MDOT Use Only
Checked _____
Loaded _____
Keyed _____

SM No. CNHS0010011441

PROPOSAL AND CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF

(STATE DELEGATED)

3
Interchange Construction of the I-10 / I-110 Interchange Including - CD Roads, Leg Ramps, Loop Ramps and the D'Iberville Road Interchange, known as State Project No. NHS-0010-01(144) / 105281301 in Harrison County.
Project Completion: August 24, 2015

NOTICE

BIDDERS MUST PURCHASE A BOUND PROPOSAL
FROM MDOT CONTRACT ADMINISTRATION DIVISION
TO BID THIS PROJECT.

Electronic addendum updates will be posted on www.gomdot.com

SECTION 900

OF THE CURRENT
2004 STANDARD SPECIFICATIONS
FOR ROAD AND BRIDGE CONSTRUCTION
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
JACKSON, MISSISSIPPI

BIDDER CHECK LIST
(FOR INFORMATION ONLY)

_____ All unit prices have been entered into Expedite Bid in accordance with Subsection 102.06 of the Mississippi Standard Specifications for Road and Bridge Construction.

_____ Expedite bid sheets have been stapled and inserted into the proposal package.

_____ First sheet of SECTION 905--PROPOSAL has been completed.

_____ Second sheet of SECTION 905--PROPOSAL has been completed and signed.

_____ Addenda, if any, have been acknowledged. Second sheet of Section 905 listing the addendum number has been substituted for the original second sheet of Section 905. Substituted second sheet of Section 905 has been properly completed, signed, and added to the proposal.

_____ DBE/WBE percentage, when required by contract, has been entered on last sheet of the bid sheets of SECTION 905 - PROPOSAL.

_____ Form OCR-485, when required by contract, has been completed and signed.

_____ The last sheet of the Expedite bid sheets of SECTION 905--PROPOSAL has been signed.

_____ Combination Bid Proposal of SECTION 905--PROPOSAL has been completed for each project which is to be considered in combination (See Subsection 102.11).

_____ Equal Opportunity Clause Certification, when included in contract, has been completed and signed.

_____ The Certification regarding Non-Collusion, Debarment and Suspension, etc. has been executed in duplicate.

_____ A certified check, cashier's check or bid bond payable to the State of Mississippi in the principal amount of 5% of the bid has been included with project number identified on same. A bid bond has been signed by the bidder and has also been signed or countersigned by a Mississippi Agent or Qualified Nonresident Agent for the Surety with Power of Attorney attached.

_____ ON FEDERAL FUNDED PROJECTS, the Notice To Bidders regarding DUNS Requirements has been completed and included in the contract documents.

_____ Non-resident Bidders: ON STATE FUNDED PROJECTS ONLY, a copy of the current laws regarding any preference for local Contractors from State wherein domiciled has been included. See Subsection 103.01, Mississippi Standard Specifications for Road and Bridge Construction, and Section 31-7-47, MCA, 1972 regarding this matter.

Return the MDOT flash drive with completed EBS file, proposal and contract documents in its entirety in a sealed envelope. DO NOT remove any part of the contract documents; exception - an addendum requires substitution of second sheet of Section 905. A stripped proposal is considered as an irregular bid and will be rejected.

Failure to complete any or all of the applicable requirements will be cause for the proposal to be considered irregular.

(10/2012)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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SECTION 902- CONTRACT FORM, AND SECTION 903- CONTRACT BOND FORMS
PILE DRIVE FORM

(REVISIONS TO THE ABOVE WILL BE INDICATED ON THE SECOND SHEET OF SECTION 905 AS ADDENDA)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 901 - ADVERTISEMENT

Sealed bids will be received by the Mississippi Transportation Commission in the Office of the Contract Administration Engineer, Room 1013, Mississippi Department of Transportation Administration Building, 401 North West Street, Jackson, Mississippi, until 10:00 o'clock A.M., Tuesday, April 23, 2013, and shortly thereafter publicly opened on the Sixth Floor for:

Interchange Construction of the I-10 / I-110 Interchange Including – CD Roads, Leg Ramps, Loop Ramps and the D'lberville Road Interchange, known as State Project No. NHS-0010-01(144) / 105281301 in Harrison County.

The attention of bidders is directed to the predetermined minimum wage rate set by the U. S. Department of Labor under the Fair Labor Standards Act.

The Mississippi Department of Transportation hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, age, disability, religion or national origin in consideration for an award.

Plans and specifications are on file in the offices of the Mississippi Department of Transportation.

Bid proposals must be purchased online at https://shopmdot.ms.gov. Specimen proposals may be viewed and downloaded online at no cost at http://mdot.ms.gov or purchased online. Proposals are available at a cost of Ten Dollars ($10.00) per proposal plus a small convenience fee. Cash or checks will not be accepted as payment.

Plans must be purchased online at https://shopmdot.ms.gov. Costs of plans will be on a per sheet basis plus a small convenience fee. If you have any questions, you can contact the MDOT Plans Print Shop at (601) 359-7460, or e-mail at plans@mdot.state.ms.us. Plans will be shipped upon receipt of payment. Cash or checks will not be accepted as payment.

Bid bond, signed or countersigned by a Mississippi Agent or Qualified Nonresident Agent, with Power of Attorney attached, a Cashier's check or Certified Check for five (5%) percent of bid, payable to STATE OF MISSISSIPPI, must accompany each proposal.

The attention of bidders is directed to the provisions of Subsection 102.07 pertaining to irregular proposals and rejection of bids.

MELINDA L. MCGRATH
EXECUTIVE DIRECTOR

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1 **CODE: (IS)**

DATE: 05/03/2004

SUBJECT: Governing Specifications

The current (2004) Edition of the Standard Specifications for Road and Bridge Construction adopted by the Mississippi Transportation Commission is made a part hereof fully and completely as if it were attached hereto, except where superseded by special provisions, or amended by revisions of the Specifications contained herein. Copies of the specification book may be purchased from the MDOT Construction Division.

A reference in any contract document to controlling requirements in another portion of the contract documents shall be understood to apply equally to any revision or amendment thereof included in the contract.

In the event the plans or proposal contain references to the 1990 Edition of the Standard Specifications for Road and Bridge Construction, it is to be understood that such references shall mean the comparable provisions of the 2004 Edition of the Standard Specifications.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 6 **CODE: (IS)**

DATE: 05/03/2004

SUBJECT: Quantity for Fillet Concrete

Bidders are hereby advised that the following note is shown on the span detail sheets in the bridge plans:

> "The Volume Of Concrete In The Fillets Between The Bottom Of Nominal Slab And Top Of The Beams Has Been Estimated By Using One Half (1/2) Of The Fillet Height At The Bearing Times The Top Flange Width For The Full Length Of The Beam. This Volume Shall Be Used For Final Pay Quantity."

The purpose of this note is to show the method that is used to determine the final pay quantity of fillet concrete. The calculated volume of concrete may or may not be equal to the actual volume of concrete that is placed in the fillet. The volume of fillet concrete used for final pay quantity is based upon the plan fillet height at bearing and a zero inch (0") plan fillet height at midspan.

If bidders feel that variations from these dimensions will be encountered, they should adjust their bid accordingly.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 151 **CODE: (IS)**

DATE: 06/18/2004

SUBJECT: Gopher Tortoises

Bidders are hereby advised that the Contractor will be required to make special considerations regarding gopher tortoises on this project. In addition to the normal required documentation associated with borrow pits, the Contractor shall, for each site used to obtain or dispose of materials associated with this project, provide the Engineer with a letter from a qualified biologist certifying that the site was inspected prior to any clearing of vegetation or disposal of project materials and that the site is not inhabited by gopher tortoises, or appropriate avoidance measures have been installed. No individual lacking the proper State or Federal license shall touch or otherwise harass a gopher tortoise.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 640 **CODE: (IS)**

DATE: 09/26/2005

SUBJECT: Fiber Reinforced Concrete

Bidders are hereby advised that synthetic structural fibers meeting the requirements of Subsection 907-711.04 may be used in lieu of wire mesh in some items of construction. Substitution of fibers for wire mesh will be allowed in the construction of paved ditches, paved flumes, paved inlet apron, driveways, guard rail anchors and pile encasements. Substitution in any other items of work must be approved by the State Construction Engineer prior to use.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 883 **CODE: (IS)**

DATE: 04/28/2006

SUBJECT: Payroll Requirements

Bidders are hereby advised that the Contractor and Subcontractor(s) are required to submit payroll information to the Project Engineers on a weekly basis.

On Federal-Aid Projects, CAD-880, CAD-881 and certified payroll submissions are required each week the Contractor or a Subcontractor performs work on the project. This is addressed in Section V, page 6 of Form FHWA-1273.

On State-Funded Projects, CAD-880 is required each week the Contractor or a Subcontractor performs work on the project.

When no work is performed on either Federal-Aid and State-Funded Projects, the Contractor should only submit CAD-880 showing no work activities.

The Contractor shall make all efforts necessary to submit this information to the Project Engineer in a timely manner. The Engineer will have the authority to suspend the work wholly or in part and to withhold payments because of the Contractor's failure to submit the required information. Submission of forms and payrolls shall be current through the first full week of the month for the estimate period in order for the Project Engineer to process an estimate.

Bidders are advised to review the requirements regarding payroll submissions in Section 110 of the Standard Specifications.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 927 **CODE: (SP)**

DATE: 04/19/2006

SUBJECT: Use of Fly Ash in Stone Matrix Asphalt (SMA)

Bidders are hereby advised that it is not the intent of the Department to disallow the use of fly ash in Stone Matrix Asphalt (SMA). Therefore, the last sentence of of Subsection 703.06.1.2 on page 614 in the 2004 Mississippi Standard Specifications that reads "Fly ash shall not be used in hot mix asphalt pavements" is not applicable for Stone Matrix Asphalt (SMA).

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1322 **CODE: (SP)**

DATE: 1/22/2007

SUBJECT: Non-Use of Precast Drainage Units

Bidders are hereby advised that the use of precast inlets and junction boxes will **NOT** be allowed on this project. Subsection 601.02.3 states that " the Contractor may request approval from the Engineer to furnish and install precast units in lieu of cast-in-place units". Should the Contractor make this request, the request will be denied.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1405 **CODE: (IS)**

DATE: 03/15/2007

SUBJECT: ERRATA AND MODIFICATIONS TO THE 2004 STANDARD SPECIFICATIONS

Page	Subsection	Change
101	201.01	In the second sentence of the first paragraph, change “salvable” to “salvageable”.
107	202.04	In the fourth sentence of the fourth paragraph, change “yard” to “feet”.
107	202.05	In the list of units measurements for 202-B, add “square foot”.
132	211.03.4	In the second sentence of the second paragraph, change “planted” to “plated”.
192	306.02.4	In the first line of the first paragraph, delete the word “be”.
200	307.03.7	In the fourth sentence of the second paragraph, change “lime-fly ash” to “treated”.
236	401.01	Change the header from “Section 403” to “Section 401”.
242	401.02.3.2	In the first sentence of the third full paragraph, add “1/8” in the blank before the inch mark.
250	401.02.6.3	In the second sentence of the first paragraph on page 250, change “rutting over ” ” to “rutting over 1/8" ”.
253	401.02.6.4.2	In the paragraph preceding the table, change “91.0” to “89.0”.
259	401.03.1.4	In the first paragraph, change “92.0 percent” to “the specified percentage (92.0 or 93.0)”.
269	403.03.2	In the table at the top of page 269, change the PI requirement from “ = ” to “ ≤ ”.

