

STATE OF DELAWARE

THIS COPY IS FOR INFORMATION
ONLY. YOU MUST PURCHASE
THE PROPOSAL IN ORDER TO
SUBMIT A BID.



DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T201080101.01

MAGNOLIA YARD VEHICLE MAINTENANCE SHOP

KENT COUNTY

ADVERTISEMENT DATE: DECEMBER 30, 2013

PROSPECTIVE BIDDERS ARE ADVISED THAT THERE WILL BE A MANDATORY PRE-BID MEETING FOR THIS CONTRACT ON JANUARY 15, 2014 at 10:30 A.M. IN THE DelDOT ADMINISTRATION CENTER, 800 BAY ROAD, U.S. ROUTE 113 SOUTH, DOVER, DELAWARE, 19901.

Completion Date 236 Calendar Days

SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
DELAWARE DEPARTMENT OF TRANSPORTATION
AUGUST 2001

Bids will be received in the Bidder's Room (B1.11.01), Transportation Administration Center, 800 Bay Road,

Dover, Delaware until 2:00 P.M. local time February 11, 2014

Contract No.T201080101.01

**MAGNOLIA YARD VEHICLE MAINTENANCE SHOP
KENT COUNTY**

GENERAL DESCRIPTION

LOCATION

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

DESCRIPTION

The improvements consist of furnishing all materials for IMPROVEMENTS AT THE DELDOT MAGNOLIA MAINTENANCE YARD, TO INCLUDE A VEHICLE MAINTENANCE SHOP, and other incidental construction in accordance with the location, notes and details shown on the plans and as directed by the Engineer.

COMPLETION DATE

All work on this contract must be complete within 236 Calendar Days . The Contract Time includes an allowance for 20 Weather Days

It is the Department's intent to issue a Notice to Proceed such that work starts on or about March 26, 2014

ELECTRONIC BIDDING

This project incorporates a newer version of the electronic bidding system, Expedite 5.9a. Bidders wishing to use the electronic bidding option will find the installation file on the plan holders bid file disk. The installation file and instructions are also available at: http://www.deldot.gov/information/business/bids/const_proj_bid_info.shtml.



PROSPECTIVE BIDDERS NOTE:

1. No retainage will be withheld on this contract.
2. The Department has adopted an External Complaint Procedure. The procedure can be viewed on our website at; <http://www.deldot.gov/information/business/>, or you may request a copy by calling (302) 760-2555.
3. Make note of the new version of Electronic Bidding software as noted above.
4. Please note the Special Provision titled **Changes to Project Documents During Advertisement**. The Department is using an alternative method of providing bid documents for this contract.
5. **BIDDERS MUST REQUEST A CD OF THE OFFICIAL PLANS AND SPECIFICATIONS FROM THE DEPARTMENT IN ORDER TO SUBMIT A BID.**

**STATE OF DELAWARE
CONSTRUCTION ITEMS UNITS OF MEASURE**

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

*Not used for units of measurement for payment.

GENERAL DESCRIPTION.....	<u>i</u>
LOCATION.....	<u>i</u>
DESCRIPTION.....	<u>i</u>
CONSTRUCTION ITEMS UNITS OF MEASURE.....	<u>ii</u>
GENERAL NOTICES.....	<u>1</u>
SPECIFICATIONS.....	<u>1</u>
CLARIFICATIONS.....	<u>1</u>
ATTESTING TO NON-COLLUSION.....	<u>1</u>
QUANTITIES.....	<u>1</u>
REQUIREMENT BY DEPARTMENT OF LABOR FOR SWORN PAYROLL INFORMATION	
.....	<u>1</u>
PREFERENCE FOR DELAWARE LABOR.....	<u>2</u>
EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS.....	<u>2</u>
TAX CLEARANCE.....	<u>2</u>
LICENSE.....	<u>2</u>
DIFFERING SITE CONDITIONS.....	<u>2</u>
PREVAILING WAGES.....	<u>4</u>
SUPPLEMENTAL SPECIFICATIONS.....	<u>7</u>
SPECIAL PROVISIONS.....	<u>9</u>
<u>CHANGES TO PROJECT DOCUMENTS DURING ADVERTISEMENT.....</u>	<u>11</u>
CONSTRUCTION ITEM NUMBERS.....	<u>13</u>
401502 - ASPHALT CEMENT COST ADJUSTMENT.....	<u>14</u>
211503 - DEMOLITION OF BUILDINGS.....	<u>15</u>
270500 - DEWATERING BAG.....	<u>18</u>
401699 - QUALITY CONTROL/QUALITY ASSURANCE OF BITUMINOUS CONCRETE	
.....	<u>20</u>
401807 - BITUMINOUS CONCRETE, TYPE C, 160 GYRATIONS, PG 76-22 (CARBONATE	
STONE).....	<u>30</u>
401816 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 76-22	
.....	<u>30</u>
614891 - WATER SUPPLY SYSTEM.....	<u>43</u>
701505 - PORTLAND CEMENT CONCRETE PARKING BUMPER.....	<u>45</u>
709518 - SANITARY CLEANOUT.....	<u>46</u>
720578 - BOLLARD, STEEL.....	<u>47</u>
748555 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS,	
HANDICAP SYMBOL.....	<u>48</u>
753532 - INSTALLING SANITARY SEWER, PVC 4".....	<u>51</u>
753533 - INSTALLING SANITARY SEWER (FORCE MAIN), PVC 1 1/2".....	<u>51</u>
753516 - SANITARY SEWER SYSTEM.....	<u>56</u>
763569 - BUILDINGS.....	<u>58</u>
UTILITY STATEMENT.....	<u>59</u>
RIGHT OF WAY CERTIFICATE.....	<u>61</u>
ENVIRONMENTAL STATEMENT.....	<u>63</u>
BID PROPOSAL FORMS.....	<u>65</u>
BREAKOUT SHEETS.....	<u>75</u>
CERTIFICATION.....	<u>83</u>
BID BOND.....	<u>85</u>

Contract No. T201080101.01

GENERAL NOTICES

SPECIFICATIONS:

The specifications entitled "Delaware Standard Specifications, for Road and Bridge Construction, August, 2001", hereinafter referred to as the Standard Specifications, Supplemental Standard Specifications, the Special Provisions, notes on the Plans, this Bid Proposal, and any addenda thereto shall govern the work to be performed under this contract.

CLARIFICATIONS:

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

ATTESTING TO NON-COLLUSION:

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

QUANTITIES:

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

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)

"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."

TAX CLEARANCE:

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

LICENSE:

A person desiring to engage in business in this State as a contractor shall obtain a license upon making application to the Division of Revenue. Proof of said license compliance to be made prior to, or in conjunction with, the execution of a contract to which he has been named.

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.

PREVAILING WAGES

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

REQUIREMENT BY DEPARTMENT OF LABOR FOR SWORN PAYROLL INFORMATION

Title 29 Del.C. §6960 stipulates;

- (b) Every contract based upon these specifications shall contain a stipulation that the employer shall pay all mechanics and laborers employed directly upon the site of the work, unconditionally and not less often than once a week and without subsequent deduction or rebate on any account, the full amounts

accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the employer and such laborers and mechanics. The specifications shall further stipulate that the scale of wages to be paid shall be posted by the employer in a prominent and easily accessible place at the site of the work, and that there may be withheld from the employer so much of accrued payments as may be considered necessary by the Department of Labor to pay to laborers and mechanics employed by the employer the difference between the rates of wages required by the contract to be paid laborers and mechanics on the work and rates of wages received by such laborers and mechanics to be remitted to the Department of Labor for distribution upon resolution of any claims.

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

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

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

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: (302) 451-3423

Mailing Address:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

Located at:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

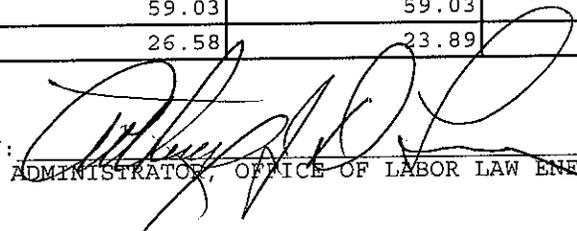
PREVAILING WAGES FOR BUILDING CONSTRUCTION EFFECTIVE MARCH 15, 2013

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
ASBESTOS WORKERS	21.87	26.94	39.20
BOILERMAKERS	65.47	33.22	48.83
BRICKLAYERS	46.83	46.83	46.83
CARPENTERS	50.06	50.06	39.82
CEMENT FINISHERS	27.61	29.11	21.20
ELECTRICAL LINE WORKERS	43.49	37.29	28.44
ELECTRICIANS	60.60	60.60	60.60
ELEVATOR CONSTRUCTORS	75.33	40.93	30.55
GLAZIERS	64.10	64.10	54.20
INSULATORS	51.48	51.48	51.48
IRON WORKERS	59.12	59.12	59.12
LABORERS	38.30	38.30	38.30
MILLWRIGHTS	62.18	62.18	48.75
PAINTERS	42.02	42.02	42.02
PILEDRIVERS	67.87	37.64	30.45
PLASTERERS	28.55	28.55	17.50
PLUMBERS/PIPEFITTERS/STEAMFITTERS	59.00	49.26	46.28
POWER EQUIPMENT OPERATORS	57.06	57.06	24.13
ROOFERS-COMPOSITION	21.77	17.96	19.34
ROOFERS-SHINGLE/SLATE/TILE	17.59	17.50	16.45
SHEET METAL WORKERS	62.74	62.74	62.74
SOFT FLOOR LAYERS	45.97	45.97	45.97
SPRINKLER FITTERS	51.75	51.75	51.75
TERRAZZO/MARBLE/TILE FNRS	51.41	51.41	45.45
TERRAZZO/MARBLE/TILE STRS	59.03	59.03	52.63
TRUCK DRIVERS	26.58	23.89	20.03

CERTIFIED:

12/9/13

BY:



ADMINISTRATOR, OFFICE OF LABOR LAW ENFORCEMENT

NOTE: THESE RATES ARE PROMULGATED AND ENFORCED PURSUANT TO THE PREVAILING WAGE REGULATIONS ADOPTED BY THE DEPARTMENT OF LABOR ON APRIL 3, 1992.

CLASSIFICATIONS OF WORKERS ARE DETERMINED BY THE DEPARTMENT OF LABOR. FOR ASSISTANCE IN CLASSIFYING WORKERS, OR FOR A COPY OF THE REGULATIONS OR CLASSIFICATIONS, PHONE (302) 451-3423.

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

PROJECT: T201080101.01; Magnolia Yard Site Improvements, Kent County

Contract No. T201080101.01

SUPPLEMENTAL SPECIFICATIONS TO THE AUGUST 2001 STANDARD SPECIFICATIONS

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

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

To access the Website;

- in your internet browser, enter; <http://www.deldot.gov>
- on the left side of the page under 'INFORMATION', Click; 'Publications'
- scroll down under 'MANUALS' and Click; "Standard Specifications 2001"

The full Website Link is;

http://www.deldot.gov/information/pubs_forms/manuals/standard_specifications/index.shtml

Printed copies of the Supplemental Specifications are available upon request. A printed copy of the above referenced Supplemental Specifications will be included in the final contract documents upon award.

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

Contract No. T201080101.01

SPECIAL PROVISIONS

CHANGES TO PROJECT DOCUMENTS DURING ADVERTISEMENT

1. PRINTED PLANS AND SPECIFICATIONS NOT AVAILABLE FROM DELDOT.

The Department is not providing printed plans or specifications for this project. Bidders must contact the Department in order to receive a CD that contains all bid documents. Bidders are able to use the CD to print the plans and specifications, or have them printed from the Website. While the plans and specifications are available on-line at DelDOT's Website, the Website bid documents are not authorized for submitting bids, and the Website documents are marked as such. To receive required bid Documents on a CD, contact:

Contract Administration
Delaware Department of Transportation
P.O. Box 778, Dover, DE 19903
e-mail: dot-ask@state.de.us
Phone: (302) 760-2030
FAX: (302) 739-2254

The Department is providing a printed set of plans and specifications available for viewing in the Bidder's Room, Transportation Administration Center, 800 Bay Road, Dover, Delaware, Monday through Friday excluding holidays from 8:00A.M. through 4:15 P.M..

2. QUESTIONS AND ANSWERS

All questions pertaining to this project are to be submitted to the following e-mail address:

dot-ask@state.de.us

Questions and Answers will be dated and posted periodically on Delaware's Bid Solicitation Directory Website located at: <http://www.bids.delaware.gov/>

The final Questions and Answers will be posted no later than the end of the day, two working days prior to the bid date.

All Questions and Answers posted by the Department on the above Website are included by reference and become part of the contract documents. The awarded bidder will receive a hard copy of the final posted Questions and Answers.

Potential bidders that do not have access to the internet may contact Jim Hoagland, Contract Services Administrator, by telephone at (302) 760-2036 to make other arrangements.

NOTE: There is space provided on the CERTIFICATION page to insert the Posted Date of the final Questions and Answers. The Final Posted Date is the latest Posted Date of the Questions and Answers one day prior to Bid Date. This final Posted Date must be submitted on the Certification page.

3. ADDENDA

The Department is not providing printed Addendums, if issued, for this project. **All addendums will be posted on the Department's Website, and are included by reference and become part of the contract documents.** It is the responsibility of the bidder to check the Website as needed. If there are Addendums issued, the final Addendum will be posted no later than the end of the day, two working days prior to the bid date.

NOTE: There is space provided on the CERTIFICATION page to insert each issued Addendum and the date you acknowledge receipt of the addendum. Each Addendum number and date acknowledged must be submitted on the Certification page.

