITUMINOUS CONCRETE PAVEMENT	SYIN	10000
760011	PAVEMENT MILLING, BITUMINOUS CONCRETE PAVEMENT, TAPER CUT	SYIN	6200
762000	SAW CUTTING, BITUMINOUS CONCRETE	LF	6200
762001	SAW CUTTING, CONCRETE, FULL DEPTH	LF	300
763000	INITIAL EXPENSE/DE-MOBILIZATION	LS	1

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Delaware Department of Transportation
Quantity Sheet Summary

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Project Descripton: PAVEMENT PRESERVATION, OPEN END, SUSSEX/KENT, FY21-22

NOT TO BE USED FOR BIDDING

Item Number	Description	Unit	Quantity
763554	ROAD LOCATION MOBILIZATION, ZONE 11	EACH	10
763556	ROAD LOCATION MOBILIZATION, ZONE 13	EACH	10
763557	ROAD LOCATION MOBILIZATION, ZONE 14	EACH	10
803001	FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	EADY	150
808002	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	225
810001	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	880
811002	FLAGGER, KENT COUNTY, STATE	HOUR	700
811003	FLAGGER, SUSSEX COUNTY, STATE	HOUR	700

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PROJECT NOTES *(cont.)*

30. Excavation for PCC curbs, sidewalk or valley gutter shall be incidental to the bid price for each respective item. Excavated material, not needed on the project, shall be removed from the project at the contractor's expense. Item 908001, topsoil, shall be used as backfill material for curb and sidewalk as directed by the engineer. Topsoil shall be screened / sifted so as no material greater than .5" should be present in material used for back fill. When replacement of curb and gutter has been completed and the forms removed at each location of this contract, backfilling shall be done immediately. Complete restoration, topsoil, seeding, and removal of all materials for curb & gutter or sidewalk; sealing of valley gutters, flow channels and parging of catch basins, shall be completed within seven (7) calendar days. Failure to comply will result in a suspension of all other contract work with time charges continuing to be assessed.

31. All manhole adjustments placed in concrete shall require tack on all vertical surfaces and joint sealing application per 1042.01.2. These items are incidental to the manhole adjustment per items 401.03-M and item 762.03.D in the 2016 Standard Specifications.

32. All concrete to bituminous interfaces shall require tack on all vertical surfaces. All longitudinal interfaces shall be sealed with a uniform 4" band of PG 64-22. These items are incidental to the interface item per items 401.03-M and item 762.03.D in the 2016 Standard Specifications.

33. All vertical contact surfaces shall be tacked before placing any new mixture against the joint. These items are incidental to item 401 per section 401.03-M and 762.03.D in the 2016 Standard Specifications. No separate payment will be made for the sealing of these joints.

34. Item 504001, Crack and Joint Sealing less than ¾" Wide, shall be paid on locations where the remedy is crack sealing. This item will not be paid separately for newly installed pavement joints or interfaces as the sealing of those joints are incidental to the work generating the joints.

35. The contractor shall give a two (2) weeks' notice to the property owner when any fixture, shrub or other object must be removed from the right of way or easement area. If the owner has not attempted to salvage this property, the contractor shall remove it without obligation. Compensation shall be incidental to the contract.

36. A Safety Edge shall be used on all patches that extend to the edge of the riding surface of the shoulder.

37. For this contract, the specification for item 401053 (Superpave Type C, PG 64-22, Thin Lift) and 401054 (Superpave Type C, PG 70-22, Thin Lift) is hereby modified to exclude the use of any Recycled Asphalt Pavement (RAP) or Reclaimed Asphalt Shingles in the Mix Design. Use of any of these materials shall result in a rejection of the mix design and any bituminous pavement placed, which is determined contains any of these materials, shall be removed and replaced at the contractor's expense.

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MAINTENANCE OF TRAFFIC AND PAVEMENT MARKINGS

38. All work shall be performed in a manner that will reasonably provide the least practical obstruction to all road users, including vehicular, pedestrian and bicycle traffic and shall conform to the requirements of the latest Delaware Manual on Uniform Traffic Control Devices (MUTCD) Part 6, herein referred to as the Traffic Control Manual (including revisions in effect at the time of advertisement for bids).

39. At the preconstruction meeting, the contractor shall submit to the South District Safety Officer the necessary NCHRP 350 & MASH certifications for all traffic control devices expected to be used on the contract. In addition, prior to the start of any work order, the contractor must submit a traffic control plan including any additional certifications not previously submitted. Written approval must be received before the start of work at each location.

40. The contractor shall submit to the South District Safety Officer their proposed lane closure time frames for approval. This shall be submitted a minimum of 2 weeks prior to the start of work.

41. An American Traffic Safety Services Association (ATSSA) certified traffic control supervisor shall be required for each location on this project. A copy of the certification card for the ATSSA traffic control supervisor shall be submitted at the preconstruction meeting. The paper certificate is not acceptable. The ATSSA officer shall be incidental to the work being performed and shall not be paid separately.