278	404.04	In the second sentence, change the subsection from "401.04" to "403.04".
283	409.02.2	Change "PG 64-22" to "PG 67-22".
294	413.02	In the first sentence of the second paragraph, change "707.02.1.3" to "Subsection 707.02.1.3".
340	511.04	In the second sentence of the second paragraph, change "412" to "512".
349	601.03.3	In the first sentence, change "804.03.2" to "804.03.5".
355	603.02	Change the subsection reference for Joint mortar from "707.03" to "714.11".
369	604.04	In the first sentence, change "601.04" to "Subsection 601.04".
427	619.04	Delete the second paragraph.
442	625.04	In the third paragraph, change "626.04" to "Subsection 626.04".
444	626.03.1.2	Delete the third sentence of the first paragraph.
464	631.02	Change the subsection reference for Water from "714.01.0" to "714.01.1".
570	682.03	Change the subsection number from "682-03" to "682.03".
575	683.10.4	Change the subsection number from "683.10.4" to "683.04".
575	683.10.5	Change the subsection number from "683.10.5" to "683.05".
596	701.02	In the table under the column titled "Cementations material required", change Class F, FA" to "Class F FA,".
603	702.11	In the first sentence, change "702.12" to "Subsection 702.12".
612	703.04.2	In the fifth paragraph, delete "Subsection 703.11 and".
616	703.07.2	In the Percentage By Weight Passing Square Mesh Sieves table, change the No. 10 requirement for Class 7 material from "30 - 10" to "30 - 100".

618	703.13.1	In the first sentence of the first paragraph, change "703.09" to "703.06".
618	703.13.2	In the first sentence, change "703.09" to "703.06".
671	712.06.2.2	In the first sentence, change "712.05.1" to "Subsection 712.05.1".
689	714.11.2	In the first sentence, change "412" to "512".
709	715.09.5	In the first sentence of the first paragraph, change "guage" to "gauge".
717	717.02.3.4	In the top line of the tension table, change "1 1/2" to "1 1/8" and change "1 1/8" to "1 1/2".
741	720.05.2.2	In the last sentence of this subsection, change "720.05.2.1" to "Subsection 720.05.2.1".
827	803.03.2.3.7.5.2	In the first sentence of the second paragraph, change "803.03.5.4" to "803.03.2.3.4".
833	803.03.2.6	In the first sentence, change "803.03.7" to "803.03.2.5".
854	804.02.11	In the last sentence of the first paragraph, change "automatically" to "automatic".
859	804.02.13.1.3	In the last sentence, change Subsection "804.02.12.1" to "804.02.12".
879	804.03.19.3.2	In the first sentence of the third paragraph, change "listed on of Approved" to "listed on the Approved".
879	804.03.19.3.2	In the last sentence of the last paragraph, change "804.03.19.3.1" to "Subsection 804.03.19.3.1".
962	814.02.3	In the first sentence, change "710.03" to "Subsection 710.03".
976	820.03.2.1	In the first sentence, change "803.02.6" to "803.03.1.7".
976	820.03.2.2	In the first sentence, change "803.03.9.6" to "803.03.1.9.2".
985	Index	Change the subsection reference for Petroleum Asphalt Cement from "702.5" to "702.05".

985	Index	Change the subsection reference for the Definition of Asphaltic Cement or Petroleum Asphalt from "700.2" to "700.02".
985	Index	Change the subsection reference for Automatic Batchers from "501.03.2.4" to "804.02.10.4".
986	Index	Delete "501.03.2" as a subsection reference for Batching Plant & Equipment.
988	Index	Change the subsection reference for the Central Mixed Concrete from "501.03.3.2" to "804.02.11".
988	Index	Change the subsection reference for the Concrete Batching Plant & Equipment from "501.03.2" to "804.02.11".
999	Index	Delete "501.03.3.3" as a subsection reference for Truck Mixers.
1001	Index	Change the subsection reference for Edge Drain Pipes from "605.3.5" to "605.03.5".
1002	Index	Change the subsection reference for Metal Posts from "713.05.2" to "712.05.2".
1007	Index	Change the subsection reference for Coarse Aggregate of Cement Concrete Table from "703.3" to "703.03".
1007	Index	Change the subsection reference for Composite Gradation for Mechanically Stabilized Courses Table from "703.8" to "703.08".
1009	Index	Delete "501.03.3.3" as a subsection reference for Truck Mixers and Truck Agitators.
1010	Index	Delete reference to "Working Day, Definition of".

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1928 **CODE: (IS)**

DATE: **04/14/2008**

SUBJECT: **Federal Bridge Formula**

Bidders are hereby advised that Federal Highway Administration Publication No. FHWA-MC-94-007, **BRIDGE FORMULA WEIGHTS**, dated January 1994, is made a part of this contract when applicable.

Prior to the preconstruction conference, the Contractor shall advise the Engineer, in writing, what materials, if any, will be delivered to the jobsite via Interstate route(s).

Copies of the **BRIDGE FORMULA WEIGHTS** publication may be obtained by contacting:

Federal Highway Administration
400 7th Street, SW
Washington, DC 20590
(202) 366-2212

or

http://ops.fhwa.dot.gov/freight/sw/brdgcalc/calc_page.htm

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2382 **CODE: (IS)**

DATE: **02/12/2009**

SUBJECT: **Status of Right-of-Way**

Although it is desirable to have acquired all rights-of-way and completed all utility adjustments and work to be performed by others prior to receiving bids, sometimes it is not considered to be in the public interest to wait until each and every such clearance has been obtained. The bidder is hereby advised of possible unacquired rights-of-way, relocatees and utilities which have not been completed.

The status of right-of-way acquisition, utility adjustments, encroachments, potentially contaminated sites and asbestos containation are set forth in the following attachments.

In the event right of entry is not available to ALL parcels of right-of-way and/or all work that is to be accomplished by others on the date set forth in the contract for the Notice to Proceed is not complete, the Department will issue a restricted Notice to Proceed.

STATUS OF RIGHT-OF-WAY
NHS-0010-01(144)
105281/301000
I-10
Harrison County

February 26, 2013

All rights of way and legal rights of entry have been acquired, **except**:

Parcel 035-2-00 W, purchased from the City of D'Iberville, is not clear. The City is in the process of building a new fire station to replace the one being taken by this acquisition. This parcel must be restricted from the contractor until August 1, 2013.

The Parcel is in the southwest quadrant of the I-110 and Pops Ferry Road Interchange beginning approximately at station 385 +00 unto approximately 391 + 00. A copy of the right of way map is attached showing the parcel.

STATUS OF POTENTIALLY CONTAMINATED SITES
NHS-0010-01(144)
105281-301000
Harrison
County
February 14, 2013

This project has been inspected and there was no visible indication of potentially contaminated sites within the proposed right of way.

ASBESTOS CONTAMINATION STATUS OF BUILDINGS
TO BE REMOVED BY THE CONTRACTOR
NHS-0010-01(144)
105281-301000
Harrison County
February 25, 2013

Reference is made to notices to bidders entitled "Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP)" and "Removal of Obstructions".

The following pertinent information is furnished concerning asbestos containing materials (ACMs), if any, found in buildings to be removed by the Contractor.

There is a restricted area on this project from station #385+00 to station #391+00, parcel 035-2-00-W, City of D'Iberville Fire Station, this parcel to be cleared by June 1st, 2013.

UTILITY STATUS REPORT
NHS-0010-01(144)
105281301
HARRISON COUNTY(IES)
February 13, 2013

This is to certify that the above captioned project has been inspected and there are no known utilities in conflict with the project.

ENCROACHMENT CERTIFICATION

NHS-0010-01(144)

105281301

HARRISON COUNTY(IES)

February 14, 2013

This is to certify that the above captioned project has been inspected and no encroachments were found.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2418 **CODE: (SP)**

DATE: 02/19/2009

SUBJECT: Clearing and/or Grubbing

All items resulting from clearing and/or grubbing operations shall be chipped on the project right-of-way and disposed of by placement in an approved landfill site, or as directed by the Engineer. Burning of these items **will not** be allowed.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2818 **CODE: (SP)**

DATE: **10/01/2009**

SUBJECT: **Non-Quality Control / Quality Assurance Concrete**

Bidders are advised that the following pay items will not be accepted based on the Quality Control / Quality Assurance (QC/QA) requirements of Section 804 of the specifications. The acceptance of these pay items will be based on sampling and testing at the project site by MDOT forces. The Contractor is required to submit mix designs to accomplish this work in accordance with Section 804 and perform normal Quality Control functions at the concrete plant. Acceptance will be in accordance with the requirements of 907-601, Structural Concrete, and TMD-20-04-00-000. At the discretion of the Engineer, the Contractor may request that the concrete be accepted based on QC/QA requirements.

Pay Item	Description
221	Paved Ditches
601	Minor Structures - manholes, inlets, catch basins, junction boxes, pipe headwalls, and pipe collars.
606	Guardrail Anchors
607	Fence Post Footings
608	Sidewalks
609	Curb and Gutter
614	Driveways
616	Median and Island Pavement
630	Sign Footings, except Overhead Sign Supports

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2937 **CODE: (SP)**

DATE: 01/11/2010

SUBJECT: Reduced Speed Limit Signs

Bidders are advised that all black and white speed limits signs that are used to reduce the speed limit through construction zones shall be covered or removed during times when the Contractor is not performing work. If the Contractor has a routine daytime operation and is not working at night, the signs shall be covered or removed during the nighttime when there is no work activity.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3039 **CODE: (SP)**

DATE: 03/23/2010

SUBJECT: Alternate Asphalt Mixture Bid Items

Bidders are advised that the asphalt mixture used on this project will be bid as an alternate pay item: Hot Mix Asphalt (HMA) or Warm Mix Asphalt (WMA). Bidders must select one of the alternates at the time of bid. **The Contractor must use the selected asphalt mixture, HMA or WMA, throughout the entire project.**

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3131 **CODE: (SP)**

DATE: 06/24/2010

SUBJECT: Temporary Traffic Paint

Bidders are hereby advised that the temporary traffic paint for this project can be waterborne paint as specified in the 2004 Mississippi Standard Specifications For Road and Bridge Construction or fast dry solvent traffic paint meeting the requirements set out in 907-710-1 (Fast Dry Solvent Traffic Paint).

Payment for all temporary traffic paint shall be paid under the appropriate 619 pay items.

When using fast dry solvent traffic stripe, no paint can be sprayed or placed on the ground during set-up or clean-up.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3242 **CODE: (SP)**

DATE: **09/21/2010**

SUBJECT: **Warm Mix Asphalt**

Bidders are advised that MDOT approved products and processes for the production of Warm Mix Asphalt is available at the following MDOT website.

http://www.gomdot.com/Divisions/Highways/Resources/MPL/Home.aspx

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3581 **CODE: (SP)**

DATE: 6/10/2011

SUBJECT: Storm Water Discharge Associated with Construction Activity (≥ 5 Acres)

PROJECT: NHS-0010-01(144) / 105281301 – Harrison County

A Construction Storm Water General NPDES Permit to discharge storm water associated with construction activity is required.

The Department has acquired Certificate of Permit Coverage MSR-106344 under the Mississippi Department of Environmental Quality's (MDEQ) Storm Water Large Construction General Permit. Projects issued a certificate of permit coverage are granted permission to discharge treated storm water associated with construction activity into State waters. Copies of said permit, completed Large Construction Notice of Intent (LCNOI), and Storm Water Pollution Prevention Plan (SWPPP) are on file with the Department.