CONSTRUCTION ITEM NUMBERS

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

Standard Item Number:

The first three digits of the construction item numbers indicates the Section number as described in the Standard Specifications, and all applicable requirements of the Section shall remain effective unless otherwise modified by the Special Provisions. The last three digits of the construction item identifies the item by sequential number under that Section. Sequential numbers for all items covered under Standard Specifications range from 000 to 499. A comprehensive list of construction item numbers begins on page 421 of the Standard Specifications. Additions to this list will be made as required.

Special Provisions Item Number:

The first three digits of the construction items, covered under Special Provisions, indicates the applicable Section number of the Standard Specifications, and shall be governed fully by the requirements of the Special Provisions. The last three digit of the items covered under Special Provisions identifies the item by sequential number. Sequential numbers for Special Provision items, range from 500 to 999.

Examples

Standard Item Number - 202000 Excavation and Embankment

202 Indicates Section Number

000 Indicates Sequential Number

Special Provision Item Number - 202500 Grading and Reshaping Roadway

202 Indicates Section Number

500 Indicates Sequential Number

401502 - ASPHALT CEMENT COST ADJUSTMENT

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

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

The Project Asphalt Cement Base Price will be the anticipated Delaware Posted Asphalt Cement Price expected to be in effect at the time of receipt of bids.

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 on the basis of weight tickets and asphalt percentage from the approved job mix formula.

For Recycled Hot-Mix the asphalt percentage eligible for cost adjustment shall be only the new asphalt cement added to the mix.

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

The Asphalt cement cost adjustment will be calculated on grade PG 64-22 asphalt regardless of the actual grade of asphalt used. The Project Asphalt Cement Base Price for the project will be \$553.33 per ton (\$609.95 per metric ton).

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

NOTE

Application of Asphalt Cement Cost Adjustment requirements as indicated above shall apply only to those contracts involving items related to bituminous base and pavements, and with bitumen, having a total of 1,000 tons (1,000 metric tons) or more of hot-mix bid quantity in case of Sections 401, 402 and 403; and 15,000 gallons (60 000 liters) or more in case of Sections 304, 404 and 405.

211503 - DEMOLITION OF BUILDINGS

Description:

This work consists of the demolition and removal of the structures as specifically specified on the Plans, described herein, and as directed by the Engineer.

The demolition and/or removal of the building and structure shall consist of complete demolition and/or removal of the building including removal of equipment and fixtures, foundation walls, footings, concrete floors, porches, steps, sheds, garages, barns and other out buildings, concrete masonry and timber structures, and other structures directed to be demolished; also, disconnecting and terminating utility service facilities; the removal and disposal of materials, shrubbery and debris; final cleaning up of the site and other incidental work.

All buildings and structures to be demolished will be open for inspection, and may be seen by appointment at any time convenient to the Area Yard prior to the time limit for receipt of bids.

General Requirements and Construction Methods:

Time and Manner of Performance: Bidders are advised to ascertain the availability and vacation of buildings which are to be demolished or removed under the Contract, and of the possible vacation or removal or demolition of building on the site of the Contract by other parties from the project engineer.

The Contractor shall not begin the work of demolition of any building until the Engineer has declared in writing that the building is available for demolition.

Damages to Existing Roadways, Sidewalks and Curbs: All damages to existing roadway, sidewalk and curb areas caused by demolition work shall be replaced or repaired by the Contractor to the satisfaction of the Engineer at the Contractor's expense.

Laws and Permits: The Contractor shall comply with all Federal, State and local ordinances, regulations and laws and secure the necessary permits for prosecuting the work of this item.

Certificates: Required certificates, if any, of satisfactory performance of the demolition work signed by local Building Inspectors must be presented to the Department of Transportation before final payment will be made.

Rodent Control: Prior to commencing demolitions, the Contractor shall present to the project District Office of the Department of Transportation a certificate, certifying that the buildings have been properly exterminated of rodents and other household pests.

Permits: A demolition permit will be required.

Construction Methods:

Trees and shrubbery may be removed as necessary to remove the structure. Any small shrubbery bordering the structure shall be removed.

All utility companies must be notified in writing. A demolition permit will not be issued until all utilities have given written confirmation of disconnection and/or capping.

Building's which are required to be demolished or removed under the Contract, shall be torn down and removed. In lieu of demolition, the buildings may be used for the purpose of fire training by a local fire department in strict accordance with County Ordinances and the regulations and limitations established by DNREC and the State Fire Marshall's office. If this option is desired by the Contractor, he/she shall be required to submit a Value Engineering Proposal to the Department for approval. The Contractor will also be responsible for all damages from such burning to adjacent properties, utilities and roadways.

It shall be the responsibility of bidders to ascertain, by their own inspection and investigation, the sizes and condition of buildings, their types of construction, data concerning equipment and fixtures in, or a part of the building, whether or not such information be shown or given in the Plans, specifications, or other Contract documents, and to make such other investigations that may be necessary for a complete understanding of the work to be performed. Bids shall be based on the bidders' own findings.

The Department of Transportation does not guarantee that the condition and contents of buildings will be the same at the time of starting work, as they were when bidders inspected the site or prepared their bids; neither does the Department of Transportation assume any responsibility for destruction or loss due to fire, theft, or vandalism that may occur prior to the time that the Contractor takes possession of the buildings for demolition. The Contractor shall accept buildings in the condition prevailing at the time they are made available to him/her for demolition.

All building materials, fixtures and equipment in, attached or belonging to, the buildings at the time they are declared available for demolition shall become the property of the Contractor unless otherwise noted on the plans.

The structures have been inspected and tested for asbestos materials. There was some asbestos found in the roofing material of Building 1. All asbestos will be removed under separate contract prior to demolition included under this scope.

Prior to the demolition of any buildings, the Contractor shall provide for the disconnection and removal from the building to the R/W of all water, sewer, gas, electric, telephone service facilities and other buried or overhead cables. All removals shall be done in accordance with the requirements of DeIDOT and utility companies owning or controlling them. The Contractor shall notify DeIDOT and utility companies of the time any such disconnections may need to be made, and he/she shall perform the work according to their standard practices and requirements and under their supervision, or arrange for its performance by their forces. The cost of any and all such utility work including charges, if any, made to the municipalities and utility companies, shall be borne by the Contractor and shall be included in the price bid for the item "Demolition of Buildings".

Prior to acceptance of the Contract, small shrubbery in the way of mowing, all materials and debris accumulated from demolition of buildings and from other work in connection therewith, shall be removed from the site and shall be disposed of by the Contractor. The ground surface shall be graded, if necessary, to eliminate water pockets, then the area shall be covered with 6" (150 mm) of topsoil and seeded in accordance with Sections 732, 734 and 735. The site of each demolished building shall then be cleaned up and left in a condition satisfactory to the Engineer.

Breakdown of Lump Sum Price and Right of Department to Delete Demolition of One or More Bid Items:

The attention of bidders is directed to the fact that in the Proposal, a lump sum bid for Demolition of Buildings will be made for all Buildings and other items to be demolished. However, each bidder will be required to show an analysis of the lump sum price bid for Demolition of Buildings per Breakout sheet which shall be included as part of the bid form.

The Department of Transportation reserves the right to delete from the Contract the demolition of any of the individual buildings shown on the Plans, and the lump sum price to be paid for Demolition of Buildings will be reduced in accordance with the Contractor's itemized attachment to the Proposal. The Contractor shall make no claims for additional compensation because of deletion of any of the individual buildings from this Contract and the corresponding reduction in the Lump Sum Price Payment.

Method of Measurement:

The quantity of building demolition will not be measured.

Basis of Payment:

The quantity of building demolition will be paid for at the Contract lump sum. Price and payment shall be full compensation for the cost of furnishing all materials, and for all labor, equipment, tools, permits,

certificates, and incidentals necessary to complete the work of this item as specified, including any excavation, Type "C" Borrow, backfilling and compaction, topsoil and grading required.

The price bid for this item shall also include the removal of sidewalks, drives, patios, trailer parking pads, replacement of curb and other miscellaneous items as required and/or as directed. At the option of the Engineer, each separate work area will be accepted when completed as the entire work progresses.

The lump sum price bid for the item shall be reduced based on the price indicated on the breakout sheet for individual buildings submitted by the Contractor, in the event one or more of the items designated for demolition is/are deleted from the Contract.

Additionally further clarification for each bid item is noted as follows:

Item No. 1 – Remove Concrete and Brick Barn to include slab and electrical service. This shall be the complete removal disposal of the existing Salt Silo. This shall include the roofing, walls, concrete floor and any lighting and electrical.

Item No. 2 – Remove existing macadam ramp, light, & bollards. This work shall include the removal and disposal of the exiting ramp along with the bollards, light pole and light complete.

Item No. 3 – Relocate existing ground macadam stockpile. Work associated with this item shall consist of relocating the stockpile of millings to a different spot on site. The spot shall be as determined by the yard superintendent.

Item No. 4 – Remove existing waterline and yard hydrant, salvage fire hydrant. This work shall consist of the complete removal and disposal of the existing waterline, fittings, valves, and yard hydrants as per the contract drawings. It shall also include the removal of the existing fire hydrant for relocation. Incidental to the cost of this pay item is the excavation, backfill, and capping the line at the tee.

Item No. 5 – Remove existing concrete pad under storage tanks. This work is comprised of the complete removal and disposal of the concrete pad under the existing storage tanks.

Item No. 6 – Remove and relocate existing water tanks. The existing water tanks shall be removed and relocated to the new concrete pad shown on the contract drawings.

Item No. 7 – Sawcut and remove all macadam paving around buildings 11-17. This work shall include the sawcutting, removal, and disposal of the existing asphalt paving in the area noted on the contract drawings. The removal shall be as necessary to complete the sitework and install the new pavement section.

Items No. 8 and 9 – Remove buildings 9 and 1 complete. This work shall include the complete removal of the respective existing buildings including the accessory structures, concrete pads, tanks, utility services, slabs, sawcutting and asphalt necessary for complete removal of the building.

Item No. 10 – Salvage Gas tank north of Building 9. This bid item shall include all costs necessary to disconnect and salvage the existing gas tank north of building 9 back to the owner.

10/20/12

270500 - DEWATERING BAG

Description:

This work consists of furnishing, placing, maintaining and removing a dewatering bag used to remove sediment from the effluent of a dewatering operation.

Materials:

A. Fabric. The dewatering bag shall be constructed of a non-woven geotextile fabric conforming to the following properties:

<u>Properties</u>	<u>Values</u>	<u>Test Method</u>
Weight	10 oz/yd ² (min)	ASTM D-3776
Tensile Strength	250 lb (min)	ASTM D-4632
Puncture Resistance	165 lb (min)	ASTM D-4833
Flow Rate	70 gal/min-ft ² (max)	ASTM D-4491
Permittivity	1.3 sec ⁻¹ (max)	ASTM D-4491
Bursting Strength	550 psi (min)	ASTM D-3786
UV Resistance	70% (min)	ASTM D-4355
AOS	150 micron (max)	ASTM D-4751

B. Seams. The dewatering bag construction shall consist of double-sewn seams, to form a continuous surface except for the inlet opening. The seams shall have a minimum strength of 100 lb/in, when tested in accordance with ASTM d-4884.

C. Inlet Opening. The dewatering bag shall have an inlet opening capable of accommodating at maximum a 4 diameter hose. The opening shall be such that it can be sealed tightly around the effluent hose to prevent non-filtered water from escaping.

Construction Methods:

Construction. Dewatering bags shall be placed at locations designated on the plans or as approved by then Engineer. The dewatering bags discharge pipe shall be tightly sealed at the inlet and the pumping rate shall not exceed the manufacturer recommendations. The dewatering effluent shall be discharged without causing any erosion between the dewatering bag and the outlet. The method of erosion control shall be approved by the Engineer.

Maintenance. When the dewatering bag cannot readily pass any more water as determined by the Engineer, a new dewatering bag shall be furnished and placed.

The Contractor shall properly remove and dispose of the dewatering bag when it is replaced or when it is no longer needed. Additional straps may be necessary to safely transport the dewatering bag after it has been filled with sediment.

Performance Requirement. To be considered acceptable, the dewatering bag shall filter all effluent so that soil particles retained on a #100 sieve (150 microns) are captured in the bag and removed from the discharge water.

Method of Measurement:

Each acceptable dewatering bag is counted, each. Each replacement bag, required when the previous bag is discarded, is also counted, each.

Basis of Payment:

The price and payment for each measured dewatering bag, paid for at the Contract unit price, will constitute full compensation for the work of furnishing, placing, maintaining and removing the dewatering

bag. This work includes, but is not limited to, excavating and preparing the bag site (foundation and outfall); removing the dewatering bag and its contents; restoring the bag site, if needed (with grass seed and mulch); and supplying materials, labor, equipment, tools and incidentals required to complete the work.

11/21/03

401699 - QUALITY CONTROL/QUALITY ASSURANCE OF BITUMINOUS CONCRETE

.01 Description

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

.02 Bituminous Concrete Production – Quality Acceptance

(a) Material Production - Tests and Evaluations.