42. Maintenance of traffic, unless otherwise noted in the approved plans, shall conform to the appropriate traffic control typical application found in the latest version of the DE MUTCD.

43. When required by the DE MUTCD, permanent advance warning signs shall be installed with the legend “END ROAD WORK” located 500 feet downstream from the work area. On intersecting roadways within the project limits, a “ROAD WORK AHEAD” sign shall be placed at a distance not less than 500 feet in advance of the work area and an “END ROAD WORK” sign shall be located 500 feet downstream of the work area. The use of skid mounted sign supports is not allowed unless the contractor can demonstrate that a utility conflict exists, which shall be verified by the engineer; or concrete medians prevent the installation of the permanent signs in the appropriate location. All temporary and permanent signs shall be paid as item 810001.

44. The use of millings and GABC in the travel way, temporary travel way, high volume entrances and access ramps for the purpose of providing temporary roadway service, pothole repair, tapered edge for utilities, butt joints, and longitudinal drop-offs (milling and paving operations) is prohibited. Bituminous TRM, as approved by the Engineer, shall be used for this purpose. TRM shall be incidental to the work it protects and shall not be paid separately.

45. The use of millings or GABC shall be used at the following locations where access to a business, residence, or edge drop off needs to be maintained unless otherwise noted in the plans or directed by the Engineer to use bituminous TRM. All millings and GABC shall be rolled and compacted to prevent material from unraveling.
    a. Driveways
    b. Entrances
    c. Low volume access ramps (identified in the contract documents)
    d. Edge drop offs adjacent to live roadway (lane, shoulder, or turn lane) and the proposed road construction
    e. Edge of roadway drop off

46. Grading and maintaining base course that is being used for roadway wedge/ fillet between travel lanes and pavement box, edge of travel way, driveway or entrance access shall be incidental to the contract. The base course shall be placed at no greater than the slope specified in table 6G-1 and shall be compacted. Vertical differences shall be corrected in accordance with the table 6G-1 of the DE MUTCD.

MAINTENANCE OF TRAFFIC AND PAVEMENT MARKINGS *(cont.)*

47. No separate payment shall be made for the use of traffic cones. Traffic cones and/or work associated with their use such as setup, removal, cleaning, etc. shall be incidental to the work for which they protect.

48. All persons working within the state right-of-way shall wear a minimum of an ANSI Class II safety vest meeting the ANSI 107-2004 requirements.

49. The contractor is responsible for ensuring that the Traffic Management Center (1-302-659-4600) is notified each and every day when work is being performed in State Right of Way. The contractor must identify the type of work, any lane(s) or shoulder(s) closed, the length of time for work when the lane restriction is in place and when the lane restriction is picked up, contact person/number and state inspector.

50. The contractor shall be responsible for notifying the local 911 center, local schools, and the DelDOT public information center of all roads and lanes to be closed a minimum of seven calendar days before the closure. If temporarily blocking access to a fire hydrant, notification must be given to Sussex County, the local firefighting authorities, and the 911 center.

51. The contractor shall be responsible for daily coordination efforts with his/her work with other contractors in the immediate area.

52. The contractor shall provide all residents and businesses adjacent to the work zone a minimum 48 hr. prior written notice for the start of construction work. This notification shall include the scope of work, working hours, anticipated start and completion dates, contractor name & address, and DelDOT contact numbers. Failure to give proper notice will result in a suspension of work requiring notice until proper notice is provided.

53. Access to all businesses and residences within the project limits shall be maintained throughout the duration of the contract. Any temporary closure of an entrance for tie in purposes shall be coordinated with the engineer and / or property owner in advance of the closure.

54. Prior to additional lifts, all drop offs shall be secured before next lift per DE MUTCD 6G.1, even when a safety edge is present.

55. The contractor is responsible for the maintenance of existing pavement and shoulders within the project limits for the duration of the contract or as directed by the Engineer or his designee.

56. All roadways and entrances not open to traffic shall be closed using Type III Barricades and shall be placed per the Traffic Control Manual, Section 6F.63 & 6F.68.

57. A safety edge shall be used on all overlays and patches where patch extends to unimproved shoulder.

58. The contractor shall maintain access to and along pedestrian facilities at all times during construction. Earth, stone and gravel surfaces are not acceptable for providing pedestrian access. Where pedestrian routes are closed or blocked, alternate pedestrian access shall be provided using TA-28 or TA-29 of the DE MUTCD or to the satisfaction of the Engineer and shall be ADA compliant. The cost for any provisions on open end contracts shall be negotiated prior to the commencement of work.

    Pedestrian maintenance of traffic: this work shall consist of providing and maintaining an accessible pedestrian route throughout the project's limits in accordance with the Americans with Disabilities Act of 1960 (ADA) Title II, Paragraph 35.130.