Prior to the execution of the contract, the successful bidder shall execute and deliver to the Executive Director an original signed copy of the completed Prime Contractor Certification Forms.

Failure of the bidder to execute and file the completed Prime Contractor Certification Forms shall be just cause for the cancellation of the award.

The executed Prime Contractor Certification Forms shall be prima facie evidence that the bidder has examined the permit, is satisfied as to the terms and conditions contained therein, and that the bidder has the primary responsibility for meeting all permit terms including, but not limited to, the inspection and reporting requirements. For this project, the Contractor shall furnish, set up and read, as needed, an on-site rain gauge.

The Contractor shall make inspections in accordance with condition No. S-4, page 22, and shall furnish the Project Engineer with the results of each weekly inspection as soon as possible following the date of inspection. A copy of the inspection form is provided with the packet. The weekly inspections must be documented monthly on the Inspection and Certification Form. The Contractor's representative and the Project Engineer shall jointly review and discuss the results of the inspections so that corrective action can be taken. The Project Engineer shall retain copies of the inspection reports.

The Engineer will have the authority to suspend all work and/or withhold payments for failure of the Contractor to carry out provisions of MDEQ's Storm Water Construction General Permit, the erosion control plan, updates to the erosion control plan, and /or proper maintenance of the BMPs

Upon successful completion of all permanent erosion and sediment controls, accepted and documented by the full maintenance release, the Construction Division shall submit a completed Request for Termination (RFT) of Coverage to the Office of Pollution Control.

Securing a permit (s) for storm water discharge associated with the Contractor's activity on any other regulated area the Contractor occupies, shall be the responsibility of the Contractor.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3612 **CODE: (SP)**

DATE: 08/10/2011

SUBJECT: Additional Erosion Control Requirements

Bidders are hereby advised of the following requirements that relate to erosion control activities on the project.

THE MAXIMUM TOTAL ACREAGE THAT CAN BE DISTURBED, AT ONE TIME, ON THE PROJECT IS NINETEEN (19) ACRES. THE CONTRACTOR SHALL BE REQUIRED TO STABILIZE DISTURBED AREAS PRIOR TO OPENING UP ADDITIONAL SECTIONS OF THE PROJECT. STABILIZED SHALL BE WHEN THE DISTURBED AREA MEETS ONE OF THE FOLLOWING CRITERIA:

- **THE AREA HAS BEEN GRASSED, EITHER TEMPORARY OR PERMANENT, AND MULCHED ACCORDING TO THE SPECIFICATIONS,OR**
- **A CRUSHED STONE COURSE OR A LIFT OF ASPHALT PAVEMENT HAS BEEN PLACED, OR**
- **THE AREA HAS BEEN CHEMICALLY TREATED USING PORTLAND CEMENT OR LIME-FLY ASH, AND SEALED.**

DISTURBED AREAS INCLUDE THE ROADBED, SLOPES AND REMAINING AREA OUT TO THE ROW LINE.

Clearing and Grubbing: Prior to beginning any clearing and grubbing operations on the project, controls shall be in place to address areas such as drainage structures, wetlands, streams, steep slopes and any other sensitive areas as directed by the Engineer. Clearing and grubbing should be limited to the minimum area necessary to construct the project. Grubbing operations should be minimized in areas outside the construction limits and stumps should be cut off flush with the existing ground elevations. A buffer area of at least fifteen (15) feet shall be in place adjacent to the right-of-way line and at least five (5) feet adjacent to stream banks. The buffer area can either be the existing vegetation that is left undisturbed or re-established by planting new vegetation if clearing and grubbing was required.

Unclassified Excavation: Cut sections shall be graded in accordance with the typical sections and plan grades. Permanent erosion control BMP's should be placed as soon as possible after the cut material has been moved. Fill sections that are completed shall have permanent erosion control BMP's placed. Fill sections that are not completed will be either permanently or temporarily grassed until additional material is made available to complete these sections. All unclassified excavation on the project will still be required to be moved prior to incorporating any borrow excavation on the project. The contractor may have to stockpile unclassified excavation in order to comply with the nineteen (19) acre requirement. No additional compensation will be made for stockpiling operations.

Disturbed areas that remain inactive for a period of more than fourteen (14) days shall be temporary grassed and mulched. Temporary grassing and mulching shall only be paid one time for a given area.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3655 **CODE: (SP)**

DATE: 10/04/2011

SUBJECT: Type III Barricade Rails

Bidders are advised that the use of 2-inch nominal thickness timber for rails on Type III barricades has not been approved by NCHRP as a crashworthy device. Therefore, the use of 2-inch nominal thickness timbers will not be allowed for rails on Type III Barricades. Timber rails for Type III Barricades shall be as follows.

- For barricades up to four feet (4') wide, the maximum thickness of timber rails shall be one inch (1") and the material shall be pine timber or ¾-inch ACX plywood.

- For barricades more than four feet (4') wide, timber rails shall be constructed of ¾-inch ACX plywood.

A list of crashworthy Type III Barricades can be found at the below FHWA website.

http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/wzd/

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3893 **CODE: (SP)**

DATE: 04/10/2012

SUBJECT: Petroleum Products Base Prices

Bidders are advised that monthly petroleum products base prices will be available at the web site listed below. Current monthly prices will be posted to this web site on or before the 15th of each month. Bidders are advised to use the petroleum base prices on this web site when preparing their bids. The current monthly petroleum products base prices will be acknowledged by the Bidder and become part of the contract during the execution process.

Monthly Petroleum Products Base Prices can be viewed at:

http://sp.gomdot.com/Contract%20Administration/BidSystems/Pages/letting%20calendar.aspx

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3980 **CODE: (SP)**

DATE: 07/25/2012

SUBJECT: Questions Regarding Bidding

Bidders are advised that all questions that arise regarding the contract documents (proposal) or plans on this project shall be directed to the www.gomdot.com current letting webpage. Click on the call number for this project to open an email form to submit your question. Questions must be submitted by 8:00 a.m. on Monday prior to the letting on Tuesday. Answers to questions will be posted by 6:00 p.m. on Monday prior to the letting on Tuesday. Answers can be viewed by clicking on Q&A link under the Proposal Addenda column.

It shall be the Bidders responsibility to familiarize themselves with the questions and answers that have been submitted on this project.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4084 **CODE: (SP)**

DATE: 08/29/2012

SUBJECT: Stay-In-Place Metal Forms

Bidders are advised that any reference in the plans or contract documents to the non-use of Stay-In-Place metal forms shall be disregarded. The Contractor will be allowed to use Stay-In-Place metal forms meeting the requirements of Subsection 907-804.03.14.2.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4085 **CODE: (SP)**

DATE: 08/28/2012

SUBJECT: Temporary Steel Bracing

Bidders are advised that temporary steel bracing will be required when beams are to be placed over railroads and roadways. The detail sheet with requirements for temporary beam bracing can be downloaded or viewed at the below ftp site.

http://ftp.mdot.state.ms.us/ftp/Bridge/Bracing

SUPPLEMENT TO NOTICE TO BIDDERS NO. 4121

DATE: 09/19/2012

The contract goal is 10 percent for the Disadvantaged Business Enterprise. The low bidder is required to submit Form OCR-481 for all DBEs. Bidders are advised to check the bid tabulation link for this project on the MDOT website at:

http://sp.gomdot.com/Contract%20Administration/BidSystems/Pages/letting%20calendar.aspx

Bid tabulations are usually posted by 3:00 pm on Letting Day.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4121 **CODE: (SP)**

DATE: 09/18/2012

SUBJECT: DISADVANTAGED BUSINESS ENTERPRISES IN SPECIAL FUNDED PROJECTS

The Department has developed a Disadvantaged Business Enterprise Program that is applicable to this contract and is made a part thereof by reference, except approvals and concurrences by the Federal Highway Administration is not applicable to this contract since it is not financed in whole or in part with Federal Funds.

Copies of the program may be obtained from:

Office of Civil Rights
Mississippi Department of Transportation
P. O. Box 1850
Jackson, Mississippi 39215-1850

POLICY

It is the policy of the Mississippi Department of Transportation to provide a level playing field, to foster equal opportunity in all contracts, to improve the flexibility of the DBE Program, to reduce the burdens on small businesses, and to achieve that amount of participation that would be obtained in a non-discriminatory market place. In doing so, it is the policy of MDOT that there will be no discrimination in the award and performance of these contracts on the basis of race, color, sex, age, religion, national origin, or any handicap.

ASSURANCES THAT CONTRACTORS MUST TAKE:

MDOT will require that each contract which MDOT signs with a subrecipient or a Contractor, and each subcontract the Prime Contractor signs with a Subcontractor, includes the following assurances:

> "The Contractor, subrecipient or Subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as MDOT deems appropriate."

DEFINITIONS

For purposes of this provision the following definitions will apply:

"Disadvantaged Business" means a small business concern: (a) which is at least 51 percent owned by one or more socially and economically disadvantaged individual(s) or in the case of

any publicly owned business, at least 51 percent of the stock of which is owned by one or more socially and economically disadvantaged individual(s); and (b) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individual(s) who own it. It is important to note that the business owners themselves must control the operations of the business. Absentee ownership or title ownership by an individual who does not take an active role in controlling the business is not consistent with eligibility as a DBE under CFR 49 Part 26.71.

CONTRACTOR'S OBLIGATION

The Contractor and all Subcontractors shall take all necessary and reasonable steps to ensure that DBE firms compete for and participate in the performance of a portion of the work in this contract and shall not discriminate on the basis of race, color, national origin, religion or sex. Failure on the part of the Contractor to carry out the DBE requirements of this contract constitutes a breach of contract and after proper notification the Department may terminate the contract or take other appropriate action as determined by the Department.

CONTRACT GOAL

The goal for participation by DBEs is established for this contract in the attached Supplement. The Contractor shall exercise all necessary and reasonable steps to ensure that participation is equal to or exceeds the contract goal.

The percentage of the contract that is proposed for DBEs shall be so stated on the last bid sheet of the proposal.

The apparent lowest responsive bidder shall submit to the Office of Civil Rights Form OCR-481 signed by the Prime Contractor and the DBE Subcontractors, no later than the 10th day after opening of the bids.

FORMS ARE AVAILABLE FROM THE OFFICE OF CIVIL RIGHTS

The OCR-481 Form must contain the following information:

The name and address of each certified DBE Contractor/Supplier;

The Reference Number, percent of work and the dollar amount of each item. If a portion of an item is subcontracted, a breakdown of that item including quantities and unit price must be attached, detailing what part of the item the DBE firm is to perform and who will perform the remainder of the item.

If the DBE Commitment shown on the last bid sheet of the proposal, does not equal or exceed the contract goal, the bidder must submit, with the proposal, information to satisfy the Department that adequate good faith efforts have been made to meet the contract goal.

Failure of the lowest bidder to furnish acceptable proof of good faith efforts, submitted with the bid proposal, shall be just cause for rejection of the proposal. Award may then be made to the next lowest responsive bidder or the work may be readvertised.

The following factors are illustrative of matters the Department will consider in judging whether or not the bidder has made adequate good faith effort to satisfy the contract goal.