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

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

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

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

The Engineer will evaluate and accept the material on a lot basis. All the material within a lot shall have the same JMF (mixture ID). The lot size shall be targeted for 2000 tons or a maximum period of three days, whichever is reached first. If the 2000th ton target lot size is achieved during a production day, the lot size shall extend to the end of that production day. The Contractor may interrupt the production of one JMF in order to produce different material; this type of interruption will not alter the determination of the size or limits of material represented by a lot. The Engineer will evaluate each lot on a 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 Gyrotory Compactor
- AASHTO T166, Method C (Rapid Method) - Bulk Specific Gravity of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface Dry Specimens
- AASHTO T308 - Determining the Asphalt Binder Content of Hot Mix Asphalt (HMA) by the Ignition Method
- AASHTO T30 - Mechanical Analysis of Extracted Aggregate
- AASHTO T209 - Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)
- ASTM D7227 - Standard Practice for Rapid Drying of Compacted Asphalt Specimens using Vacuum Drying Apparatus

(b) Pavement Construction - Tests and Evaluations.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

.03 Payment and Pay Adjustment Factors.

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

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

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

(a) Material Production - Pay Adjustment.

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

Table 2

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

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

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

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

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

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

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

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

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

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

Table 3 - Quality Level Analysis by the Standard Deviation Method							
PU or PL	QU and QL for 'n' Samples						
	n = 3	n = 4	n = 5	n = 6	n = 7	n = 8	n = 9
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
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	-100*
96.5	96.26 – 96.74	-5
96.0	95.75 – 96.25	-3
95.5	95.26 – 95.74	-2
95.0	94.75 – 95.25	0
94.5	94.26 – 94.74	0
94.0	93.75 – 94.25	1
93.5	93.26 – 93.74	3
93.0	92.75 – 93.25	5
92.5	92.26 – 92.74	3
92.0	91.75 – 92.25	0
91.5	91.26 – 91.74	0
91.0	90.75 – 91.25	-5
90.5	90.26 – 90.74	-15
90.0	89.75 – 90.25	-20
89.5	89.26 – 89.74	-25
89.0	88.75 – 89.25	-30
88.5	88.26 – 88.74	-50
≤88.0	≤88.25	-100*

* or remove and replace it at Engineer's discretion

Table 5A: Compaction Price Adjustment Other¹ Locations		
Degree of Compaction	Range	Pay Adjustment Factor (%)
≥ 97.0	≥ 96.75	-100*
96.5	96.26 – 96.74	-5
96.0	95.75 – 96.25	-3
95.5	95.26 – 95.74	-2
95.0	94.75 – 95.25	0
94.5	94.26 – 94.74	0
94.0	93.75 – 94.25	0
93.5	93.26 – 93.74	1
93.0	92.75 – 93.25	3

Table 5A: Compaction Price Adjustment Other¹ Locations		
92.5	92.26 – 92.74	1
92.0	91.75 – 92.25	0
91.5	91.26 – 91.74	0
91.0	90.75 – 91.25	0
90.5	90.26 – 90.74	0
90.0	89.75 – 90.25	0
89.5	89.26 – 89.74	0
89.0	88.75 – 89.25	-1
88.5	88.26 – 88.74	-3
88.0	87.75 – 88.25	-5
87.5	87.26 – 87.74	-10
87.0	86.75 – 87.25	-15
86.5	86.26 – 86.74	-20
86.0	85.75 – 86.25	-25
85.5	85.26 – 85.74	-30
85.0	84.75 – 85.25	-40
84.5	84.26 – 84.74	-50
≤ 84.0	≤84.25	-100*

* or remove and replace at Engineer's discretion

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

.04 Dispute Resolution.

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

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

Third party resolution testing can be performed at either another Contractor’s laboratory, the Engineer’s laboratory, or an independent accredited laboratory. Unless otherwise mutually agreed upon by DAPA and the Engineer, the Engineer’s qualified laboratory in Dover and qualified personnel shall conduct

the necessary testing for third party Dispute Resolution after the Engineer has provided reasonable notice to allow the Contractor to witness this testing.

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

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

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

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

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

9/9/13

- 401800 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 64-22
(CARBONATE STONE)**
- 401801 - BITUMINOUS CONCRETE, TYPE C, 160 GYRATIONS, PG 64-22 (CARBONATE
STONE)**
- 401802 - BITUMINOUS CONCRETE, TYPE C, 205 GYRATIONS, PG 64-22 (CARBONATE
STONE)**

- 401803 - BITUMINOUS CONCRETE, TYPE C, 115 GYRATIONS, PG 70-22 (CARBONATE
STONE)**
- 401804 - BITUMINOUS CONCRETE, TYPE C, 160 GYRATIONS, PG 70-22 (CARBONATE
STONE)**
- 401805 - BITUMINOUS CONCRETE, TYPE C, 205 GYRATIONS, PG 70-22 (CARBONATE
STONE)**

- 401806 - BITUMINOUS CONCRETE, TYPE C, 115 GYRATIONS, PG 76-22 (CARBONATE
STONE)**
- 401807 - BITUMINOUS CONCRETE, TYPE C, 160 GYRATIONS, PG 76-22 (CARBONATE
STONE)**
- 401808 - BITUMINOUS CONCRETE, TYPE C, 205 GYRATIONS, PG 76-22 (CARBONATE
STONE)**

- 401809 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 115 GYRATIONS, PG 64-22**
- 401810 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 64-22**
- 401811 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 205 GYRATIONS, PG 64-22**

- 401812 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 115 GYRATIONS, PG 70-22**
- 401813 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 70-22**
- 401814 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 205 GYRATIONS, PG 70-22**

- 401815 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 115 GYRATIONS, PG 76-22**
- 401816 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 76-22**
- 401817 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 205 GYRATIONS, PG 76-22**

- 401818 - BITUMINOUS CONCRETE, SUPERPAVE, BITUMINOUS CONCRETE BASE
COURSE, 115 GYRATIONS, PG 64-22**
- 401819 - BITUMINOUS CONCRETE, SUPERPAVE, BITUMINOUS CONCRETE BASE
COURSE, 160 GYRATIONS, PG 64-22**
- 401820 - BITUMINOUS CONCRETE, SUPERPAVE, BITUMINOUS CONCRETE BASE
COURSE, 205 GYRATIONS, PG 64-22**

- 401821 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22,
PATCHING**
- 401822 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 64-22,
PATCHING**
- 401823 - BITUMINOUS CONCRETE, SUPERPAVE, BITUMINOUS CONCRETE BASE
COURSE, 160 GYRATIONS, PG 64-22, PATCHING**

401824 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG-64-22, WEDGE

401825 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS, PG-64-22, WEDGE

401826 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 64-22, (NON-CARBONATE STONE)

401827 -BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, (NON-CARBONATE STONE)

401828 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 205 GYRATIONS, PG 64-22, (NON-CARBONATE STONE)

401829 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 70-22, (NON-CARBONATE STONE)

401830 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 70-22, (NON-CARBONATE STONE)

401831 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 205 GYRATIONS, PG 70-22, (NON-CARBONATE STONE)

401832 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 76-22, (NON-CARBONATE STONE)

401833 -BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 76-22, (NON-CARBONATE STONE)

401834 - BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 205 GYRATIONS, PG 76-22, (NON-CARBONATE STONE)

401835 - THIN BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 64-22

401836 - THIN BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22

401837 - THIN BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 70-22

401838 - THIN BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 70-22

401839 - THIN BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 115 GYRATIONS, PG 76-22

401840 - THIN BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 76-22

.01 Description:

This specification shall govern the production and construction of bituminous concrete pavement. The following Subsections of the Standard Specifications shall be applicable: 401.01, 401.03 - 401.10, 401.12, and 401.13. All other subsections have been modified herein.

Payment for bituminous concrete shall be in accordance with item 401699. The Contractor shall read and thoroughly understand the requirements of the QA/QC specification as defined in item 401699. It is the responsibility of the Contractor to determine all costs associated with meeting these requirements and to include them in the per ton bids for the various Superpave bituminous concrete items. Payment adjustment factors will be calculated in accordance with the latest version of item 401699.

Bituminous concrete may be produced by one or a combination of several technologies involving asphalt foaming processes and equipment or additives that facilitate the reduction of the temperature at which the mix can be placed and satisfactorily compacted thereby permitting the mix to be produced at reduced temperatures.

.02 Materials:

Use materials conforming to standard specifications 823.

Materials for bituminous concrete shall conform to the requirements of Subsections 823.01, 823.05-823.17, and 823.25 - 823.28 of the Standard Specifications and the following. If the Contractor proposes to use a combination of materials that are not covered by this Specification, the mix design shall be submitted and reviewed by the Engineer 30 calendar days prior to use.

a) **Asphalt Binder:**

Meet the requirements of Superpave performance-grade asphalt binder, as referenced in the Plans, according to M 320¹, Table 1 and tested according to AASHTO R29 with the following test ranges:

TEST Procedure	AASHTO REFERENCE	SPECIFICATION LIMITS
Temperature, °C	M 320	Per Grade
Original DSR, G*/sin (δ)	T 315	1.00 - 2.20 kPa ¹
RTFO DSR, G*/sin (δ)	T 315	>= 2.20 kPa
PAV DSR, G*/ sin (δ)	T 315	</=5000 kPa
BBR Creep Stiffness, S	T 313	</= 300.0 kPa
BBR m-value	T 313	>/=0.300

Note 1: The exception to M 320 is that the original DSR shall be 1.00 to 2.20 kPa

Substitution of a higher temperature grade will require prior approval by the Engineer.

The highest low temperature grade virgin binder to be used is -22.

Depending on the level of Recycled materials used, the low temperature properties, per T 313, may be different than stated in M 320 or the previous table.

b) **Recycled Materials:**

RAP (Recycled Asphalt Pavement): Bituminous concrete pavement mechanically processed to a homogenous consistency to be recycled through the production plant for use in a new bituminous concrete mixture.

The percentage allowance of recycled materials (recycled asphalt pavement and/or shingles) shall be controlled through the use of the Materials & Research recycled mixture program available through the Materials & Research Section. The program can be used by the Contractor to determine which materials and combinations of materials can be used to meet the specified material on the contract.

If the Contractor proposes to use a combination of materials that are not covered by this program, the mix design shall be submitted and reviewed by the Engineer.

c) **Shingles:**

RAS (Recycled Asphalt Shingles): Materials reclaimed from the shingle manufacturing process such as tabs, punch-outs, and damaged new shingles mechanically broken down with 100% passing the 1/2 in (12.5 mm) sieve. Shipping, handling, and shredding costs are incidental to the price of Superpave item.

Post-consumer shingles or used shingles are not acceptable. Fiberglass-backed and organic felt-backed shingles shall be kept separate. Both materials shall not be used in the same mixture at the same time. All shingles shall be free of all foreign material and moisture.

The use of Recycled Asphalt Shingles will be considered for 115 gyrations mix designs upon demonstration by the producer of adequate blending of the binder verified by laboratory testing on plant produced material.

d) Mineral Aggregate:

Conform to Section 805 and the following criteria. These criteria apply to the combined aggregate blend.

DESIGN ESAL'S (MILLIONS)	COARSE AGGREGATE ANGULARITY ¹ (% MIN)		FINE AGGREGATE ANGULARITY ² (% MIN)		CLAY CONTENT ³ (% - MIN)	FLAT AND ELONGATED ⁴ (% - MAX)
	≤ 100 MM	> 100 MM	≤ 100 MM	> 100 MM		
< 0.3	55/-	-/-	-	-	40	-
0.3 to < 3	75/-	50/-	40	40	40	
3 to <10	85/80 ⁵	60/-	45	40	45	
10 < 30	95/90	80/75	45	40	45	
≥30	100/100	100/100	45	45	50	10

¹Coarse Aggregate Angularity is tested according to ASTM D5821.

²Fine Aggregate Angularity is tested according to AASHTO TP-33.

³Clay Content is tested according to AASHTO T176.

⁴Flat and Elongated is tested according to ASTM 4791 with a 5:1 aspect ratio.

⁵85/80 denotes that 85% of the coarse aggregate has one fractured face and 80% has two or more fractured faces.

The following source properties apply to the individual aggregates in the aggregate blend for the proposed JMF.

TEST METHOD	SPECIFICATION LIMITS
Toughness, AASHTO T96 Percent Loss, Maximum	40
Soundness, AASHTO T104 Percent Loss, Maximum for five cycles	20
Deleterious Materials, AASHTO T112 Percent, Maximum	10
Moisture Sensitivity, AASHTO T283 Percent, Minimum	80

For any roadway with a minimum average daily traffic volume (ADT) of 8000 vehicles and a posted speed of 35 mph (60 kph) or greater, the polish value of the composite aggregate blend shall be greater than 8.0 when tested according to Maryland State Highway Administration MSMT 411 B A Laboratory Method of Predicting Frictional Resistance of Polished Aggregates and Pavement Surfaces. @ RAP shall be assigned a value of 5.0. The Contractor shall supply all polish values to the Engineer upon request.

e) **Mineral Filler:**

Conform to AASHTO M17.

f) **Warm Mix Additives:**

For any WMA technology requiring addition of any material by the producer during production, the following information will be submitted with the proposed JMF for review and approval at least 30 calendar days prior to production:

1. WMA technology and/or additive information.
2. WMA technology manufacturer's recommendation for usage.
3. WMA technology target dosage rate and tolerance envelope. Support tolerance envelope with test data demonstrating acceptable mix production properties conforming to all sections of this specification.
4. WMA technology manufacturer's material safety data sheets (MSDS).
5. Documentation of past WMA technology field application including points of contact.
6. Temperature ranges for mixing and compacting.
7. Laboratory test data, samples, and sources of all mix components, and asphalt binder viscosity-temperature relationships.

Follow the manufacturer's recommendation for incorporating additives and WMA technologies into the mix. Comply with the manufacturer's recommendation regarding receiving, storage, and delivery of additives.