MAINTENANCE OF TRAFFIC AND PAVEMENT MARKINGS *(cont.)*

The contractor shall be required to review each curb ramp location and submit the appropriate maintenance of traffic detail and devices to the Engineer for each location at least 2 weeks before construction for review, comment, and approval. The following considerations shall be taken into account when addressing accessible pedestrian maintenance of traffic:

- All pedestrians, including persons with disabilities, shall be provided with a reasonably safe, convenient, and accessible path that replicates as much as practical the existing pedestrian facilities.
- Maintain access to all businesses and residences at all times.
- Provide pedestrian access through or around the work zone. If a detour is chosen the contractor must submit the detour route to the engineer for review and approval. The detour route must meet or exceed the current conditions.
- Work should be phased so that all areas of an intersection/sidewalk path are not under construction at the same time unless a clear path is provided and identified.
- Traffic control devices and other construction materials and features shall not protrude into the usable width of the sidewalk, temporary pathway or other pedestrian facility.
- Signs and other devices mounted lower than 7 ft above the temporary pedestrian pathway shall not project more than 4” into the accessible pedestrian route.

A smooth, continuous hard surface shall be provided throughout the entire length and width of the pedestrian route throughout construction. There shall be no curbs or vertical elevation changes greater than ¼” in grade or terrain that could cause tripping or be a barrier to wheelchair use.

59. All storage of equipment and material shall comply with section 6G.21 of the DE MUTCD.

60. All flaggers shall comply with Chapter 6E of the DE MUTCD.

61. All roadway excavation in or adjacent to travel ways shall be properly backfilled at the end of each day prior to traffic returning to unrestricted travel per Section 6G.20 and Table 6G-1 of the DE MUTCD. This includes all utilities and/or obstacles within or adjacent to the travel ways as outlined in the DE MUTCD.

62. Prior to the start of work, the contractor shall be required to show proof that he has sufficient approved striping materials on hand to ensure striping is completed prior to fully opening roadway to traffic.

63. The department will provide striping layout at locations where no pavement markings previously existed. If department forces provide striping layout on locations where markings previously existed, then the contractor shall reimburse the department for the layout costs.

64. The contractor shall submit detailed drawings (including but not limited to lane and shoulder widths, turn lane lengths, locations of stop bars, turn arrows, crosswalks and railroad crossings) that depict the existing pavement markings for each project location at the preconstruction meeting. These drawings will be reviewed by the department’s traffic section to determine if any changes to the final pavement markings are required.

65. Final pavement markings shall conform to all existing patterns unless otherwise directed by the Engineer. The final pavement markings shall be placed within five (5) calendar days after the completion of the paving. Failure to comply will result in suspension of all other contract work with time charges continuing to be assessed.

MAINTENANCE OF TRAFFIC AND PAVEMENT MARKINGS *(cont.)*

66. At the end of each day's operation and before traffic is returned to unrestricted roadway use, temporary striping shall be utilized at locations that require permanent striping. Temporary pavement striping must match permanent pavement striping in all regards. Temporary pavement markings shall be paid at the applicable contract unit price. The contractor is responsible for maintaining the temporary markings in good condition such that the pavement is properly delineated at all times. Any refreshing of the temporary markings will be at the contractor's expense, including the replacement of peeling temporary tape.

67. Any erroneous marking will not be paid for and shall be corrected immediately at the contractor's expense. Erroneous markings or shadows that exceed one (1) inch in width shall be removed by either sand or water blasting. No other removal methods will be allowed. An asphalt sealer shall be applied in the area of the removed marking to mask the repair. Any damage to the pavement caused by the removal of erroneous markings shall be repaired/replaced to the satisfaction of the Engineer at the contractor's expense.

68. All markings that are no longer in use and conflict with the pavement markings in use by the traveling public are to be removed and must be completely obliterated by a method approved by the Engineer. Painting over the conflicting striping will not be accepted as a method of removal.

69. Yellow centerlines shall be continuous around median islands. All double yellow centerlines shall be placed in a 5-6-5 configuration (2 each, 5" yellow with a 6" gap between).

70. The contractor, with the Engineer, shall inventory all signs on all roads subject to improvements. Necessary signs shall be maintained in operation during construction and any other signs shall be properly stored by the contractor, who shall be responsible for any loss or damage. Immediately prior to final inspection, the contractor and Engineer shall again inventory the traffic signs and account for any lost or damaged signs.

71. Stop lines "bars" shall be installed in accordance with section 3B.16 of the latest DE MUTCD.

72. All crosswalks shall be installed in accordance with Section 3B.18 of the latest DE MUTCD.

73. International crosswalk symbols will be placed at all existing crosswalk locations or other locations as directed by the engineer. Payment will be under the applicable striping items.