(1) Whether the bidder attended the pre-bid meeting that was scheduled by the Department to inform DBEs of subcontracting opportunities;

(2) whether the bidder advertised in general circulation, trade association, and minority-focus media concerning the subcontracting opportunities;

(3) whether the bidder provided written notice to a reasonable number of specific DBEs that their interest in the contract is being solicited;

(4) whether the bidder followed up initial solicitations of interest by contacting DBEs to determine with certainty whether they were interested;

(5) whether the bidder selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the contract goal;

(6) whether the bidder provided interested DBEs with adequate information about the plans, specifications and requirements of the contract;

(7) whether the bidder negotiated in good faith with interested DBEs and did not reject them as unqualified without sound reasons based on a thorough investigation of their capabilities; and

(8) whether the bidder made efforts to assist interested DBEs in obtaining any required bonding or insurance.

(9) whether the bidder has written notification to certified DBE Contractors soliciting subcontracting for items of work in the contract.

(10) whether the bidder has a statement of why an agreement was not reached.

The bidder's execution of the signature portion of the proposal shall constitute execution of the following assurance:

The bidder hereby gives assurance that a good faith effort has been made to meet the contract goal for DBE participation for which this proposal is submitted.

DIRECTORY

A list of "Certified DBE Contractors" which have been certified as such by the Mississippi Department of Transportation and other Unified Certification Partners (UPC) can be found on the Mississippi Department of Transportation website at www.gomdot.com. The DBE firm must be certified at the time the project is let and approved by MDOT to count towards meeting the DBE goal.

REPLACEMENT

If a DBE Subcontractor cannot perform satisfactorily, and this causes the OCR-481 commitment to fall below the contract goal, the Contractor shall take all necessary reasonable steps to replace the DBE with another certified DBE Subcontractor or submit information to satisfy the Mississippi Department of Transportation that adequate good faith efforts have been made to replace the DBE. The replacement DBE must be a DBE who was on the Department's list of "Certified DBE Contractors" when the job was let, and who is still active All DBE replacements must be approved by the Department.

Under no circumstances shall the Prime or any Subcontractor perform the DBE's work (as shown on the OCR-481) without prior written approval from the Department. See "Sanctions" at the end of this document for penalties for performing DBE's work.

When a Contractor proposes to substitute/replace/terminate a DBE that was originally named on the OCR-481, the Contractor must obtain a release, in writing, from the named DBE explaining why the DBE Subcontractor cannot perform the work. A copy of the original DBE's release must be attached to the Contractor's written request to substitute/replace/terminate along with appropriate subcontract forms for the substitute/replacement/terminated Subcontractor, all of which must be submitted to the DBE Coordinator and approved, in advance, by MDOT.

GOOD FAITH EFFORTS

To demonstrate good faith efforts to replace any DBE that is unable to perform successfully, the Contractor must document steps taken to subcontract with another certified DBE Contractor. Such documentation shall include no less than the following:

(1) Proof of written notification to certified DBE Contractors by certified mail that their interest is solicited in subcontracting the work defaulted by the previous DBE or in subcontracting other items of work in the contract.

(2) If the Prime Contractor is a certified DBE firm, only the value of the work actually performed by the DBE Prime can be counted towards the project goal, along with any work subcontracted to a certified DBE firm.

(3) If the Contractor is not a DBE, the work subcontracted to a certified DBE Contractor will be counted toward the goal.

(4) The Contractor may count toward the goal a portion of the total dollar value of a contract with a joint venture eligible under the standards of this provision equal to the percentage of the DBE partner in the joint venture.

(5) Expenditures to DBEs that perform a commercially useful function may be counted toward the goal. A business is considered to perform a commercially useful function when it is responsible for the execution of a distinct element of the work and carries out its responsibilities by actually performing, managing, and supervising the work involved.

(6) The Contractor may count 100% of the expenditures for materials and supplies obtained from certified DBE suppliers and manufacturers that produce goods from raw materials or substantially alters them for resale provided the suppliers and manufacturers assume the actual and contractual responsibility for the provision of the materials and supplies. The Contractor may count sixty percent (60%) of the expenditures to suppliers that are not manufacturers, provided the supplier performs a commercially useful function in the supply process. Within 30 days after receipt of the materials, the Contractor shall furnish to the DBE Coordinator invoices from the certified supplier to verify the DBE goal.

(7) Any work that a certified DBE firm subcontracts or sub-subcontracts to a non-DBE firm will not count towards the DBE goal.

(8) Only the dollars actually paid to the DBE firm may be counted towards the DBE goal.

Failure of the Contractor to demonstrate good faith efforts to replace a DBE Subcontractor that cannot perform as intended with another DBE Subcontractor, when required, shall be a breach of contract and may be just cause to be disqualified from further bidding for a period of up to 12 months after notification by certified mail.

PREBID MEETING

A pre-bid meeting will be held in Amphitheater 1 & 2 of the Hilton Jackson located at I-55 and County Line Road, Jackson, Mississippi at 2:00 P.M. on the day preceding the date of the bid opening.

This meeting is to inform DBE firms of subcontracting and material supply opportunities. Attendance at this meeting is considered of prime importance in demonstrating good faith effort to meet the contract goal.

PARTICIPATION / DBE CREDIT

Participation shall be counted toward meeting the goal in this contract as follows:

(1) If the Prime Contractor is a certified DBE firm, only the value of the work actually performed by the DBE Prime can be counted towards the project goal, along with any work subcontracted to a certified DBE firm.

(2) If the Prime Contractor is not a DBE, the work subcontracted to a certified DBE Contractor will be counted toward the goal.

(3) The Contractor may count toward the goal a portion of the total dollar value of a contract with a joint venture eligible under the standards of this provision equal to the percentage of the DBE partner in the joint venture. The joint venturer must submit a Joint Venture Eligibility Form provided by the Mississippi Department of Transportation.

(4) Expenditures to DBEs that perform a commercially useful function may be counted toward the goal. A business is considered to perform a commercially useful function when it is responsible for the execution of a distinct element of the work and carries out its responsibilities by actually performing, managing, and supervising the work involved.

(5) The Contractor may count 100% of the expenditures for materials and supplies obtained from certified DBE suppliers and manufacturers that produce goods from raw materials or substantially alters them for resale provided the suppliers and manufacturers assume the actual and contractual responsibility for the provision of the materials and supplies. The Contractor may count 60 percent of the expenditures to suppliers that are not manufacturers, provided the supplier performs a commercially useful function in the supply process. Within 30 days after receipt of the materials, the Prime Contractor shall furnish to the DBE Coordinator invoices from the certified supplier to verify the DBE goal.

(6) Any work that a certified DBE firm subcontracts or sub-subcontracts to a non-DBE firm will not count towards the DBE goal

(7) Only the dollars actually paid to the DBE firm may be counted towards the DBE goal.

AWARD

Award of this contract to the low bidder will be contingent upon the following condition:

(1) Bidder must submit to the Office of Civil Rights for approval, Form OCR-481 (DBE Commitment) no later than the 10th day after opening of the bids, or submit information with the bid proposal to satisfy the Department that adequate good faith efforts have been made to meet the contract goal. For answers to questions regarding Form OCR-481, contact the MDOT Office of Civil Rights at (601) 359-7466.

(2) Bidder must submit a list of all firms that submitted quotes for material supplies or items to be subcontracted. This information must be submitted on Form OCR-485 in the back of the contract proposal. Form OCR-485 must be signed and submitted **with the bid proposal**.

Prior to the start of any work, the bidder must notify the Project Engineer, in writing, of the name of the designated "DBE Liaison Officer" for this project.

DEFAULT

In the event the Contractor defaults on this project and the Surety Company is called upon to complete the contract, the DBEs named on the original OCR-481 forms must be given the opportunity to perform the work subcontracted to them by the original Contractor unless the DBE requests, in writing, to be released. The DBE commitment percentage entered on the last bid sheet of the proposal shall remain in force as a provision of the contract, but only the contract goal established by MDOT in this proposal must be met or exceeded to fulfill the terms of the contract. The Contractor may list DBE Subcontractors and items that exceed MDOT's contract goal, but should unforeseen problems arise that would prevent a DBE from completing its total commitment percentage, the Contractor will meet the terms of the contract as long as it meets or exceeds MDOT's Contract Goal. For additional information, refer to "Replacement" section of this Notice.

DBE REPORTS

(1) OCR-481: Refer to "CONTRACT GOAL" section of this Notice to Bidders for information regarding this form.

(2) OCR-482: At the conclusion of the project the Contractor will submit to the Project Engineer for verification of quantities and further handling Form OCR-482 whereby the Contractor certifies to the amounts of payments made to each Contractor/Supplier. The Project Engineer shall submit the completed Form OCR-482 to the DBE Coordinator (Office of Civil Rights). Final acceptance of the project is dependent upon Contract Administration Division's receipt of completed Form OCR-482 which they will receive from the Office of Civil Rights.

(3) OCR-483: The Project Engineer/Inspector will complete Form OCR-483, the Commercially Useful Function (CUF) Performance Report, in accordance with MDOT S.O.P. No. OCR-03-09-01-483. Evaluations reported on this form are used to determine whether or not the DBE firm is performing a CUF. The Prime Contractor should take corrective action when the report contains any negative evaluations. DBE credit may be disallowed and/or other sanctions imposed if it is determined the DBE firm is not performing a CUF. This form should also be completed and returned to the DBE Coordinator (Office of Civil Rights).

(4) OCR-484: Each month, the Contractor will submit to the Project Engineer OCR-484 certifying payments to all Subcontractors.

(5) OCR-485: The bidder must submit **with the bid proposal** a list of all firms that submitted quotes for material supplies or items to be subcontracted.

(6) OCR-487: Only used by Prime Contractors that are certified DBE firms. This form is used in determining the exact percentage of DBE credit for the specified project. It should be returned to MDOT with the OCR-481 form, or can also

be returned with the Permission to Subcontract forms (CAD-720 or CAD-725).

SANCTIONS

The Department has the option to enforce any of the following penalties for failure of the Prime Contractor to fulfill the DBE goal as stated on the OCR-481 form or any violations of the DBE program guidelines:

(1) Disallow credit towards the DBE goal

(2) Withhold progress estimate payments

(3) Deduct from the final estimate an amount equal to the unmet portion of the DBE goal

(4) Recover an amount equal to the unmet contract goal

(5) Debar the Contractor involved from bidding on Mississippi Department of Transportation projects.

(6) Deduct from the Contractor's final estimate all or any combination of the following:

Offense	Percentage of the monetary amount disallowed from (1) above	Lump Sum
# 1	10%	$ 5,000 or both
# 2	20%	$ 10,000 or both
# 3	40%	$ 20,000 & debarment

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4189 **CODE: (SP)**

DATE: 11/08/2012

SUBJECT: Rumble Stripe

Bidders are hereby advised that when edge lines are placed over rumble strips, the pavement marking stripe must be applied using the atomization/spray method instead of extrusion / ribbon method. To ensure the proper alignment of the rumble stripes, the Contractor will be required to place a layout line to be followed during installation of the edge lines over the rumble strips.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4214 **CODE: (IS)**

DATE: 11/29/2012

SUBJECT: Safety Apparel

Bidders are advised that the Code of Federal Regulations CFR 23 Part 634 final rule was adopted November 24, 2006 with an effective date of November 24, 2008. This rule requires that "All workers within the right-of-way of a Federal-Aid Highway who are exposed either to traffic (vehicles using the highway for the purposes of travel) or to construction equipment within the work area shall wear high-visibility safety apparel". High-visibility safety apparel is defined in the CFR as "personnel protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage, and that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled American National Standard for High-Visibility Safety Apparel and Headwear". All workers on Mississippi State Highway right-of-way shall comply with this Federal Regulation. Workers are defined by the CFR as "people on foot whose duties place them within the right-of way of a Federal-Aid Highway, such as highway construction and maintenance forces, survey crews, utility crews, responders to incidents within the highway right-of-way, and law enforcement personnel when directing traffic, investigating crashes, and handling lane closures, obstructed roadways, and disasters within the right-of-way of a Federal-Aid Highway".