If the producer performs blending of the WMA technology in their tank, a separate Quality Control plan shall be submitted by the producer to the Department for review and approval at least 30 calendar days prior to production.

g) **Anti-stripping additives**

Conform to standard specifications Section 829 and blend with the asphalt cement in accordance with this specification. Incorporate anti-stripping additives when the Tensile Strength Ratio (TSR) as determined in accordance with AASHTO T283 is less than 80 or when specified for use by the Engineer.

.03 Bituminous Concrete Production – Quality Control

(a) Process Control - Material Production Quality Control.

Submit through electronic mail a QC Plan from each proposed production plant to the Engineer; no hot-mix asphalt material will be accepted until the Engineer approves the QC Plan. This plan must be submitted to the Engineer on an annual basis for review and approval prior to material production. The Engineer will send a signed copy back to the Contractor stating that it is approved. The approved QC Plan shall govern contractor operations.

The QC Plan shall include actions that will assure all materials and products will conform to the specifications, whether manufactured or processed by the Contractor, or procured from suppliers, subcontractors, or vendors. The Contractor shall perform the inspection and tests required to substantiate product conformance to contract requirements. The Contractor shall document QC inspections and tests, and provide copies to the Engineer when requested. The Contractor shall maintain records of all inspections and tests for at least one year. The records shall include the date, time, and nature of deficiency or deficiencies found; the quantities of material involved until the deficiency was corrected; and the date, time, and nature of corrective actions taken.

In the QC Plan shall detail the type and frequency of inspection, sampling, and testing deemed necessary to measure and control the various properties of material and construction governed by the Specifications. The QC Plan shall include the following elements as a minimum:

- Production Plant - make, type, capacity, and location.
- Production Plant Calibration - components and schedule; address documentation.
- Personnel - include name and telephone number for the following individuals:
 - Person responsible for quality control.
 - Qualified technician(s) responsible for performing the inspection, sampling, and testing.
 - Person who has the authority to make corrective actions on behalf of the Contractor.
- Testing Laboratory - state the frequency of accuracy checks and calibrations of the equipment used for testing; address documentation.
- Load number of QC samples (1-10 if QA sample is not within trucks 1-10)
- Locations where samples will be obtained and the sampling techniques for each test
- Tests to be performed and their normal frequency; the following, at a minimum, shall be conducted:
 - Mixture Temperature: each of the first five trucks, and each load that is sampled for QC or acceptance testing.
 - Gradation analysis of aggregate (and RAP) stockpiles - one washed gradations per week for each aggregate stockpile; RAP: five gradations and asphalt cement contents for dedicated stockpiles where new material is not being added; one gradation and asphalt cement content test per week for stockpiles where material is continually being added to the stockpile.
 - Gradation analysis of non-payment sieves
 - Dust to effective asphalt calculation
 - Moisture content analysis of aggregates - daily.
 - Gradation analysis of the combined aggregate cold feed - one per year per mixture.
 - Bulk specific gravity and absorption of blended material - one per year per mixture.
 - Ignition Oven calibration - one per year per mixture.
 - Hot-Bins: one per year per mixture.
 - Others, as appropriate.
- Procedures for reporting the results of inspection and tests (include schedule).
- Procedures for dealing with non-compliant material or work.
- Presentation of control charts. The contractor shall plot the results of testing on individual control charts for each characteristic. The control charts shall be updated within on working day as test results for each subplot become available. The control charts shall be easily and readily accessible at the plant laboratory. The following parameters shall be plotted from the testing:
 - Asphalt cement content.
 - Volumetrics (air voids, voids in mineral aggregates [VMA])
 - Gradation values for the following sieves:
 - 4.75 mm (#4).
 - 2.36 mm (#8).
 - 0.075 mm (#200).
 - Operational guidelines (trigger points) to address times when the following actions would be considered:
 - Increased frequency of sampling and testing.
 - Plant control/settings/operations change.
 - JMF adjustment.
 - JMF change (See 401644 Section .04(a)(1)).
 - Change in the source of the component materials.
 - Calibration of material production equipment (asphalt pump, belt feeders, etc.).
 - Rejection of material.

When any point of non-compliance with the QC plan, or material not meeting the Specifications, comes to the attention of either the Contractor or the Engineer, the other party shall be notified immediately, and the Contractor shall take appropriate corrective actions. Failure to take corrective actions immediately shall be cause for rejection of material or work by the Engineer.

The following are considered significant violations to the Contractor's QC Plan:

- Using testing equipment that is knowingly out of calibration or is not working properly.
- Reporting false information such as test data, JMF information, or any info requested by DeIDOT
- Failure to perform materials testing per their approved QC Plan
- Deviating from AASHTO or DeIDOT testing procedures.
- Use of any material or the use of a JMF component in a proportion that exceeds the allowable tolerance as specified in section 04(a)(1) of this specification not listed in the JMF.
- Use of the wrong PG graded asphalt.
- Failure to take corrective action per action points in the Contractors approved QC plan.

The following steps will be taken for violations listed above:

1. First offence: Written notice of violation to the Contractor
2. Second offence: Written notice of violation and forfeiture of any bonus (material production or pavement construction) payment eligibility under 401699 section .03 for that production shift.
3. Third offence: Written notice of violation, forfeiture of bonus payment eligibility, and a 5% deduction of payment based upon contract unit price in addition to any calculated pay adjustment factors per 401699 Section 03.
4. Fourth offence: Written notice of violation, forfeiture of bonus payment eligibility, 50% deduction of payment based upon contract unit price in addition to any calculated payment adjustment factor per 401699 Section 03, and immediate suspension of the Contractor until corrective actions are taken. Corrective actions shall be submitted in writing to the Engineer for approval. The Engineer may request a meeting with the Contractor to discuss proposed changes prior to lifting suspension.

Violations of Contractor QC plans shall be kept on record for a period of 1 year from the date of violation at the Central Lab.

(b) Material Production Test Equipment.

Establish, maintain, and operate a qualified testing laboratory at the production plant site of sufficient size and layout that will accommodate the testing operations of both the Contractor and the Engineer.

Facilities for the use of the Engineer and inspectors shall be a minimum of 600 square feet of floor space conditioned to maintain constant temperature of 77F with two windows and a door equipped with functional locks and latches, located such that plant activities are plainly visible from one window of the building. Work space shall be furnished with illumination, tables, chairs, desks, telephone, and water including drinking water, sanitary facilities, fuel, and power necessary to conduct all necessary tests.

Maintain all the equipment used for handling, preparing, and testing materials in proper operating condition. For any laboratory equipment malfunction, the Contractor shall remedy the situation within one working day or the Engineer may suspend production. In the case of an equipment malfunction, the Engineer may elect to test the material at another qualified testing laboratory while waiting for repairs to equipment.

Maintain minimum calibration records for the referenced equipment:

- SUPERPAVE^R Gyrotory Compactor: once every year; verified once every month by the Engineer.
- Ovens: once every three months, verified once every month.
- Vacuum Container and Gauge (Rice Bowls): once every three months, verified once every month.
- Balances and Scales: once every year, verified once every month.
- Thermometers: once a year; verified once every month.
- Gyrotory Compactor molds and base plates: once every year
- Mechanical Shakers: once every year
- Sieve Verifications: once every year

All calibrations shall be documented and on file for review by the Engineer at any time.

(c) Material Production Test Methods

- AASHTO T312 - Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyrotory 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

.04 Job Mix Formula (JMF)

Mix Design. Develop and submit a job mix formula for each mixture according to AASHTO R35. Each mix design shall be capable of being produced, placed, and compacted as specified. Assign a unique identification number to each JMF.

- a) Development of JMF

Gradation: Use the FHWA Superpave 0.45 Power Chart to define permissible gradations for the specified mixture. Type C shall be either a No.4 (4.75 mm), 3/8" (9.5 mm), or 1/2" (12.5 mm) Nominal Maximum Aggregate Size bituminous concrete. Unless otherwise noted in the Plans, the Type C shall meet the 3/8" (9.5 mm) Nominal Maximum Aggregate Size. Type B bituminous concrete shall be the 3/4" (19.0 mm) Nominal Maximum Aggregate Size and the Bituminous Concrete Base Course (BCBC) shall be the 1" (25.0 mm) Nominal Maximum Aggregate Size. Target values for percent passing each standard sieve for the design aggregate structure shall comply with the Superpave control points and should avoid the restricted zone. Percentages shall be based on the washed gradation of the aggregate according to AASHTO T11.

In addition to the results of the material requirements specified above, the following material properties shall be provided by the contractor: bulk specific gravity G_{sb} , apparent specific gravity G_{sa} , and the absorption of the individual aggregate stockpiles to be used, tested according to AASHTO T84 and AASHTO T85 and reported to three decimal places along with the specific gravity of the mineral filler to be used, tested according to AASHTO T100 and reported to three decimal places.

Superpave Gyrotory Compactive (SGC) Effort:

The Superpave Gyrotory Compaction effort employed throughout mixture design, field quality control, or field quality assurance shall be as indicated below. All mixture specimens tested in the SGC shall be compacted to N_M Height data provided by the SGC shall be employed to calculate volumetric properties at N_I , N_D , and N_M

Superpave Gyrotory Compactive (SGC) Effort:

DESIGN TRAFFIC LEVEL (MILLION ESAL'S)	$N_{INITIAL}$	N_{DESIGN}	$N_{MAXIMUM}$
0.3 to < 3	7	75	115
3 to < 30	8	100	160
≥30	9	125	205

Volumetric Design Parameters. The design aggregate structure at the target asphalt cement content shall satisfy the volumetric criteria below:

DESIGN ESAL'S (MILLION)	REQUIRED DENSITY (% OF THEORETICAL MAXIMUM SPECIFIC GRAVITY)			VOIDS-IN-MINERAL AGGREGATE (% - MINIMUM) — NOMINAL MAX. AGGREGATE (MM)					VOIDS FILLED WITH ASPHALT (%)
	$N_{INITIAL}$	N_{DESIGN}	N_{MAX}	25.0	19.0	9.5	12.5	4.75	
	0.3 to < 3	≤ 90.5							
3 to < 10									
10 < 30									
≥ 30	≤ 89.0	96.0	≤ 98.0	12.5	13.5	15.5	14.5	16.5	65.0 - 75.0 ¹

Air voids (V_a) at N_{design} shall be 4.0% for all ESAL designs. Air voids (V_a) at N_{max} shall be a minimum of 2.0% for all ESAL designs

The dust to binder ratio for the mix having aggregate gradations above the Primary Control Sieve (PCS) Control Points shall be 0.6-1.2. For aggregate gradations below the PCS Control Points, the dust to binder ratio shall be 0.8-1.6. For the No. 4 (4.75 mm) mix, the dust to binder ratio shall be 0.9-2.0 whether above or below the PCS Control Points.

For 3/8@ (9.5 mm) Nominal Maximum Aggregate Size mixtures, the specified VFA range shall be 73.0% to 76.0% and for 4.75 mm Nominal Maximum Size mixtures, the range shall be 75 % to 78% for design traffic levels \$3 million ESALs.

Gradation Control Points:

The combined aggregates shall conform to the gradation requirement specified in the following table when tested according to T-11 and T-27.

TABLE 1

Nominal Maximum Aggregates Size Control Points, Percent Passing										
SIEVE SIZE	25.0 MM		19.0 MM		12.5 MM		9.5 MM		4.75 MM	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
37.5 MM	100	-	-	-	-	-	-	-	-	-
25.0 MM	90	100	100	-	-	-	-	-	-	-
19.0 MM	-	90	90	100	100	-	-	-	-	-
12.5 MM	-	-	-	90	90	100	100	-	100	-
9.5 MM	-	-	-	-	-	90	90	100	95	100
4.75 MM	-	-	-	-	-	-	-	90	90	100
2.36 MM	19	45	23	49	28	58	32	67	-	-
1.18 MM	-	-	-	-	-	-	-	-	30	60
0.075 MM	1	7	2	8	2	10	2	10	6	12

Note: The aggregate’s gradation for each sieve must fall within the minimum and maximum limits.

Gradation Classification

The Primary Control Sieve (PCS) defines the break point of fine and coarse mixtures. The combined aggregates shall be classified as coarse graded when it passes below the Primary Control Sieve (PCS) control point as defined below. All other gradations shall be classified as fine graded.

PCS CONTROL POINT FOR MIXTURE NOMINAL MAXIMUM AGGREGATES SIZE (% PASSING)					
Nominal maximum Aggregates Size	25.0 mm	19.0 mm	12.5 mm	9.5 mm	4.5 mm
Primary Control Sieve	4.75 mm	4.75 mm	2.36 mm	2.36 mm	1.18 mm
PCS Control Point	40	47	39	47	30-60

Plant Production Tolerances:

Volumetric Property	Superpave Criteria
Air Voids (V_a) at (%) N_m	2.0 (min)
Air Voids (V_a) at N_{design} (%)	6.0 (max)
Voids in Mineral Aggregate (VMA) at N_{design}	
25.0 mm Bituminous Concrete Base Course	-1.5
19.0 mm Type B Hot-Mix	+2.0
12.5 mm Type C Hot-Mix	
9.5 mm Type C Hot-Mix	
4.5 mm Type C Hot-Mix	

The proposed JMF shall include the following:

Submit for approval to the Engineer the following documentation on Pinepave mixture design software prior to starting production of a new mixture:

1. Job mix formula (JMF) design of the component materials and target characteristic values for each mixture proposed for use. The component materials design shall include designating the source and the expected proportion (within 1 percent for the aggregate components and within 0.1 percent for the other components) of each component to be used in order to produce workable bituminous concrete meeting the specified properties. Recycled Asphalt Pavement (RAP) is one individual aggregate component regardless of fractionation size. Recycled Asphalt Shingles (RAS) is a separate component from RAP.
2. The JMF target characteristic values include the mixing temperature range, core temperature range for gyration, the percentage of the asphalt cement component (both total and virgin), and the percentages of the aggregate amounts retained on the sieves to be addressed by the JMF as shown in Table 1.
3. Plot of the design aggregate structure on the FHWA Superpave 0.45 power chart showing the maximum density line and Superpave control points.
4. Plot of the three trial asphalt binder contents at +/- 0.5% gyratory compaction curves where the percent of maximum specific gravity (% of G_{mm}) is plotted against the log base ten of the number of gyrations (log (N)) showing the applicable criteria for N_p , N_d , and N_m .
5. Plot of the percent asphalt binder by total weight of the mix (P_b) versus the following:
% of G_{mm} at N_d , VMA at N_d , VFA at N_d , Fines to effective asphalt binder (P_{bc}) ratio, and unit weight (kg/m^2) at both N_d and N_m .
6. Summary of the consensus property standards test results for the design aggregate structure, summary of the source property standards test results for the individual aggregates in the design aggregate structure, target value of the asphalt binder content, and a table of G_{mm} of

the asphalt mixture for the four trial asphalt binder contents determined according to AASHTO T209.