More information regarding high visibility safety apparel can be found at the following sites.

http://www.gpo.gov/fdsys/pkg/CFR-2008-title23-vol1/pdf/CFR-2008-title23-vol1-sec634-1.pdf

http://ops.fhwa.dot.gov/wz/resources/policy.htm#hv

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4311 **CODE: (SP)**

DATE: 2/12/2013

SUBJECT: Contract Time

PROJECT: NHS-0010-01(144) / 105281301 – Harrison County

The calendar date for completion of work to be performed by the Contractor for this project shall be **August 24, 2015** which date or extended date as provided in Subsection 907-108.06 shall be the end of contract time. It is anticipated that the Notice of Award will be issued no later than **May 14, 2013** and the effective date of the Notice to Proceed / Beginning of Contract Time will be **July 15, 2013**.

Should the Contractor request a Notice to Proceed earlier than **July 15, 2013** and it is agreeable with the Department for an early Notice to Proceed, the requested date will become the new Notice to Proceed / Beginning of Contract Time date. If an erosion control plan is required, the Contractor's erosion control plan will have to be approved prior to issuing an early Notice to Proceed.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4312

DATE: 3/26/2013

SUBJECT: Specialty Items

PROJECT: NHS-0010-01(144) / 105281301 - Harrison County

Pursuant to the provisions of Section 108, the following work items are hereby designated as "Specialty Items" for this contract. Bidders are reminded that these items must be subcontracted in order to be considered as specialty items.

CATEGORY: CURBING, SIDEWALKS, GUTTERS

Line No	Pay Item	Description
1160	609-B001	Concrete Curb, Header
1170	609-D001	Combination Concrete Curb and Gutter Type 1
1180	609-D005	Combination Concrete Curb and Gutter Type 3B Modified
1190	609-D006	Combination Concrete Curb and Gutter Type 1 Modified
1200	609-D007	Combination Concrete Curb and Gutter Type 2 Modified

CATEGORY: EROSION CONTROL

Line No	Pay Item	Description
0420	212-B001	Standard Ground Preparation
0430	213-B001	Combination Fertilizer, 13-13-13
0440	213-C001	Superphosphate
0450	216-A001	Solid Sodding
0460	217-A001	Ditch Liner
0470	219-A001	Watering
0480	220-A001	Insect Pest Control
2090	907-225-A001	Grassing
2100	907-225-B001	Agricultural Limestone
2110	907-225-C001	Mulch, Vegetative Mulch
2120	907-226-A001	Temporary Grassing

CATEGORY: FENCE, GATES

Line No	Pay Item	Description
1070	607-B006	60" Type II Chain Link Fence, Class II
1080	607-E001	Barbed Wire Fence, Single Strand
1090	607-P1007	Line Post, 7' x 1 1/2" Galvanized Steel
1100	607-P1009	Line Post, 9' x 2" Galvanized Steel
1110	607-P1010	Line Post, 10' x 2" Galvanized Steel
1120	607-P2019	Brace Post, 10' x 2" Galvanized Steel
1130	607-P2022	Brace Post, 12' x 2" Galvanized Steel
1140	607-P2023	Brace Post, 8' x 2" Galvanized Steel

CATEGORY: GUARDRAIL, GUIDERAIL

Line No	Pay Item	Description
1020	606-B001	Guard Rail, Class A, Type 1
1030	606-C001	Guard Rail, Cable Anchor Type 1, Wood Post
1040	606-D008	Guard Rail, Bridge End Section, Type H
1050	606-D012	Guard Rail, Bridge End Section, Type I
1060	606-E001	Guard Rail, Terminal End Section

CATEGORY: LIGHTING, ALUMINUM TRUSSED ARM

Line No	Pay Item	Description
1880	682-A003	Underground Branch Circuit, AWG 1/0, 2 Conductor
1890	682-A015	Underground Branch Circuit, AWG 2, 3 Conductor
1900	682-A025	Underground Branch Circuit, AWG 4, 3 Conductor
1910	682-A031	Underground Branch Circuit, AWG 6, 3 Conductor
1920	682-B001	Underground Branch Circuit, Jacked or Bored, 4" Conduit Only
1930	682-D001	Underground Pull Box
1940	682-F001	Secondary Power Controllers
1950	683-A025	Lighting Assembly, High Mast, Type 110-4
1960	683-A028	Lighting Assembly, High Mast, Type 110-5
1970	683-A031	Lighting Assembly, High Mast, Type 110-6
1980	683-A043	Lighting Assembly, High Mast, Type 120-4
1990	683-A046	Lighting Assembly, High Mast, Type 120-5
2000	683-A049	Lighting Assembly, High Mast, Type 120-6
2010	683-A052	Lighting Assembly, High Mast, Type 120-8
2020	683-B115	Lighting Assembly, Low Mast, Type 50-1-20-250
2030	685-D001	Service Pole
2040	686-A001	Relocation of Existing Lighting Assemblies
3230	907-683-G1004	Repair of High Mast Lighting Assembly, Type 130-4-S
3240	907-683-G1005	Repair of High Mast Lighting Assembly, Type 130-5-S
3250	907-683-G1026	Repair of High Mast Lighting Assembly, Type 130-6-S
3260	907-684-A002	Pole Foundation, 36" Diameter
3270	907-684-A003	Pole Foundation, 48" Diameter

CATEGORY: PAVEMENT STRIPING AND MARKING

Line No	Pay Item	Description
1480	627-K001	Red-Clear Reflective High Performance Raised Markers
1490	627-L001	Two-Way Yellow Reflective High Performance Raised Markers
1500	627-M001	One-Way Clear Reflective High Performance Raised Markers
2870	907-626-A003	6" Thermoplastic Traffic Stripe, Skip White
2880	907-626-C003	6" Thermoplastic Double Drop Edge Stripe, Continuous White
2890	907-626-D004	6" Thermoplastic Traffic Stripe, Skip Yellow
2900	907-626-E004	6" Thermoplastic Traffic Stripe, Continuous Yellow
2910	907-626-F003	6" Thermoplastic Double Drop Edge Stripe, Continuous Yellow
2920	907-626-G004	Thermoplastic Detail Stripe, White
2930	907-626-G005	Thermoplastic Detail Stripe, Yellow

CATEGORY: PAVEMENT STRIPING AND MARKING

Line No	Pay Item	Description
2940	907-626-H005	Thermoplastic Legend, White
2950	907-627-P001	Two-Way Blue Reflective High Performance Raised Markers

CATEGORY: SURVEY AND STAKING

Line No	Pay Item	Description
3280	907-699-A002	Roadway Construction Stakes

CATEGORY: TRAFFIC CONTROL - PERMANENT

Line No	Pay Item	Description
1510	630-A001	Standard Roadside Signs, Sheet Aluminum, 0.080" Thickness
1520	630-A002	Standard Roadside Signs, Sheet Aluminum, 0.125" Thickness
1530	630-B001	Interstate Directional Signs, Bolted Extruded Aluminum Panels, Ground Mounted
1540	630-B002	Interstate Directional Signs, Bolted Extruded Aluminum Panels, Overhead Mounted
1550	630-C003	Steel U-Section Posts, 3.0 lb/ft
1560	630-D004	Structural Steel Beams, W6 x 12
1570	630-D010	Structural Steel Beams, W12 x 26
1580	630-E001	Structural Steel Angles & Bars, 3" x 3" x 1/4" Angles
1590	630-E004	Structural Steel Angles & Bars, 7/16" x 2 1/2" Flat Bar
1600	630-F001	Delineators, Guard Rail, White
1610	630-F002	Delineators, Guard Rail, Yellow
1620	630-F006	Delineators, Post Mounted, Single White
1630	630-F007	Delineators, Post Mounted, Single Yellow
1640	630-F008	Delineators, Post Mounted, Double White
1650	630-F009	Delineators, Post Mounted, Double Yellow
1660	630-K002	Welded & Seamless Steel Pipe Posts, 3 1/2"
1670	630-K003	Welded & Seamless Steel Pipe Posts, 4"
1680	640-A001	Traffic Signal Heads, Type 1
1690	640-A006	Traffic Signal Heads, Type 3
1700	640-A016	Traffic Signal Heads, Type 1 LED
1710	640-A027	Traffic Signal Head, Type 5T LED
1720	640-A036	Traffic Signal Heads, Type 5L, LED
1730	640-A045	Traffic Signal Heads, Type 3L, LED
1740	640-A046	Traffic Signal Heads, Type 7L, LED
1750	642-A001	Solid State Traffic Actuated Controllers, Type 8M
1760	644-A001	Optical Detector
1770	644-B001	Optical Detector Cable
1780	644-C002	Phase Selector, 4 Channel
1790	647-A002	Pullbox, Type 3
1800	647-A005	Pullbox, Type 2
1810	648-A001	Radio Interconnect, Installed in New Controller Cabinet
1820	653-A001	Traffic Sign, Encapsulated Lens
1830	666-B054	Electric Cable, Underground in Conduit, IMSA 20-1, AWG 14, 8 Conductor
1840	666-C017	Electric Cable, Aerial Supported, IMSA 20-1, AWG 14, 8 Conductor

CATEGORY: TRAFFIC CONTROL - PERMANENT

Line No	Pay Item	Description
1850	668-A018	Traffic Signal Conduit, Underground, Type 4, 2"
1860	668-A020	Traffic Signal Conduit, Underground, Type 4, 3"
1870	668-B025	Traffic Signal Conduit, Underground Drilled or Jacked, Rolled Pipe, 3"
2960	907-630-I001	Metal Overhead Sign Supports, Assembly No. 1, Contractor Designed
2970	907-630-I002	Metal Overhead Sign Supports, Assembly No. 2, Contractor Designed
2980	907-630-I003	Metal Overhead Sign Supports, Assembly No. 3, Contractor Designed
2990	907-630-I004	Metal Overhead Sign Supports, Assembly No. 4, Contractor Designed
3000	907-630-I005	Metal Overhead Sign Supports, Assembly No. 5, Contractor Designed
3010	907-630-I007	Metal Overhead Sign Supports, Assembly No. 7, Contractor Designed
3020	907-630-I008	Metal Overhead Sign Supports, Assembly No. 8, Contractor Designed
3030	907-630-I009	Metal Overhead Sign Supports, Assembly No. 9, Contractor Designed
3040	907-630-I010	Metal Overhead Sign Supports, Assembly No. 10, Contractor Designed
3050	907-630-I012	Metal Overhead Sign Supports, Assembly No. 11, Contractor Designed
3060	907-630-J001	Overhead Sign Supported on Bridge, Assembly No 1, Contractor Designed
3070	907-630-J002	Overhead Sign Supported on Bridge, Assembly No 2, Contractor Designed
3080	907-630-J004	Overhead Sign Supported on Bridge, Assembly No 3, Contractor Designed
3100	907-639-A001	Traffic Signal Equipment Pole, Type 1, Wood
3110	907-639-A010	Traffic Signal Equipment Pole, Type IV, 30' Shaft, 35' Arm
3120	907-639-A011	Traffic Signal Equipment Pole, Type II, 17' Shaft, 35' Arm
3130	907-639-A012	Traffic Signal Equipment Pole, Type II, 17' Shaft, 45' Arm
3140	907-639-A033	Traffic Signal Equipment Pole, Type IV, 30' Shaft, 35' & 35' Arms
3150	907-639-A035	Traffic Signal Equipment Pole, Type IV, 30' Shaft, 30' & 30' Arms
3160	907-639-A048	Traffic Signal Equipment Pole, Type V, 18' Shaft
3170	907-639-A060	Traffic Signal Equipment Pole, Type V, 8' Shaft
3180	907-639-C002	Pole Foundations, 36" Diameter
3190	907-639-C003	Pole Foundations, 24" Diameter
3200	907-639-D001	Slip Casing, 36" Diameter
3210	907-639-D003	Slip Casing, 24" Diameter
3220	907-649-A004	Video Detection System, 1 Sensor, Type 2