7. Test data with each JMF and tests performed by a Qualified Laboratory on representative materials, verifying the adequacy of the design. Refer to the specifications for each mix type in order to determine the design requirements. The JMF sieve percentage values shall conform to the ranges shown in Table 1.

For any mixture that has a 20% or greater failure rate on any combined volumetric criteria, the JMF will not be approved for use on Department contracts.

8. Provide raw material of each JMF so NCAT Ignition Oven calibration correction numbers can be established for the Engineers and Contractors ovens. The Engineer shall provide an ignition oven correction number for each JMF.

.05 Approval of JMF

The Engineer will have up to three weeks once the JMF is submitted to review the submitted information.

All submitted JMF's shall correspond to the Pinepave mixture design software. The Engineer, for evaluation of the submitted JMF, will use the first three test samples. These test results acquired during production shall be within the following range compared to the submitted JMF on the Pinepave mixture design software: Gmm: + / -0.030 and Gmb: + / - 0.040

a) Design Evaluation:

The Engineer may elect to evaluate the proposed JMF and suitability of all materials through laboratory trial batches. All materials requested by the Engineer shall be provided at the contractor's expense to the Central Laboratory in Dover in a timely manner upon request. To verify the complete mixture design and evaluate the suitability of all materials, the following approximate quantities are required:

- 5.25 gal (20 liters) of the asphalt binder;
- 0.13 gal (0.5 liters) sample of liquid heat-stable anti-strip additive;
- 254 lb. (115 kg) of each coarse aggregate;
- 154 lb. (70 kg) of each intermediate and fine aggregate;
- 22 lb. (10 kg) of mineral filler; and
- 254 lb. (115 kg) of RAP, when applicable.

For more expeditious approval, the Contractor may undertake the following steps:

1. Submit the proper documentation on Pinepave mixture design software.
2. Produce the new mixture for a non-Department project. The Engineer will test the material, by taking three series per section 401800 03(c). The mixture will be approved by the Engineer for Department projects if the test results are within the specifications.

A new JMF is required when any of the following conditions occur:

- A change in the source of any of the aggregate component materials
- A change in the proportion of any aggregate component by more than 5.0%
- A change in the aggregate components resulting in a change in percent passing any sieve as identified in Table 1 by more than 5% of the JMF target.
- A change in the target AC content by more than 0.20% from the JMF target to maintain other Volumetric properties of the approved JMF.
- For any mixture that has a 20% or greater failure rate on any combined volumetric criteria.

Although a new JMF is not required, the Contractor shall inform the Engineer of any proposed changes to an existing JMF. The Contractor shall notify the Engineer by electronic mail of the proposed changes. This notification shall include the total change made from the approved JMF proportions, and the

effective time of the change. The Engineer will reply to the proposed changes within one operational day and notify the Contractor of the effective date of the changes.

.06 Construction.

(a) Pavement Construction Test Equipment.

The Contractor shall furnish and use in-place density gauges, and/or coring equipment to meet the requirements of these Specifications.

Weather Limitations.

Place mix only on dry, unfrozen surfaces and only when weather conditions allow for proper production, placement, handling, and compacting.

The following table of ambient temperatures for various binder grades and lift thicknesses for placement with the following parameters:

	PG Binder		
			64-22
Lift Thickness (in)	76-22	70-22	
1.50	50F	45F	40F
2.00	40F	38F	35F
3.00	32F	32F	32F

- Minimum surface temperature of 32 degrees F AND
- Minimum production temperature of 275 degrees F AND
- Maximum wind speed of 8 miles per hour

Construction outside of these conditions with WMA technology will be at the discretion of the Engineer.

Compaction:

(b) Pavement Construction - Process Control.

Perform Quality Control of pavement compaction by testing in-place pavement density by the following methods.

- ASTM D2950 Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods; the use of other density gauges shall be as per the manufacturer's recommendations.
- AASHTO T166, Method C (Rapid Method) Bulk Specific Gravity of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface Dry Specimens
- ASTM D7227 - Standard Practice for Rapid Drying of Compacted Asphalt Specimens using Vacuum Drying Apparatus

Cores may be cut on the first day of paving or once after the change of a JMF for gauge calibration. The number of cores obtained for calibration purposes shall not exceed the number of QA samples obtained by the Department for payment. The Contractor may use any method to select locations for the Quality Control calibration cores.

Repair all core holes in accordance with 401699 Appendix A.

Method of Measurement:

Method of Measurement will be in accordance with Subsections 401.14 and 401.15 of the Standard Specifications.

Basis of Payment:

All work completed under this item shall be considered for full payment and subsequently modified in accordance with the procedures enumerated under 401699.

Material production quality shall be evaluated per item 401699 - Quality Control/Quality Assurance of Bituminous Concrete .03 (a) Material Production - Tests and Evaluations.

Compaction quality shall be evaluated per Item 401699 - Quality Assurance of Bituminous Concrete .03 (b) Pavement Construction - Tests and Evaluations.

10/25/2013

614891 - WATER SUPPLY SYSTEM

Description:

This Section shall consist of furnishing and installing a complete and operable water supply system at the location as indicated on the Contract Drawings, and as specifically noted in the Breakout Sheet and in accordance with state, local and federal requirements.

Materials:

All materials and construction shall conform to the requirements of the Contract Drawings and any technical specifications referenced.

Method of Measurement:

Measurement shall be determined based upon the unit of measure. No measurement will be made for items bid per each unit. The payment will be based upon number of units installed. Measurement for linear foot units shall be measured based upon the distance along the ground surface. No deduction will be made for valves for fittings.

Basis of Payment:

Payment for Water Supply System will be made at the Unit price bid which price shall include all materials, machinery, tools, labor, supervision, transportation, expenses, permits, permit fees, overhead and profit, required to complete the work in place and acceptable to the Engineer. The Unit price for the items comprising the Water Supply System shall be based on the Unit price bid for each individual item as indicated on the Breakout Sheet 2.

Additionally, further clarification for each bid item is noted as follows:

Bid Item 1 - 8 Wet Tap & Valve: Work shall comprise of all labor, materials, and equipment necessary to furnish and install the tapping sleeve, valve, and valve box. The wet tap, excavation, and backfill shall also be included as part of this bid item.

Bid Item 2 - 8 PVC C900 Waterline: Work shall comprise of all labor, materials, and equipment to furnish and install the 8 water line. The following items shall be considered incidental to the cost of the waterline: excavation, backfill, fittings, retainer glands, tracing wire, buttresses and all else necessary to install the waterline per the contract documents.

Bid Item 3 - Relocate Fire Hydrant Assembly: Work shall comprise of all labor, materials, and equipment to furnish and install the hydrant assembly with an existing hydrant. The hydrant assembly is comprised of a fire hydrant, 6 gate valve and valve box, 6 pipe, retainer glands, stone, tee, excavation, backfill and any other items necessary to install the hydrant per the contract documents.

Bid Item 4 - New Fire Hydrant Assembly: Work shall comprise of all labor, materials, and equipment to furnish and install the hydrant assembly with a new hydrant. The hydrant assembly is comprised of a fire hydrant, 6 gate valve and valve box, 6 pipe, retainer glands, stone, tee, excavation, backfill, and any other items necessary to install the hydrant per the contract documents.

Bid Item 5 - 2 Water Service: Work shall comprise of all labor, materials, and equipment to furnish and install the 2 water line. The following items shall be considered incidental to the cost of the waterline: excavation, backfill, fittings, retainer glands, and all else necessary to install the waterline per the contract documents.

Bid Item 6 - 2 Curb Stop and Box: Work shall comprise of all labor, materials, and equipment to furnish and install the 2 curb stop and curb box including excavation and backfill.

Bid Item 7 - 2 Wet Tap & Corporation Stop: Work shall comprise of all labor, materials, and equipment

necessary to furnish and install the tapping sleeve, and corporation stop. The wet tap, excavation, and backfill shall also be included as part of this bid item.

Bid Item 8 - 1 Water Service (SDR 7): Work shall comprise of all labor, materials, and equipment to furnish and install the 1 water line. The following items shall be considered incidental to the cost of the waterline: excavation, backfill, fittings, retainer glands, and all else necessary to install the waterline per the contract documents.

Bid Item 9 - 1 Yard Hydrant: Work shall comprise of all labor, materials, and equipment to furnish and install a new yard hydrant including excavation, backfill, and connecting to the water service line.

Note:

The breakout sheet attached to the proposal shows all items proposed for this Section. The Contractor shall fill in the unit price and the cost (unit price times the proposed quantity) for each item. The lump sum price bid for Section 614891 Water Supply System, shall be the sum of the total cost for all items listed. The complete breakout sheet shall be attached to the Bid Proposal. Failure to submit the breakout sheet with the Bid Proposal will result in the Bid Proposal being declared non-responsive and rejected.

9/20/12

701505 - PORTLAND CEMENT CONCRETE PARKING BUMPER

Description:

This work consists of furnishing and installing portland cement concrete bumpers in accordance with the details and notes shown on Plans. The locations of installing the parking bumpers shall be in accordance with Plans or will be determined in the field by the Engineer.

Materials and Construction Methods:

Portland cement concrete shall be Class B, and shall conform to the requirements of Section 812, and bar reinforcement shall conform to Section 603 of the Standard Specifications.

Unless specified otherwise on the Plans, each parking bumper shall be anchored with two (2) 18 inch (450 mm) number 13 rebars driven flush with the top of the bumper. Any surface preparation necessary to provide a stable installation of the bumpers will be considered incidental to this item.

Method of Measurement:

The quantity of P.C.C. parking bumpers will be measured as the actual number of bumpers installed and accepted.

Basis of Payment:

The quantity of P.C.C. parking bumpers will be paid for at the Contract unit price per each. Price and payment will constitute full compensation for furnishing all materials including, but not limited to, concrete, bar reinforcement, anchor pins, installing the bumper as directed, for all labor, equipment, tools and incidentals to complete the item.

3/14/02

709518 - SANITARY CLEANOUT

Description:

This item shall consist of furnishing all materials and constructing sanitary cleanouts in accordance with this special provision, as shown on the Plans and as directed by the Engineer.

Materials and Construction Methods:

Materials and construction methods shall conform to the applicable requirements of Section 709 of the Standard Specification, requirements of the utility owner, and the notes and details on the Plans. All materials required for the completion of the sanitary cleanout shall be furnished and installed under this item, including wyes, riser pipes, covers, handholes, elbows, ferrules, plugs, gravel, and concrete for anchors and pads.

Basis of Payment:

The payment for the sanitary cleanout shall be made at the contract unit price bid per Each and constructed and accepted in place in accordance with the Plans and Special Provisions. Price and payment shall constitute full compensation for furnishing and installing all materials, excavation, backfill, backfilling, disposal of surplus materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

8/15/05

720578 - BOLLARD, STEEL

Description:

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

Materials and Construction Methods:

The bollard shall be made of 6 (150 mm) diameter x 3/16 (4.75 mm) steel tubestock.

Concrete shall be Class B conforming to the requirements of Section 812.

Steel housing for the bollard shall be installed in the hole in vertical position on a 6" (150 mm) bed of Delaware No. 57 stone and encased with concrete as shown on the Plans and/or as directed.

All exposed steel is to be painted. Individual coats of paint shall consist of an inorganic zinc-rich primer meeting the requirements of AASHTO M300 Type I or II; an epoxy-polyamide intermediate coat meeting the requirements of SSPC-Paint 22 (pigmented to contrast with both the primer and topcoat); and an aliphatic urethane topcoat meeting the requirements of SSPC-P5 Guide 17.00 Type II. The topcoat color of the exposed steel shall be federal standard 595a, color number 13538 (yellow). The Contractor shall select a complete coating system from one manufacturer. This selected coating system must be submitted to the Department's Material and Research Section for approval prior to coating. Steel surfaces that have not been shop-coated shall be solvent-cleaned. Surfaces that contain loose rust, loose mill scale, and other foreign substances shall be mechanically cleaned by power wire brushing or sand blasting. Minor amounts of residual rust that cannot be removed by applying a sharp knife to any edge, will be allowed to remain. After cleaning, one coat of primer shall be applied.

Method of Measurement:

The quantity of bollards will be measured as the actual number fabricated, installed and accepted.