CATEGORY: TRAFFIC CONTROL - TEMPORARY

Line No	Pay Item	Description
1280	619-A1001	Temporary Traffic Stripe, Continuous White
1290	619-A1004	Temporary Traffic Stripe, Continuous White, Paint
1300	619-A2001	Temporary Traffic Stripe, Continuous Yellow
1310	619-A2004	Temporary Traffic Stripe, Continuous Yellow, Paint
1320	619-A3007	Temporary Traffic Stripe, Skip White, Paint
1330	619-A4007	Temporary Traffic Stripe, Skip Yellow, Paint
1340	619-A6002	Temporary Traffic Stripe, Legend
1350	619-D1001	Standard Roadside Construction Signs, Less than 10 Square Feet
1360	619-D2001	Standard Roadside Construction Signs, 10 Square Feet or More
1370	619-D3001	Remove and Reset Signs, All Sizes
1380	619-E1001	Flashing Arrow Panel, Type C
1390	619-F1001	Concrete Median Barrier, Precast

CATEGORY: TRAFFIC CONTROL - TEMPORARY

Line No	Pay Item	Description
1400	619-F2001	Remove and Reset Concrete Median Barrier, Precast
1410	619-G4001	Barricades, Type III, Single Faced
1420	619-G4004	Barricades, Type III, Single Faced, Permanent, Red/White
1430	619-G5001	Free Standing Plastic Drums
1440	619-G7001	Warning Lights, Type "B"
1450	619-J1003	Impact Attenuator, 60 MPH
1460	619-J2002	Impact Attenuator, 60 MPH, Replacement Package
2850	907-619-E3001	Changeable Message Sign
2860	907-619-L001	Construction Safety Fence

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4313 **CODE (SP)**

DATE: 2/11/2013

SUBJECT: Placement of Fill Material in Federally Regulated Areas

PROJECT: NHS-0010-01(144) / 105281301 – Harrison County

A Permit (404, General, Nationwide, etc.) for placing fill material federally regulated sites is required.

The Department has acquired the following permit for permanently filling at regulated sites that are identified during project development:

General Permit No. 46 (Wetlands) – Site Nos. W-1, W-2, W-3, W-4, W-5, W-6, & W-7 (ID. No. SAM-2013-114)

Nationwide Permit No. 14 (Waters of the U.S.) – All sites with area of less than 0.10 acres.

Copies of said permit(s) are on file with the Department.

Securing a permit(s) for the filling of any other regulated site, the purpose of which is temporary construction for the convenience of the Contractor, shall be the responsibility of the Contractor.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4314 **CODE: (SP)**

DATE: 2/11/2013

SUBJECT: Cooperation Between Contractors

PROJECT: NHS-0010-01(144) / 105281301 – Harrison County

The Bidder's attention is hereby called to Subsection 105.07, Cooperation between Contractors, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction.

The Contractor shall cooperate in all respects and shall coordinate construction of all phases of work with the Contractor of the adjoining project. NHS-0022-01(075) / 105281303 in Harrison County.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

NOTICE TO BIDDERS NO. 4315 **CODE: (SP)**

DATE: 2/11/2013

SUBJECT: Buy America

PROJECT: NHS-0010-01(144) / 105281301 – Harrison County

Bidders are advised that Subsection 700.01 of the Standard Specifications address the requirements regarding Buy America as it relates to highway/roadway construction. Since this project involves highway/roadway construction and utility construction, the Contractor will be required to meet the requirements set forth in Subsection 700.01 and any Buy America regulations regarding the materials and fabrication processes used in the construction of the utility work on this project.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4316 **CODE: (SP)**

DATE: **2/12/2013**

SUBJECT: **PERFORMANCE PERIOD**

PROJECT: **NHS-0010-01(144) / 105281301 – Harrison County**

Bidders are hereby advised that the fourteen (14) day performance period for the roadway lighting system is part of the contract time. During each fourteen (14) day performance period, if any failure should occur in any of the mechanical or electrical equipment in the system other than minor readily replaceable components, such as light bulbs, etc., the cause of the failure shall be determined, the necessary replacements made and the system operated satisfactory for an additional period of not less than fourteen (14) consecutive days.

Bidders are also hereby advised that the 30 day performance period for the traffic signals has been allowed for in the contract time.

No additional time will be allowed for any additional performance period(s) found to be necessary because of failure(s) during the initial period, or subsequent performance period(s).

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 – NOTICE TO BIDDERS NO. 4317 **CODE: (SP)**

DATE: 2/12/2013

SUBJECT: Lane Closure Restrictions

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Bidders are advised that closures will be limited as follows:

- Work requiring a lane closure on I-10 or I-110 will only be permitted between the hours of 7:00 PM and 6:00 AM Sunday through Thursday.

A lane rental fee of **$1,000.00** per full or partial 10 minutes shall be assessed for closures or obstructions that extend beyond the times mentioned above. No exposed signs shall be viewable to the traveling public prior to or after the above mentioned times. No part of a closures, drums or cones, shall be in the roadway prior to or after the above mentioned times.

- Demolition of the existing D'Iberville Boulevard Bridge will require closure of I-10. Closure of I-10 will only be permitted between the hours of 7:00 PM and 9:00 AM Saturday through Sunday.

A lane rental fee of **$10,000.00** per full or partial hour shall be assessed for closures or obstructions that extend beyond the times mentioned above. No exposed signs shall be viewable to the traveling public prior to or after the above mentioned times. No part of a closures, drums or cones, shall be in the roadway prior to or after the above mentioned times.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904- NOTICE TO BIDDERS NO. 4321 **CODE: (SP)**

DATE: 03/26/2013

SUBJECT: Project Sign

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Bidders are advised that this project will require a Project Sign which includes the following information.

1) Program Name (Grant Program)
2) Project Description
3) Name of Grant Recipient (City, Town or County)
4) Granting Agency (Governor, Mississippi Agency and Mississippi Development Authority, Executive Director)
5) Other officials as shown

The sign shall be erected prior to beginning any construction and remain in place for the duration of the project. The sign shall be placed at the beginning of the project. The sign shall be waterproof and shall have a red, white and blue background. The sign shall be four (4) feet by six (6) feet.

The following is a graphic example of how the sign should look.

Project Sign 4'x6'

KATRINA COMMUNITY DEVELOPMENT BLOCK GRANT
(NHS-0010-01(144) / 105281301)
CITY OF D'IBERVILLE I-10/I-110 INTERCHANGE PROJECT
City of D'Iberville City Council

GOVERNOR PHIL BRYANT
STATE OF MISSISSIPPI
MISSISSIPPI DEVELOPMENT AUTHORITY
Brent Christensen, Executive Director

MISSISSIPPI TRANSPORTATION COMMISSION
Mike Tagert: Northern District
Dick Hall: Central District
Tom King: Southern District

RUSTY QUAVE , MAYOR
COUNCIL MEMBERS
Brenda Broussard
Henry Toncrey, Jr.
Teddy Harder
Stephen Furney
Joey Bosarge

U.S. Department of Housing and Urban Development

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904- NOTICE TO BIDDERS NO. 4322 **CODE: (SP)**

DATE: 02/13/2013

SUBJECT: Additional Contract Requirements

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Bidders are hereby advised of the following documents that shall be adhered to as a part of this contract:

1) Special Provisions and Regulations Stipulated By The U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG) Program
2) Federal Labor Standards Provisions
3) Wage Rates

SPECIAL PROVISIONS AND REGULATIONS STIPULATED BY THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD) COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG) PROGRAM

For the purpose of clarification, "Contracted Party" shall refer to the firm providing professional services to the Grantee as specified in the contract to which this document is attached.

1. **Access of Grantee, State of Mississippi, HUD and Others to CDBG Documents, Papers, and Books**

The Contracted Party agrees to allow the Grantee, State of Mississippi, HUD, the Comptroller General of the United States, and any of their duly authorized representatives access to any books, documents, papers, and records of the Contracted Party which are directly pertinent to the CDBG Program for the purpose of making audits, examinations, excerpts, and transcriptions.

2. **Termination of Contract For Cause**

If, through any cause, the Contracted Party shall fail to fulfill in timely and proper manner, his obligations under this Contract, or if the Engineer shall violate any of the covenants, agreements, or stipulations of this Contract, the Grantee shall thereupon have the right to terminate this Contract by giving written notice to the Contracted Party of such termination and specifying the effective date of such termination. In such event, all finished or unfinished documents, data, studies, and reports prepared by the Contracted Party shall entitle the Contracted Party's receipt of just and equitable compensation for any satisfactory work completed on such documents.

Notwithstanding the above, the Contracted Party shall not be relieved of liability to the Grantee for damages sustained or the Grantee by virtue of any breach of the Contract by the Contracted Party. The Owner may withhold any payments to the Contracted Party for the purpose of set off until such time as the exact amount of damages due the Grantee from the Contracted Party is determined.

3. **Termination for Convenience of the Grantee**

The Grantee may terminate this Contract any time by a notice in writing from the Grantee to the Contracted Party. If the Contract is terminated by the Owner as provided herein, the Contracted Party will be paid an amount which bears the same ratio to the total compensation as the services actually performed bear to the total services of the Contracted Party covered by this Contract, less payments of compensation previously made provided that if less than sixty percent of the services covered by this Contract have been performed upon the effective date of such termination, the Contracted Party shall be reimbursed (in addition to the above payment) for that portion of actual out-of-pocket expenses (not otherwise reimbursed under this Contract) incurred by the Contracted Party during the Contract period which are directly attributable to the incomplete portion of the services covered by this Contract.

4. **Records**

The subrecipient shall maintain all records required by the federal regulations specified in 24 CFR 570.506 that are pertinent to the activities to be funded under this agreement. Such records shall include but not be limited to:

a. Records providing a full description of each activity undertaken;
b. Records demonstrating that each activity undertaken meets one of the National Objectives of the CDBG program;
c. Records required to determine the eligibility of activities;
d. Records required to document the acquisition, improvement, use or disposition of real property acquired or improved with CDBG assistance;
e. Records documenting compliance with the equal opportunity components of the CDBG program;

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f. Financial records as required by 24 CFR 570.502 and 24 CFR 84.21-28; and,
g. Other records necessary to document compliance with Subpart K of 24 CFR Part 570.

All records required to be kept on the project shall be maintained for at least three years after final payments and until all other pending matters under the grant are closed.

5. **Health and Safety Standards**

All parties participating in this project agree to comply with Section 107 of the Contract Work Hours and Safety Standards Act. Section 107 of the Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions, which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction, safety, and health standards promulgated by the Secretary of Labor. These requirements do not apply to the purchase of supplies or materials or articles ordinarily available on the open market, or contracts for transportation.

6. **Environmental Compliance**

Contracts, subcontracts, and subgrants of amounts in excess of $100,000.00 shall contain a provision which requires compliance with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 U.S.C. 1957 (h)), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency (EPA) regulations (40 CFR, 15), which prohibit the use under nonexempt Federal contracts, grants, or loans of facilities included on the EPA List of Violating Facilities. The provisions shall require reporting of violations to the grantor agency and the U.S. EPA Assistant Administrator for Enforcement (EN-329).

7. **Energy Efficiency**

All participants in the projects shall recognize mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (PL 94-163).

8. **Changes**

The Grantee may, from time to time, request changes in the scope of the services of the Contracted Party to be performed hereunder. Such changes, including any increase or decrease in the amount of the Contracted Party's compensation which are mutually agreed upon by and between the Grantee and the Contracted Party, shall be incorporated in written amendments to this Contract.

9. **Personnel**

The Contracted Party represents that it has, or will secure at its own expense, all personnel required in performing the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the Grantee.

All the services required hereunder will be performed by the Contracted Party or under its supervision, and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under State and local law to perform such services.

No person who is serving sentence in a penal or correctional institution shall be employed on work under this Contract.

10. Anti-Kickback Rules

Salaries of personnel performing work under this Contract shall be paid unconditionally and not less often than once a month without payroll deduction or rebate on any account except only such payroll deductions as are mandatory by law or permitted by the applicable regulations issued by the Secretary of Labor pursuant to the "Anti-Kickback Act" of June 13, 1934 (48 Stat. 948; 62 Stat. 740; 63 Stat. 108; Title 18 U.S.C. 874; and Title 40 U.S.C. 276c). The Engineer and contractor shall comply with all applicable "Anti-Kickback" regulations and shall insert appropriate provisions in all subcontracts covering work under this contract to insure compliance by the subcontractors with such regulations, and shall be responsible for the submission of affidavits required of subcontractors thereunder except as the Secretary of Labor may specifically provide for variations of or exemptions from the requirements thereof.

11. Withholding of Salaries

If in the performance of this Contract, there is any underpayment of salaries by the Contracted Party or by any subcontracted thereunder, the Grantee shall withhold from the Contracted Party out of payment due to him an amount sufficient to pay to employees underpaid the difference between the salaries required thereby to be paid and the salaries actually paid such employees for the total number of hours worked. The amounts withheld shall be disbursed by the Grantee for and on account of the contracted party or subcontractor to the respective employees to whom they are due.

12. Claims and Disputes Pertaining to Salary Rates

Claims and disputes pertaining to salary rates or to classifications of professional staff or technicians performing work under this Contract shall be promptly reported in writing by the Contracted Party to the Grantee for the latter's decision which shall be final with respect thereto.

13. Equal Employment Opportunity

During the performance of this Contract, the Contracted Party agrees to comply with Executive Order 11246, and the regulations issued pursuant thereto (24 CFR 130 and 41 CFR Chapter 60), which provides that no person shall be discriminated against on the basis of race, color, religion, gender, or national origin in all phases of employment during the performance of Federal or Federally assisted construction contracts, contractors and subcontractors on Federal and Federally assisted construction contracts shall take affirmative action to ensure fair treatment in employments, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination, rates or pay or other forms of compensation and selection for training apprenticeship.

14. Anti-Discrimination Clauses

The Contracted Party will comply with the following clauses:

1. Title VI of the Civil Rights Act of 1964 (PL 88-352), and the regulations issued pursuant thereto (24 CFR 1), which provides that no person in the United States shall on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Applicant receives Federal financial assistance and will immediately take any measures necessary to effectuate this assurance. If any real property or structure thereon is provided or improved with the aid of Federal financial assistance extended to the applicant, this assurance shall obligate the applicant, or in the case of any transfer of such property, any transferee, for the period during which the real property or structure is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits;

2. Title VIII of the Civil Rights Act of 1968 (PL 90-284), as amended, administering all programs and activities relating to housing and community development in a manner to affirmatively further fair housing, and taking action to affirmatively further fair housing in the sale or rental of housing, the financing of housing, and the provision of brokerage services; and,

3. Executive Order 11063, as amended by Executive Order 12259, on equal opportunity in housing and nondiscrimination in the sale or rental of housing built with Federal assistance Section 109 of the Housing and Community Development Act of 1974, as amended which requires that no person in the United States shall on the grounds of race, color, national origin, or gender be excluded from participation in, be denied the benefits or be subjected to discrimination under, any program or activities funded in whole or in part with community development funds made available pursuant to the Act. Section 109 further provides that any prohibition against discrimination on the basis of age under the Age Discrimination Act of 1975 (42 U.S.C. 6101 et seq.) or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 796) shall also apply to any such program or activity.

15. **Section 3 Clause**

The Contracted Party will comply with Section 3 of the Housing and Urban Development Act of 1968, as amended (42 U.S.C. 1701u) and with the requirements of 24 C.F. R. Part 135 requiring that to the greatest extent feasible, opportunities for training and employment be given to lower income residents of the project area and contracts for work in connection with the project area be awarded to eligible business concerns which are located in, or owned in substantial part by persons residing in the area of the project. The Section 3 Clause attached hereto as Exhibit A is specifically incorporated into this agreement and must be included in all contract and sub-contracts.

16. **Discrimination Because of Certain Labor Matters**

No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because he has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable hereunder to his employer.

17. **Compliance with Local Laws**

The Contracted Party shall comply with all applicable laws, ordinances, and codes of the state and local governments, and shall commit no trespass on any public or private property in performing any of the work embraced by this Contract.

18. **Subcontracting**

None of the services covered by this Contract shall be subcontracted without prior written consent of the Grantee. The Contracted Party shall be as fully responsible to the Grantee for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by him. The Contracted Party shall insert in each subcontract appropriate provisions requiring compliance with the labor standards provisions of this Contract.

19. **Assignability**

The Contracted Party shall not assign any interest in this Contract, and shall not transfer any interest in the same (whether by assignment or notation) without prior written approval of the Grantee provided that claims for money due or to become due the Contracted Party from the Grantee under this Contract

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may be assigned to a bank, trust company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the Grantee.

20. **Interest of Members of Local Public Agency and Others**

The Contracted Party agrees to establish safeguards to prohibit employees from using positions for a purpose that is or give the appearance of being motivated by a desire for private gain for themselves or others, particularly those with whom they have a family, business, or other tie.

The Contracted Party will comply with Section 25-4-105, Mississippi Code Annotated (1972), which prohibits any public servant from using his official position to obtain pecuniary benefits for himself other than compensation provided for by law or for any relative or business with which he is associated and which further provides that a public servant may not be interested, during the term for which he has been chosen, or within one (1) year thereafter, in any contract made or let by the governing authorities of such municipality for the construction or doing of any public work, or for the sale or purchase of any materials, supplies or property of any description, or for any other purpose whatsoever, or in any subcontract arising therefrom or connected therewith, or to receive, either directly or indirectly, any portion or share of any money or other thing paid for the construction or doing of any public work, or for the sale or purchase of any property, or upon any other contract made by the governing authorities of the municipality, or subcontract arising therefore or connected therewith.

The Contracted Party will also be aware of and avoid any violation of Sections 25-4-117 and 25-4-119, Mississippi Code Annotated (1972), which prescribes a criminal penalty for any public servant convicted of a violation of this Ethics in Government section.

21. **Interest of Certain Federal Officers**

No member of or delegate to the Congress of the United States and no Resident Commissioner, shall be admitted any share or part of this Contract or to any benefit to arise therefrom.

22. **Interest of Contractor**

The Contracted Party covenants that he presently has no interest and shall not acquire any interest direct or indirect in the above described project or any parcels therein or any other interest which would conflict in any manner or degree with the performance of his services hereunder. The Contracted Party further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. **Political Activity**

The Contracted Party will comply with the provisions of the Hatch Act (5 U.S.C. 1501 et seq.), which limits the political activity of employees.

24. **Davis-Bacon Act Requirements**

The Contracted Party will comply with Section 110 of the Housing and Community Development Act of 1974, as amended, which requires that all laborers and mechanics employed by contractors or subcontractors on construction work assisted under the Act shall be paid at rates not less than those prevailing on similar construction in the locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act, as amended 40 U.S.C. 276a-276-a5), and it will comply with the Contract Work Hours and Safety Standards Act (40 U.S.C. 327 *et seq.*). However, these requirements apply to

the rehabilitation of residential property only if such property is designed for residential use of eight or more families.

25. **Uniform Act Requirements**

The Contracted Party will comply with all applicable requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. 4630) as specified in regulations issued by the Secretary of the Department of Housing and Urban Development and published in 24 CFR 570-1.

26. **Lead-Based Paint Requirements**

The Contracted Party will comply with Title IV of the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4831), which prohibits the use of lead-based paint in residential structures constructed or rehabilitated with Federal assistance in any form.

27. **Compliance with Office of Management and Budget**

The parties agree to comply with the regulations, policies, guidelines, and requirements of the Office of Management and Budget, Circulars A-95, A-102, and A-54, as they relate to the use of Federal funds under this contract.

28. **Flood Insurance Purchase Requirements**

Both parties agree to comply with the flood insurance purchase requirements of Section 102(2) of the Flood Disaster Protection Act of 1973, (PL 93-234, 87 Stat. 975) approved December 31, 1976. Section 102 (a) requires, on and after March 2, 1975, the purchase of flood insurance in communities where such insurance is available as a condition for the receipt of any Federal financial assistance for construction or acquisition purposes for use in any area that has been identified by the Secretary of the Department of Housing and Urban Development as an area having special flood hazards. The phrase, "Federal financial assistance," includes any form of loan, grant, guaranty, insurance payment, rebate, subsidy, disaster assistance loan or grant, or any other form of direct or indirect Federal assistance.

29. **Historic Preservation**

Both parties agree to assist the Federal grantor agency in its compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (16 USC 470), Executive Order 11593, and the Archaeological and Historic Preservation Act of 1966 (16 USC 469a-1 *et seq.*) by (a) consulting with the State Historic Preservation officer on the conduct of investigations, as necessary, to identify properties listed in or eligible for inclusion in the National Register of Historic Places that are subject to adverse effects (CFR Part 600.8) by the activity, and notifying the Federal grantor agency of the existence of any such properties, and by (b) complying with all requirements established by the Federal grantor agency and the state grantor agency to avoid or mitigate adverse effects upon such properties.

30. **Program Monitoring**

Both parties agree to assist and cooperate with the Federal grantor agency and the state grantor agency or their duly designated representatives in the monitoring of the project or projects to which this grant relates, and to provide in form and manner approved by the state grantor agency such monitoring reports, progress reports, and the like as may be required and to provide such reports at the times specified.

31. **Discrimination**

In operation of the project to which this grant relates, no individual shall be excluded from participation in, denied the benefits of, subjected to discrimination under, or denied employment in the administration of or in connection with, any such program or activity because of race, color, religion, national origin, age, disability, or political affiliation or belief.

32. **Confidential Findings**

All of the reports, information, data, etc., prepared or assembled by the Contracted Party under this Contract are confidential, and the Contracted Party agrees that they shall not be made available to any individual or organization without prior written approval of the Grantee.