Basis of Payment:

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

3/3/04

- 748541 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS,
4"
- 748542 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS,
6"
- 748543 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS,
8"
- 748544 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS,
12"
- 748545 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS,
16"
- 748546 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS,
SYMBOL/LEGEND
- 748553 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS,
BIKE SYMBOL
- 748554 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS,
PEDESTRIAN SYMBOL
- 748555 - PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS,
HANDICAP SYMBOL

Description:

This work consists of furnishing and installing preformed retroreflective thermoplastic pavement marking with a preapplied Federal Specification Type IV glass bead coating throughout its entire cross section on bituminous asphalt pavement at the locations and in accordance with the patterns on the Plans, or as directed by the Engineer.

The preformed retroreflective markings shall conform to the size and dimensions as shown in the Federal "Standard Highway Signs" book found at: <http://mutcd.fhwa.dot.gov/SHSe/pavement.pdf> as referred to in the Delaware Manual on Uniform Traffic Control Devices, Part 3, Markings.

Materials:

General: Only materials listed on the Department's Approved Pavement Markings Material List will be used for this item. The preformed retroreflective markings shall be fusible to bituminous asphalt pavement by means of the normal heat of a propane type of torch. Adhesives, primers or sealers are not necessary prior to the preformed retroreflective markings application on bituminous asphalt pavement.

The preformed retroreflective markings shall conform to pavement contours, breaks and faults through the action of traffic at normal pavement temperatures. The markings shall have resealing characteristics and be capable of fusing to itself and previously applied worn hydrocarbon and/or alkyl thermoplastic pavement markings.

The preformed retroreflective markings shall be capable of application on bituminous asphalt pavement wearing courses during the paving operation in accordance with the manufacturer's instructions. After application the markings shall be immediately ready for traffic. The preformed retroreflective markings shall be suitable for use for one year after the date of receipt when stored in accordance with the manufacturer's recommendations.

The preformed retroreflective thermoplastic markings shall not be brittle and must be sufficiently cohesive and flexible at temperatures exceeding 50°F (10°C) for one person to carry without the danger of fracturing the material prior to application.

Composition: The retroreflective pliant rosin ester thermoplastic pavement markings shall consist of a homogeneous mixture of high quality polymeric thermoplastic binders, pigments, fillers and glass beads. The thermoplastic material must conform to AASHTO M249-79(86) with the exception of the relevant differences due to the material being preformed, and identified herein.

Intermix Glass Beads: The preformed retroreflective material shall contain a minimum of 30% glass spheres which shall conform to AASHTO M247-81 Type 1. Glass spheres shall have a minimum of 80% true spheres overall.

Top Beads: To provide the required retroreflectivity, the preapplied factory top coating of glass beads shall be a combination of both Federal Spec. Type IV and AASHTO M247-81 Type I beads. Federal Spec. Type IV beads shall be evenly disbursed across the entire surface of the product at a minimum rate of 4 lb. (1.8 kg) per 100 ft² (9.3 m²) and the AASHTO at 3 lb. (1.4 kg) per 100 ft² (9.3 m²). In combination, the total glass bead coverage shall be 7-8 lb. (3.2-3.6 kg) per 100 ft² (9.3 m²). The AASHTO M247-81 Type I beads shall have a minimum of 80% true spheres overall and the Federal Spec. Type IV beads shall be 80% true spheres on the 12 and 14 sieves and shall be no less than 75% true spheres on the remaining sieves.

Retroreflectivity: After satisfactory completion of all striping work and written notification from the contractor, the Department shall test the striping to ensure it has the minimum reflectivity. The testing will be completed within 30 calendar days from notification. Testing will be done using a Delta LTL 2000 Retrometer (30 meter geometry). The required minimum initial reflectivity reading in millicandellas shall be:

White 300
Yellow 200
Blue 200

Skid Resistance: The surface of the preformed retroreflective thermoplastic markings shall provide a pre-applied minimum skid resistance value of 45-51 BPN and a post-applied minimum skid resistance value of 45-55 BPN when tested according to ASTM E303-74.

Thickness: The thickness of the supplied material shall have a minimum average thickness of .090" (90 mils) for all Longitudinal lines and a thickness of .125" (125 mils) for all transverse lines and symbols/legends.

Tensile Strength and Elongation: The preformed retroreflective thermoplastic material shall have a minimum tensile strength of 150 lb. per square inch (1054 kg per square mm) of cross section, at .002" (2.28 mil) thickness, when tested according to ASTM D638-76 except that a sample 6" by 1" (150 mm by 25 mm) shall be tested at a temperature between 70°F and 80°F (21°C and 27°C) using a jaw speed of 10" to 12" (250 mm to 300 mm) per minute. The sample shall have a maximum elongation of 20% at break when tested by this method.

Flexibility: The preformed retroreflective thermoplastic marking material shall have flexibility at 50°F such that when a 1" by 6" (25 mm by 150 mm) sample is bent through an arc of 90 degrees at a uniform rate in 10 seconds (9 degrees per second) over a 1" (25 mm) mandrel, no cracking occurs in the test sample. The sample must be conditioned prior to testing at 50°F±2 degrees (10°C) for a minimum of four hours. At least two specimens tested must meet the flexibility requirements at 50°F (10°C) for a passing result.

Environmental Resistance: The applied markings shall be resistance to deterioration due to exposure to sunlight, water, oil, diesel fuels, gasoline, pavement oil content, salt and adverse weather conditions.

Effective Performance Life: When properly applied, in accordance with manufacturer's instructions, the preformed retroreflective pavement markings shall be neat and durable. The markings shall remain skid resistant and show no lifting, shrinkage, tearing, roll back or other signs of poor adhesion for a period of one winter season.

Oil/grease Resistant Test: The preformed retroreflective thermoplastic material shall not dissolve or smear after rubbing a small amount of motor oil on a small piece of the thermoplastic material for two minutes.

Bond Strength: The material shall exhibit a bond strength to Portland Cement Concrete (PCC) equal or exceed 180 psi when tested at room temperature (73.4±3°F) (23°C) in accordance to ASTM Standard Test Method for Bond Strength of thermoplastic marking Material D4796-88. Place a coarse brick in a 400°F (204°C) oven for 5 minutes. Prepare a 4 square inch test specimen. Place the test specimen on the brick and

further heat in the 400°F (204°C) oven for 15 minutes. The test specimen is then allowed to cool to room temperature and prepared for testing.

Low Temperature Cracking (Stress) Resistance for Extended Period: The material shall be tested according to AASHTO T250 Section 7 with Section 7.2.3 modified for and extended cold temperature 15 degrees $\pm 3^\circ\text{F}$ ($-9.4 \pm 2^\circ\text{C}$) exposure period 72 hours. Any cracking shall constitute failure of the material for PCC road surfaces.

Impact Resistance (Gardner Falling Weight): A 2" by 7.5" (50 by 190 mm) specimen shall be applied on a course concrete brick. Using a Gardner Impact Tester, a 2 lb (.91 kg) weight is dropped from a height of 80" (2032 mm). The specimen when tested at room temperature $73.4 \pm 3^\circ\text{F}$ (23°C) should show no sign of cracking. (Test procedure is in accordance with ASTM D5420-93).

Packaging: The flexible preformed retroreflective thermoplastic marking materials, for use as transverse or longitudinal markings as well as legends, arrows and symbols shall be available in flat form material or in rolls. Flat material shall be supplied in maximum of 4' (1.2 m) lengths up to 2' (.6 m) in width. The material shall be packed in suitable cartons clearly labeled for ease of identifying the contents.

Construction Methods:

The markings shall be applied in strict accordance with the manufacturer's recommendations on clean and dry surfaces. Marking configurations shall be in accordance with the "Delaware Manual on Uniform Traffic Control Devices, Part 3, Markings."

The preformed retroreflective thermoplastic material shall be fusible to the pavement by means of a propane torch recommended by the manufacturer. Preheating the surface to remove any latent moisture will be done just prior to the placement and installation of the Symbol/ Legend.

No markings shall be placed when the ambient temperature is below 40°F (4°C). The material shall be kept in a location above 55°F (13°C) until just before application.

The supplier shall provide technical services as may be required.

Method of Measurement:

The quantity of pavement striping (748541-748545) will be measured by the number of linear feet (linear meters) of 4", 6", 8", 12", or 16" pavement striping line placed and accepted. The quantity of symbol/ legend (748546) will be measured by the number of square feet (meters) of symbol/legend placed and accepted. The quantity of bike symbol, pedestrian symbol, and handicap symbol (748551-748553) will be measured as each placed and accepted. The dimensions for the symbol/legends are as follows:

Bike Rider with Helmet shall be 3' X 5'.

Pedestrian shall be 4' X 8'.

Handicap Symbol shall be 40" X 40".

Basis of Payment:

The quantity of pavement striping payment will be paid for at the Contract unit price per linear foot (linear meter) for 4", 6", 8", 12" and 16" (100 mm, 150 mm, 200 mm, 300 mm, and 400 mm) line. The quantity of symbol/legend will be paid for at the Contract unit price per square foot (meter). The quantity of bike symbol, pedestrian symbol, and handicap symbol will be paid for at the Contract unit price per each. Price and payment shall include cleaning and preparing the pavement surface, and placing all materials, for all labor, tools, equipment and incidentals necessary to complete the work.

Warranty:

The Contractor shall warrant to the Department that the installed retroreflective preformed thermoplastic pavement markings are free of defects, as hereafter defined, for a period of one winter season beginning at the initial acceptance of the marking installation by the Department. The initial acceptance of

the marking installation will occur upon the satisfactory correction of all deficiencies noted in the marking installation during the Final Inspection of the project. The markings shall be warranted against failure due to blistering, excessive cracking, bleeding, staining, discoloration, oil content of the pavement materials, smearing and spreading under heat, deterioration due to contact with grease deposits, oil, diesel fuel, or gasoline drippings, chipping, spalling, poor adhesion to the pavement materials, vehicular damage, and wear from normal maintenance activities including snow plowing.

The Contractor shall repair all defective areas identified by the Department after initial installation or during the Warranty Period. All repairs shall begin immediately following the notice to the Contractor by the Department unless weather limitations prevent the corrective work. Should the contractor not commence work within the period stated in the notice, weather permitting, and pending severity, the Department reserves the right to remedy the condition and charge the contractor for the work. Any corrective work shall be as recommended by the manufacturer of the marking material and approved by the Department. The Department shall be given notification before the Contractor begins corrective work to allow for inspection of the operation. All costs associated with the repair work shall be the responsibility of the contractor. These costs shall include, but are not limited to, removal, material, maintenance of traffic, etc.

2/28/09

- 753501 - INSTALLING SANITARY SEWER, PVC 8"
- 753502 - INSTALLING SANITARY SEWER, PVC 10"
- 753503 - INSTALLING SANITARY SEWER, PVC 12"
- 753504 - INSTALLING SANITARY SEWER, PVC 15"
- 753505 - INSTALLING SANITARY SEWER, PVC 18"
- 753506 - INSTALLING SANITARY SEWER, PVC 21"
- 753507 - INSTALLING SANITARY SEWER, DIP 30"
- 753508 - INSTALLING SANITARY SEWER, DIP 42"
- 753509 - INSTALLING SANITARY SEWER (FORCE MAIN), PVC 4"
- 753510 - INSTALLING SANITARY SEWER (FORCE MAIN), PVC 8"
- 753511 - INSTALLING SANITARY SEWER, DIP 4"
- 753512 - INSTALLING SANITARY SEWER, RCP 24"
- 753513 - INSTALLING SANITARY SEWER, DIP 12"
- 753514 - INSTALLING SANITARY SEWER (FORCE MAIN), PVC 6"
- 753515 - INSTALLING SANITARY SEWER (FORCE MAIN), PVC 2"
- 753517 - INSTALLING SANITARY SEWER, PVC 6"
- 753518 - INSTALLING SANITARY SEWER, DIP 6"
- 753520 - INSTALLING SANITARY SEWER, DIP 8"
- 753522 - INSTALLING SANITARY SEWER, PVC 24"
- 753524 - INSTALLING SANITARY SEWER, DIP 10"
- 753525 - INSTALLING SANITARY SEWER (FORCE MAIN), DIP 10"
- 753526 - INSTALLING SANITARY SEWER (FORCE MAIN), PVC 3"
- 753527 - INSTALLING SANITARY SEWER, DIP 24"
- 753528 - INSTALLING SANITARY SEWER, DIP 24"
- 753529 - INSTALLING SANITARY SEWER, DIP 8"
- 753530 - INSTALLING SANITARY SEWER, DIP 16"
- 753531 - INSTALLING SANITARY SEWER, RCP 30"
- 753532 - INSTALLING SANITARY SEWER, PVC 4"
- 753533 - INSTALLING SANITARY SEWER (FORCE MAIN), PVC 1 1/2"
- 753534 - INSTALLING SANITARY SEWER (FORCE MAIN), PVC 2 1/2"
- 753539 - INSTALLING SANITARY SEWER (FORCE MAIN), DIP, 4"
- 753540 - INSTALLING SANITARY SEWER (FORCE MAIN), DIP, 24"
- 753541 - INSTALLING SANITARY SEWER (FORCE MAIN), DIP, 8"
- 753542 - INSTALLING SANITARY SEWER, DIP, 18"
- 753543 - INSTALLING SANITARY SEWER (FORCE MAIN), DIP, 6"
- 754544 - INSTALLING SANITARY SEWER (FORCE MAIN), HDPE, 8"

Description:

This work consists of furnishing all materials including pipes with all required fittings with bends

Wyes, clean-outs, etc., and installing sanitary sewer in accordance with these Special Provisions, Delaware Standard Specifications, and requirements of the Standard Specifications of the Owner of the sewer line. In case of any conflict between the notes and details on the Plans; Special Provisions; Standards and Specifications of the Owner of the Utility; the Standards and Specifications of the Owner of the Utility shall prevail. The Contractor shall obtain the Standards and Specifications of the Owner of the utility and study for materials cost before submitting the bids. The Owner could be a city, municipality or a county, and from hereafter shall be addressed as the Owner.

General Requirements: All work shall be subject to inspection and subsequent approval/disapproval of the Engineer and the representative of the Owner of the utility; and the Contractor shall be required to correct the discrepancies at his/her expense.

Included in this work are the connections of all existing commercial, industrial, and residential sanitary sewer services to the new sanitary sewer system. All modifications to such services, as required by the present Standards and Specifications of the Owner, and all relocations of such services necessary to avoid conflicts with utilities and highway drainage facilities are included in the work. Since the exact locations of the conflicts cannot be determined prior to trench excavation operations, the Contractor must coordinate and schedule any required relocation efforts of each sanitary sewer connection on an individual basis with the utility Owner and the property owner.

It is of prime importance that the Contractor, in the performance of his/her work, does not disrupt the operation of the existing sanitary sewer facilities in any manner or at any time, without the expressed prior approval of the Owner. The Contractor shall construct, maintain and remove, following construction, such temporary bypasses as may be required during construction to maintain sanitary sewer facilities in service.

Any and all emergency repairs required during the period of this Contract shall be the responsibility of the Contractor. In the event the Owner is unable to contact the Contractor for the immediate emergency repair items of work, or in the event the Contractor does not take action when contacted within a reasonable length of time, the Owner of the utility reserves the right to attend to any and all emergency repair work items and to resubmit the costs directly to the Contractor for complete payment.

Materials:

The requirements for the materials as applicable to the Contract are as noted below, unless otherwise stated on the Plans and/or required by the Owner of the sewer system. The Contractor shall verify the compatibility of these materials specifications with the Owner before placing order for the Contract.

The Polyvinyl Chloride Pipe (PVC pipe) suitable for non-pressure drainage of sewage and fittings shall conform to the applicable requirements of ASTM D3033 Type PSP, and/or ASTM D3034 Type PSM, and pipe shall be of SDR-35 or SDR-41 or SDR-42 of the nominal size required by the Plans and/or as required by the Owner.

PVC pipe and fittings for Force Main shall conform to the requirements of ASTM D-2241 and AWWA C 900 (SDR-14) utilizing the bell and spigot concept with a single sealing synthetic rubber gasket provided by the same manufacturer in conformance with ASTM D1859. Pressure rating of PVC pipe for force mains shall be 1034 kPa minimum.

Ductile Iron Pipe shall be centrifugally cast, and all pipe and fittings shall conform to the applicable specifications of AWWA C-151 and ANSI and shall be Class 52 for gravity and force mains unless otherwise specified on the Plans.

Reinforced Concrete Pipe shall meet the applicable requirements of Section 612 of the Delaware Standard Specifications.

All the pipe and fittings shall be free from defects, and the defective materials as determined by the Engineer or the Owner, shall be rejected and replaced.

Warning tape for sanitary sewer or force main shall be printed polyethylene plastic tape with a metallic core, manufactured specifically for warning and identification of buried utility lines. The tape shall

be of a roll type, 2" (50 mm) minimum width, and color coded for sewer (green), with warning and identification imprinted in bold black letters continuously and repeatedly over entire length of tape. The code and letter color shall be permanent and unaffected by moisture and other substances contained in trench backfill materials. Imprinted on the tape shall be "Caution, Buried Sewer Line Below", or a similar message as approved by the Engineer.

Concrete for the thrust blocks and clear-outs shall meet the requirements of Section 812, Class B of Standard Specifications. Thrust blocks and clean-outs shall be constructed in accordance with the Standard Detail Drawings of the Owner or as directed.

Borrow Type C and sand for backfilling when required by the Contract and specified on the Plans shall conform to the respective requirements of Sections 210 and 804 of the Standard Specifications. Concrete required for the work shall be Class B, and shall conform to the requirements of Section 812.

Unless shown otherwise on the Plans or required by the owner, all commercial, industrial, and residential connections shall be constructed of the same class of material as the sewer mains to which they are connected. Minimum grade and size of the lateral pipes shall be as required by the Owner's Standards and Specifications.

Construction Methods:

All pipes shall be thoroughly cleaned before they are laid and shall be kept clean until the completed work is accepted.

The excavation and backfill for the pipe shall be performed in accordance with the applicable requirements including backfill requirements of Section 612 of the Delaware Standard Specifications, unless otherwise modified on the Plans, or in conflict with the requirements of the Owner. If there is a conflict between the Delaware Standard Specifications (including these Special Provisions) and the Specifications of the Owner of the utility, the latter will prevail. The Contractor is advised to obtain and be fully acquainted with the applicable specifications of the Owner. The pipe shall be installed at the locations and to the lines, grades, and dimensions shown on the Plans or as directed by the Engineer.

During backfill of the sewer or force main the Contractor shall install the specified warning tape at a depth of 8" (200 mm) to 12" (300 mm) below finished grade or as directed and approved by the Engineer/Owner.

No pipe shall be laid upon a foundation into which frost has penetrated nor at any time when the Engineer shall deem that there is danger of the formation of ice or the penetration of frost at the bottom of the excavation, unless the minimum length of open trench and promptness of refilling are observed.

The Contractor shall build all future service connections to the existing houses, businesses, and others, complete to the property line, right-of-way lines or other designated points. The ends of all such service connections shall be closed with stoppers as directed and approved by the Engineer/Owner.

Acceptance Testing:

Prior to the request for inspection by the Engineer, it shall be the Contractor's responsibility to examine all completed pipe lines to insure that they are laid to the proper alignment and grade and free from foreign material. After this has been done to the satisfaction of the Engineer, he/she will order tests to be made on all portions of the sewers built under the Contract.

The Contractor shall cooperate and furnish all assistance necessary to perform the tests as specified herein and as further required and directed by the Engineer and the representative of the Owner.

Sanitary sewer lines shall be tested for the maximum amount of allowable leakage as specified by the Owner in the presence of the Engineer and the representative of the Owner. If a maximum leakage rate is not specified by the Owner, the allowable leakage rate will be 25 gallons per inch of diameter per mile (59 liters per 25 mm of diameter per kilometer) per day.

- A. All sewers above the ground water line with a diameter of 39" (990 mm) or less will be tested by the low air pressure method. Sewers greater than 39" (990 mm) in diameter will be tested by the exfiltration method. This test will be made by plugging the lower manhole and filling the pipe section between manholes with water until the upper manhole is filled to the top or to a level designated by the Engineer. The quantity of water leakage will be measured by the drop in the level of the water in the upper manhole.
- B. All sewers below the ground water line will be tested by the infiltration method. This test will be made by measuring the amount of water infiltration at the lower end of the pipe section at the end of the manhole stretch by means of a weir installed in the pipe or other means, as approved by the Engineer.
- C. All sewers shall be tested in individual sections or an accumulation of series of sections in lengths approved by the Engineer. If the series method is used, each section between manholes shall meet the infiltration and exfiltration requirements specified herein.

All sewers before they are tested shall be carefully plugged and backfilled to a depth not less than 2 feet (0.6 meters) above the top of the pipe. Water shall be furnished by the Contractor and maintained at such levels as directed by the Engineer for a period of at least twenty hours immediately prior to the time of the test and during the test. The Contractor shall replace or repair all defects on sections of sewers failing to meet the requirements of these tests.

For conducting low pressure test, all branch fittings and ends of lateral stubs shall be securely plugged to withstand the internal test pressures. The section of line being tested shall also be securely plugged at each manhole. All stoppers shall be adequately braced when required.

Air shall be slowly supplied to the plugged pipe line until the internal air pressure reaches 4 psi (28 kPa) greater than the average back pressure of any ground water that may submerge the pipe. At least two minutes shall be allowed for temperature stabilization before proceeding further. The rate of air loss shall then be determined by measuring the time interval required for the internal pressure to decrease from 3.5 to 2.5 psi (24 to 17 kPa). When the Owner of the utility is satisfied that the sewer main is functional, then the sewer main will be accepted.

The Contractor shall furnish all equipment and personnel to conduct the tests specified herein and/or any proposed by the Owner of the utility.

The Contractor shall not make connections to existing sanitary sewers until after the final inspection and tests have been approved. All material and labor required for tests shall be furnished by the Contractor and the cost thereof included in the prices bid for installing sanitary pipe. Water for leakage test shall be furnished by the Contractor.

Method of Measurement and Basis of Payment:

Payment for the item Installing Sanitary Sewer of respective diameter(s) as required by the Contract measured along the centerline from end-to-end shall be paid for at the Contract unit price per linear foot (linear meter) for "Installing Sanitary Sewer", of the size(s) and type(s) required by the Contract, which price and payment will constitute full compensation for furnishing and installing sanitary sewer pipes; bends, Wyes, clean-outs including valves and related fittings including concrete thrust blocks in the sewer line which are not covered by a separate Contract item(s); for furnishing and installing warning tape; for excavation, backfill Borrow Type C, and backfilling for pipe sizes under 24" (600 mm); for all labor, tools, equipment, and incidentals to complete the work and make the sewer system functional.

Sanitary sewer installed for services will be measured and paid for at the Contract unit price per linear foot (linear meter) for "Installing Sanitary Sewer" of the size(s) and type(s) required for the service, which price and payment will constitute full compensation for furnishing and installing sanitary sewer pipes, bends, Wyes, clean-outs including valves and related fittings; for furnishing and installing warning tape; for excavation, backfill Borrow Type C, and backfilling for pipe under 24" (600 mm) for all labor, tools, equipment, and incidentals to complete the work and make the sewer service functional.

Payment for the use of Del. No. 57 stone shall be incidental to the respective sizes of sanitary sewer installed, unless otherwise Del. No. 57 stone is a separate bid item of this Contract.

For pipe of internal diameter 24" (600 mm) and over, payment for excavation, backfill and backfilling shall be in accordance with Section 208.

7/24/02

753516 - SANITARY SEWER SYSTEM

Description:

This work consists of furnishing all material and installing the sanitary sewer pump station, valve vault, oil/grit separator, and accessories in accordance with the locations, details and notes on the Plans and as directed by the Engineer. The work shall be performed in accordance with these Special Provisions, and Delaware Standard Specifications. The existing sewer mains shall be abandoned or salvaged as specified on the Plans.

Materials:

All material including pipe and all other accessories as listed under this Special Provision, shall conform to the material and quality requirements of the Specifications. The Owner shall have right to inspect the material and reject any material, if the specifications requirements are not met.

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

Special Requirements:

Part II, Chapter 180, Article III, Section 180-10 of the Code of Kent County requires that “no person shall discharge or cause to be discharged any storm water, surface water, uncontaminated groundwater, roof runoff, subsurface drainage, uncontaminated non-contact cooling water or unpolluted industrial process waters to any sanitary sewer” this shall include condensate. Sec. 110-231 of the City of Dover Code defines storm sewer as “....any system used for conveying rain water, surface water, condensate, cooling water or similar liquid wastes, exclusive of sewage.” The contractor, developer, owner and designers shall ensure during construction that no illegal discharges to the sanitary sewer system are created with the site improvements.

The Owner shall have the sole right of determining at what times and in what order the Contractor shall undertake work, of making connections and modifications to the existing sewer system. Prior notice, a minimum of forty-eight (48) hours shall be given to the Owner for inspection and supervision by the Contractor of his intention to begin work involving the sewer pipeline relocations. No work shall be started by the Contractor until he / she has received permission from both the Engineer and the Owner to proceed. The Contractor shall immediately notify both the Engineer and the Owner of all delays.

It is of prime importance that the Contractor, in the performance of this work, does not disrupt the operation of the existing sewer facilities in any manner or at any time without the express prior approval of the Owner. The Contractor shall construct, maintain and remove, following construction, such temporary sewer bypasses as may be required during construction to maintain the continuous operation of the sanitary sewer system.

Any and all emergency repairs required during the period of this Contract shall be the responsibility of the Contractor. The Owner will notify the Contractor by telecommunication and the Contractor shall be required to attend the repair immediately. In the event the Owner is unable to contact the Contractor for immediate emergency repair work in the length of time as determined by the Owner, the Owner reserves the right to attend to any or all emergency repair work, and to submit the costs of repair directly to the Contractor for complete payment.

All material and work, or part thereof, which are unsatisfactory as to any or all requirements of the Owner or the Engineer, and/or as specified herein, shall be removed and replaced or repaired in an acceptable manner by the Contractor at his/her own expense.

The Contractor shall guarantee that all workmanship, material and work performed under the Contract shall be in strict accordance with the Plans, Specifications and other Contract Documents. This guarantee

shall be for a period of one (1) year from and after the date of completion and acceptance of the work. The Contractor shall repair, correct or replace, as required, promptly and without charge, all work, equipment and material, or parts thereof, which fail to meet the above guarantee, or which, in any way, fail to comply with or fail to be in strict accordance with the terms and provisions and requirements of the Contract during such one (1) year period.

Construction Methods:

All work in connection with construction of sewer mains and service connections shall conform to the applicable requirements of the Standard Specifications of the Owner, except as modified by the Plans and these Special Provisions. In case of conflict, the Specifications of the Owner shall prevail.

Violations from sewage spills shall be the sole responsibility of the Contractor and it is the Contractors responsibility to immediately report all sewage spills or overflows resulting from construction activity to the Engineer and the Owner.

Method of Measurement:

The work associated with Sanitary Sewer System indicated on the plans or as directed by the Engineer and constructed in accordance with these specifications, installed and accepted, shall not be measured for payment, but shall be paid for on a lump sum basis.

Basis of Payment:

The payment for Sanitary Sewer System shall be made at the Contract lump sum price. Price and payment shall constitute full compensation for furnishing and installing the material, maintaining service as required and for all labor, equipment, tools and necessary incidentals to furnish and install the oil/grit separator tank, valve vault manhole, valves and the sewer pump station complete with pumps, electric control panel, and all other incidentals per the contract documents. The forcemain piping and fittings from the pump station through the valve vault as well as the gravity line between the oil/grit separator and the pump station shall be considered incidental to the cost of the sanitary sewer system bid item. The pay item for forcemain starts on the effluent side of the valve vault.

The payment shall also include the cost of excavation, backfilling, connecting gravity sewer lines to the oil/grit separator, sheeting and shoring, de-watering, labor, equipment, tools and incidentals necessary to complete the installation of the Sanitary Sewer System.

9/20/12

763569 - BUILDINGS

Description:

This work consists of all equipment, labor, materials necessary to furnish and install the maintenance shop building complete per the contract drawings. The work specifically includes but is not necessarily limited to the building shell including foundation and footers. It also includes the concrete floor, walls, plumbing, electrical, HVAC, mechanical, lighting, and all other items indicated within the building as indicated in the Contract Drawings and in accordance with Appendix A - Technical Specifications.

Materials and Construction:

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

Mandatory Pre-Bid Meeting:

All bidders must be represented at the Mandatory Pre-Bid Meeting(s) for this contract. The meeting information is provided on the first page of this contract (page i). The bidder's representative must sign-in and identify the name of the bidder they represent.

Failure to sign-in with the bidder's company name at the Mandatory Pre-Bid Meeting will result in the bidder being found non-responsible and non-responsive, and their bid will be rejected.

Method of Measurement:

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

Basis of Payment:

Payment will be made at the Lump Sum price bid for this item. The price bid shall include the cost for performing the work specified and furnishing all labor, materials, tools, equipment and incidentals necessary to provide a complete, working and usable facility acceptable to the Engineer.

12/5/2013



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

SHAILEN P. BHATT
SECRETARY

UTILITY STATEMENT

STATE CONTRACT No. T201080101
Project I.D. No. 10-05502
Magnolia Yard Vehicle Maintenance Shop

CENTRAL DISTRICT

No utility relocation involvement is anticipated, should any conflicts be encountered during construction the adjustments and/or relocations of existing utility facilities shall be accomplished by the respective companies' forces as construction warrants.

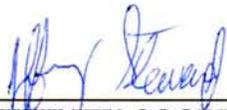
Any adjustments and/or relocations of municipally owned sewer or water facilities shall be done by the State's contractor in accordance with the respective agencies' standard specifications as directed by the District Engineer.

General Notes

1. The Contractor's attention is directed to Section 105.09 Utilities, Delaware Standard Specifications, August 2001. The Contractor shall contact Miss Utility (1-800-282-8555) two working days prior to any excavation. The Contractor is responsible for the support and protection of all utilities when excavating. The Contractor is responsible for ensuring proper clearances, including safety clearances, from overhead utilities for construction equipment. The Contractor is advised to check the site for access purposes for his equipment and, if necessary, make arrangements directly with the utility companies for field adjustments for adequate clearances.
2. It is understood and agreed that the Contractor has considered in his bid all permanent and temporary utility appurtenances in their present and relocated positions as shown on the plans or described in the Utility Statement or are readily discernible and that no additional compensation will be allowed for any delays, inconvenience, or damage due to any interference from the utility facilities and appurtenances or the operation of moving them, except that the Contractor may be granted an equitable extension of time.
3. Coordination and cooperation among the Utility Companies and the State's Contractor are of prime importance. Therefore, the Contractor is directed to contact the following Utility Company representatives with any questions regarding this work prior to submitting bids and work schedules. Proposed work schedules should reflect the Utility Companies' proposed relocations. The Utility Companies do not work on weekends or legal holidays.

DIVISION OF TRANSPORTATION SOLUTIONS

4.5.2012
DATE


UTILITY COORDINATOR



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

CERTIFICATE OF RIGHT-OF-WAY STATUS

STATE PROJECT NO. T201080101

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

MAGNOLIA YARD VEHICLE MAINTENANCE SHOP

KENT COUNTY

Certificate of Right-of-Way Status – 100%

As required by 23CFR Part 635, all necessary right of way has been acquired in accordance with current State/Federal rules and regulations covering the acquisition of real property.

This is to certify that all project rights of way is currently available in accordance with the project right-of-way plans.

A landscape agreement was obtained by M & O for the placement of 110 trees on an adjacent property. The trees were required by Kent County Planning and Zoning. The requirement is in their Code under Section 187-79(A) which refers to a landscape buffer. Another reason for placing this buffer pertains to the “Good Neighbor Policy” as per the M & O Section of DelDOT. It will provide visual beautification and a noise buffer.

It is further certified that there were no individuals or families displaced by this project. Therefore the provisions of 49 CFR Part 24 is not applicable to the project.

There are no improvements to be removed or demolished as part of this project.

REAL ESTATE SECTION

Cleon L. Cauley, Sr.
Deputy Director, Planning

May 21, 2012



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

SHAILEN P. BHATT
SECRETARY

March 8, 2012

ENVIRONMENTAL REQUIREMENTS

FOR

State Contract No. T201080101

Federal Aid No.: None

Contract Title: Magnolia Yard Vehicle Maintenance Shop

In accordance with the procedural provisions for implementing the National Environmental Policy Act of 1969, as amended, the referenced project has been processed through the Department's Environmental Review Procedures and has been classified as a Level D/ Class II Action.

Due to the nature of the proposed construction activities, permits are not required for this project. However, the following construction requirements and special provisions have been developed to minimize and mitigate impact to the surrounding environs. These requirements by DelDOT not specified within the contract, but listed below, are the responsibility of the contractor and is subject to risk of shut down at the contractor's expense if not followed.

GENERAL REQUIREMENTS:

1. All construction debris, excavated material, brush, rocks, and refuse incidental to such work shall be placed either on shore above the influence of flood waters or on some suitable dumping ground.
2. That effort shall be made to keep construction debris from entering adjacent waterways or wetlands. Any debris that enters those areas shall be removed immediately.
3. The disposal of trees, brush, and other debris in any stream corridor, wetland, surface water, or drainage area is prohibited.



BID PROPOSAL FORMS

CONTRACT T201080101.01

CONTRACT ID: T201080101.01 PROJECT(S): T201080101

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS

SECTION 0001 MAGNOLIA SHOP AND SITE WORK

0010	202001 EXCAVATION AND EMBANKMENT PREPARATION OF SUBGRADE	LUMP		LUMP		
0020	211503 DEMOLITION OF BUILDINGS SEE BREAKOUT SHEET	LUMP		LUMP		
0030	212000 UNDERCUT EXCAVATION	CY	100.000			
0040	250000 SEDIMENT REMOVAL	CY	100.000			
0050	251000 SILT FENCE	LF	2550.000			
0060	252002 INLET SEDIMENT CONTROL, AT GRADE INLET	EACH	4.000			
0070	263000 SUMP PIT, TYPE 1	EACH	1.000			
0080	268000 STABILIZED CONSTRUCTION ENTRANCE	TON	30.000			
0090	270500 DEWATERING BAG	EACH	1.000			

CANNOT BE USED FOR BIDDING

CONTRACT ID: T201080101.01 PROJECT(S): T201080101

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0100	302005 GRADED AGGREGATE BASE COURSE, TYPE B	6500.000 TON				
0110	401807 BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 76-22 (CARBONATE STONE)	1800.000 TON				
0120	401816 BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 76-22	2700.000 TON				
0130	501001 PORTLAND CEMENT CONCRETE PAVEMENT, 8" SEE PLAN DETAIL OF WASH PAD	375.000 SY				
0140	614891 WATER SUPPLY SYSTEM SEE BREAKOUT SHEET	LUMP		LUMP		
0150	701022 INTEGRAL PORTLAND CEMENT CONCRETE CURB & GUTTER, TYPE 3-8	385.000 LF				
0160	701505 P.C.C. PARKING BUMPER	2.000 EACH				
0170	705001 P.C.C. SIDEWALK, 4"	903.000 SF				
0180	705002 P.C.C. SIDEWALK, 6"	40.000 SF				

CANNOT BE USED FOR BIDDING

CONTRACT ID: T201080101.01 PROJECT(S): T201080101

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0190	705007 SIDEWALK SURFACE DETECTABLE WARNING SYSTEM	10.000 SF				
0200	709518 SANITARY CLEANOUT	5.000 EACH				
0210	720578 BOLLARD, STEEL SEE DETAILS	21.000 EACH				
0230	748001 PAINTING OF WHITE OR YELLOW, 4" LINE	270.000 LF				
0240	748555 PREFORMED RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS, HANDICAP SYMBOL HANDICAPPED SYMBOLS, INCLUDE SIGN	2.000 EACH				
0250	753516 SANITARY SEWER SYSTEM FURNISH & INSTALL PUMP STATION PER PLANS	LUMP		LUMP		
0260	753532 INSTALLING SANITARY SEWER, PVC, 4"	200.000 LF				
0270	753533 INSTALLING SANITARY SEWER (FORCE MAIN), PVC, 1 1/2"	375.000 LF				
0280	763000 INITIAL EXPENSE	LUMP		LUMP		

CANNOT BE USED FOR BIDDING

CONTRACT ID: T201080101.01 PROJECT(S): T201080101

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0290	763569 BUILDINGS SEE PLANS	LUMP	LUMP			
	SECTION 0001 TOTAL					
	TOTAL BID					

CANNOT
BE USED
FOR BIDDING

CANNOT

BREAKOUT SHEETS

THE FOLLOWING SHEETS MUST BE COMPLETED AND RETURNED WITH THE PROPOSAL AT THE TIME OF BID. BREAKOUT SHEETS MUST BE COMPLETED REGARDLESS OF WHETHER BIDDING BY ELECTRONIC MEANS OR TYPEWRITTEN HARD COPY.

BE USED

FOR BIDDING

SECTION 1

BREAKOUT SHEET - 1
ITEM 211503 - DEMOLITION

CONTRACT NO. T201080101

ITEM NO.	Location - Description	Unit of Measurement	UNIT PRICE	AMOUNT
1	Remove concrete and brick barn (bldg. 5), to include slab and electrical service	LS	\$	\$
2	Remove existing macadam ramp to include light and bollards in the immediate vicinity	LS	\$	\$
3	Relocate existing ground macadam stockpile	LS	\$	\$
4	Remove existing water line and yard hydrant and cap at tee (Note D-18)/salvage fire hydrant	LS		
5	Remove existing concrete pad under storage tanks	LS		
6	Remove and relocate existing water tank	LS		
7	Sawcut and remove all macadam paving around buildings 11-17	LS		
8	Remove building 9 and accessory structures, pads, tanks, services, bollards, slabs and macadam paving (to include sawcutting)	LS	\$	\$
9	Remove building 1 and accessory pads, services, slabs and macadam paving (to include sawcutting)	LS	\$	\$
10	Salvage gas tank north of building 9	LS	\$	\$
TOTAL ITEM 211503 - DEMOLITION			\$	
(LUMP SUM BID PRICE FOR ITEM 211503)				

SECTION 1		BREAKOUT SHEET - 2		CONTRACT NO. T201080101	
ITEM 614891 - Water Supply System					
ITEM NO.	Description	Approx. Qty.	UOM	UNIT PRICE	AMOUNT
1	8" Wet Tap and Valve	1	EA	\$	\$
2	8" PVC C900 Waterline	225	LF	\$	\$
3	Relocate Fire Hydrant Assembly	1	EA	\$	\$
4	New Fire Hydrant Assembly	1	EA	\$	\$
5	2" Water Service	80	LF	\$	\$
6	2" Curb Stop & Box	1	EA	\$	\$
7	2" Tap and Corp Stop	1	EA	\$	\$
8	1" Waterline SDR 7	220	EA	\$	\$
9	1" Yard Hydrant	1	EA	\$	\$
TOTAL ITEM 614891 - Water Supply System				\$	
				(LUMP SUM BID PRICE FOR ITEM 614891)	

"ATTENTION"

TO BIDDERS

This Bid Proposal includes breakout sheets. The breakout sheets **MUST ACCOMPANY** the bid proposal at the time of bid.

CANNOT BE USED FOR BIDDING

CERTIFICATION

Contract No. T201080101.01

The undersigned bidder, _____
whose address is _____
and telephone number is _____ hereby certifies the following:

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

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

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

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

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

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

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

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

BIDDERS MUST ACKNOWLEDGE RECEIPT OF ALL ADDENDA AND FINAL QUESTIONS AND ANSWERS.

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



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

Name of Bidder (Organization)

Corporate
Seal

By:

Authorized Signature

Attest _____

Title

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

Notary
Seal

Notary

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____ of _____
_____ in the County of _____ and State of _____ as **Principal**, and _____
_____ of _____ in the County of _____ and State of _____ as **Surety**, legally
authorized to do business in the State of Delaware ("**State**"), are held and firmly unto the **State** in the sum of _____
Dollars (\$ _____), or _____ percent not to exceed _____
Dollars (\$ _____) of amount of bid on Contract No. T201080101.01
to be paid to the **State** for the use and benefit of its Department of Transportation ("**DeIDOT**") for which payment well and truly
to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for
and in the whole firmly by these presents.

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

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

SEALED, AND DELIVERED IN THE
presence of

Name of Bidder (Organization)

Corporate
Seal

By:

Authorized Signature

Attest

Title

Name of **Surety**

Witness:

By:

Title

FOR BIDDING