33. **Third-Party Contracts**

The Grantee shall include in all contracts with Participating Parties receiving grant funds provisions requiring the following:

1. Each such Participating Party keeps and maintains books, records, and other documents relating directly to the receipt and disbursement of such grant funds; and,

2. Any duly authorized representative of the Mississippi Development Authority, the U.S. Department of Housing and Urban Development, and the Comptroller General of the United States shall, at all reasonable times, have access to and the right to inspect, copy, audit, and examine all such books, records, and other documents of such Participating Party until the completion of all close-out procedures respecting this grant and the final settlement and conclusion of all issues arising out of this grant.

The Grantee shall include in all contracts with Participating Parties a provision that each Participating Party agrees that any duly authorized representative of the Mississippi Development Authority, the U.S. Department of Housing and Urban Development, and the Comptroller General of the United States shall, at all reasonable times, have access to any portion of the Project in which such Participating Party is involved until the completion of all close-out procedures respecting this grant.

34. **Excessive Force**

The contracted parties will adopt and enforce a policy of prohibiting the use of excessive force by law enforcement agencies within its jurisdiction against any individuals engaged in nonviolent civil rights demonstrations; and enforcing applicable State and local laws against physically barring entrance to or exit from a facility or location which is the subject of such nonviolent civil rights demonstrations within its jurisdiction.

35. **Architectural Barriers Act and Americans with Disabilities**

The contracted parties will comply with the Architectural Barriers Act and the Americans with Disabilities as described in 24 CFR Sec 487 (e).

36. **Environmental**

The applicant will:

(1) Comply with Section 104(f) of the Housing and Community Development Act of 1974, as amended, which requires compliance with the policies of the National Environmental Policy Act of 1969 (NEPA) and other provisions of law which further the purposes of the National Environmental Policy Act. Such other provisions of law which further the

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purposes of the NEPA are specified in regulations issued pursuant to Section 104(f) of the Housing and Community Development Act of 1974, as amended, and are contained in 24 CFR Part 58; and

(2) Assume all of the responsibilities for environmental review, decision making, and action as specified and required in regulations issued by the Secretary of Housing and Urban Development pursuant to Section 104(f) of the Housing and Community Development Act of 1974, as amended, and published in 24 CFR Part 58.

Its chief executive officer or other officer of applicant:

(1) Consents to assume the status of a responsible federal official under the National Environmental Policy Act of 1969 (NEPA) and other provisions of federal law, as specified in 24 CFR Part 58; and

(2) Is authorized and consents on behalf of the applicant and himself/herself to accept the jurisdiction of the federal courts for the purpose of enforcement of his/her responsibilities as such an official.

It will, in connection with its performance of environmental assessments under the National Environmental Policy Act of 1969, comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470), Executive Order 11593, and the Preservation of Archeological and Historic Data Act of 1966 (16 U.S.C. 469 a-1, et seq) by:

(1) Consulting with the State Historic Preservation Officer to identify properties listed in or eligible for inclusion in the National Register of Historic Places that are subject to adverse effects of the proposed activities; and

(2) Complying with all requirements established by HUD to avoid or mitigate adverse effects upon such properties.

It will comply with Executive Order Number 12898, issued February 11, 1994, by:

(1) Focusing attention on the environment and health conditions in minority and low-income communities; and

(2) Fostering non-discrimination in federal programs that substantially affect human health and the environment; and

(3) Providing minority and low-income communities with access to information on, and opportunities for public participation in, matters relating to human health and the environment.

37. Uniform Relocation

It will comply with the Uniform Relocation Assistance and Real Property acquisition policies Act of 1970, as amended, and Federal Implementing regulation at 49 CFR Part 24, and the requirements of Section 570.496a (including the requirement to provide a certification that the recipient is following a residential antidisplacement and relocation assistance plan under Section 104(d)) of the Act.

38. Code of Standards of Conduct

It will establish a written Code of Standards of Conduct to prohibit any of its officers, employees, and agents from using his/her position in any manner or matter, which would have the purpose or effect of a conflict of interest, real or apparent. In order to properly implement this provision, it will fully comply with the requirements of 24 CFR, Part 85.36.

39. Use of Influence

The chief elected official certifies, to the best of his or her knowledge and belief, that:

(1) No federally appropriated funds have been paid or will be paid, by or on behalf of the chief elected official, to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than federally appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the chief elected official shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The subgrantee shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

40. Cost Overruns

The subgrantee agrees to and understands that the CDBG award is limited to the amount under this agreement. Any cost overruns will be the sole responsibility of the subgrantee.

41. Mississippi Employment Protection Act

The subgrantee represents and warrants that it will ensure its compliance with the Mississippi Employment Protection Act, Section 71-11-1, et seq of the Mississippi Code Annotated (Supp 2008), and will register and participate in the status verification system for all newly hired employees. The term "employee" as used herein means any person that is hired to perform work within the State of Mississippi. As used herein, "status verification system" means the Illegal Immigration Reform and Immigration Responsibility Act of 1996 that is operated by the United States Department of Homeland Security, also known as the E-Verify Program, or any other successor electronic verification system replacing the E-Verify Program. Contractor/Seller agrees to maintain records of such compliance and, upon request of the State and approval of the Social Security Administration or Department of Homeland Security, where required, to provide a copy of each such verification to the State. Contractor/Seller further represents and warrants that any person assigned to perform services hereunder meets the employment eligibility requirements of all immigration laws of the State of Mississippi. Contractor/Seller understands and agrees that any breach of these warranties may subject Contractor/Seller to the following: (a) termination of this Agreement and ineligibility for any state or public contract in Mississippi for up to three (3) years, with notice of such cancellation/termination being made public, or (b) the loss of any license, permit, certification or other document granted to Contractor/Seller by an agency, department or governmental entity for the right to do business in Mississippi for up to one (1) year, or (c) both. In the event of such termination/cancellation, Contractor/Seller would also be liable for any additional costs incurred by the State due to contract cancellation or loss of license or permit.

Exhibit A

All section 3 covered contracts shall include the following clause (referred to as the section 3 clause):

A. The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

B. The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

D. The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.

E. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.

F. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

G. With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b) agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section l(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part

of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section l(b)(2)(B) of the Davis-bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section l(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i) except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5 (a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant ',to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by

the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 in this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1 01 0, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration..... makes, utters or publishes any statement knowing the same to be false..... shall be fined not more than $5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable where the amount of the prime contract exceeds $100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in sub paragraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable where the amount of the prime contract exceeds $100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.

(3) The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

>

General Decision Number: MS130172 01/04/2013 MS172

Superseded General Decision Number: MS20120172

State: Mississippi

Construction Type: Highway

County: Harrison County in Mississippi.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Modification Number	Publication Date
0	01/04/2013

* ELEC0903-003 06/01/2011

	Rates	Fringes
ELECTRICIAN	$ 23.60	12%+4.40

SUMS2008-133 09/04/2008

	Rates	Fringes
CARPENTER, Includes Form Work	$ 13.00	0.00
CEMENT MASON/CONCRETE FINISHER	$ 15.25	0.00
LABORER: Common or General	$ 8.00	0.00
LABORER: Pipelayer	$ 10.17	0.00
OPERATOR: Backhoe	$ 12.57	0.00
OPERATOR: Broom	$ 8.00	0.00
OPERATOR: Bulldozer	$ 11.63	0.00
OPERATOR: Grader/Blade	$ 11.10	0.00
OPERATOR: Mechanic	$ 13.00	0.00
OPERATOR: Piledriver	$ 12.50	1.23
OPERATOR: Roller	$ 9.31	0.00
OPERATOR: Scraper	$ 10.00	0.00
TRUCK DRIVER	$ 11.00	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable , i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904- NOTICE TO BIDDERS NO. 4359 **CODE: (SP)**

DATE: 3/05/2013

SUBJECT: Restricted Area

PROJECT: NH-0010-01(144) / 105281301 -- Harrison County

Bidders are hereby advised that the Contractor shall not access southwest quadrant of the I-110 and Pops Ferry Road Interchange beginning approximately at Station 385+00 unto approximately Station 391+00 until **August 1, 2013**.

Upon written notification by the Engineer, the Contractor may be allowed earlier access without a penalty in the contract time.

No extension of time will be considered for this non-access unless restrictions extend beyond the above mentioned date.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4403 **CODE: (SP)**

DATE: **3/05/13**

SUBJECT: **Corrected Pay Items**

PROJECT: **NHS-0010-01(144) / 105281301 -- Harrison County**

Bidders are hereby advised that the pay item 907-603-PE 8" HDPE Force Main, Directional Bore shown on plan sheet 5001 is in error. The correct pay item is 907-603-DD006 Directional Bore, 8" HDPE Force Main, The pay items have been corrected in the proposal and bid documents.

The Contractor is hereby advised that the pay item number for 907-202-B (Removal of Sewage) as shown in the plans is incorrect. The correct pay item number is 202 –B300 (Removal of Sewage) and has been corrected in the Proposal bid items.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904- NOTICE TO BIDDERS NO. 4448 **CODE: (SP)**

DATE: 03/26/2012

SUBJECT: MDES Employment Plan Compliance

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Bidders are advised that this project requires compliance with Section 31-5-37, Miss. Code Ann. (1972 as amended). Compliance requires completion of the attached **Certified Employment Plan Form**. Failure to sign and include this form with your bid will result in the bid being considered irregular.

Bidders are further advised that the low bidder must within 10 days of bid opening execute the attached **Agreement Form** related to hiring practices.

Miss. Code Ann. § 31-5-37

MISSISSIPPI CODE of 1972

*** Current through the 2012 Regular Session ***

TITLE 31. PUBLIC BUSINESS, BONDS AND OBLIGATIONS
CHAPTER 5. PUBLIC WORKS CONTRACTS
IN GENERAL

Miss. Code Ann. § 31-5-37 (2012)

§ 31-5-37. Contractors submitting bids for public works projects utilizing specified funding required to submit employment plan with bid; contents of plan; review of individuals for vacant positions

(1) All public works projects utilizing funds received by state or local governmental entities resulting from a federally declared disaster or a spill of national significance, including damages, penalties, fines or supplemental projects paid or financed by responsible parties pursuant to a court order, negotiated settlement, or other instrument, including under any law distributing such fines and penalties including the federal Resources and Ecosystems Sustainability, Tourist Opportunities and Revived Economy of the Gulf Coast Act of 2011 (R.E.S.T.O.R.E.), the Oil Pollution Act of 1990 or the Federal Water Pollution Control Act or similar legislation, shall be subject to the hiring policies established by this section.

(2) Contractors submitting bids for public works projects financed in whole or in part through the use of funds described in subsection (1) of this section shall submit with their bid an employment plan which shall include the following:

(a) The types of jobs involved in the public works project;

(b) The skill level of the jobs involved in the project;

(c) Wage information on the jobs involved in the project;

(d) The number of vacant positions that the contractor needs to fill;

(e) How the contractor will recruit, low wage and unemployed individuals for job vacancies;

(f) Such other information as may be required by the Mississippi Department of Employment Security; and

(g) Proof of registration with the Mississippi Department of Employment Security for taxation in accordance with the provisions of Title 71.

(3) When a contractor's bid is accepted, the contractor shall enter into an agreement with the entity that accepted the bid that requires the contractor not to hire any personnel to fill vacant positions necessary for the public works project for a period of ten (10) days after the date of the agreement. During the ten-day period the Mississippi Department of Employment Security shall submit qualified individuals to the contractor to consider for the vacant positions. The contractor shall review the individuals submitted by the department before hiring individuals who are not submitted by the department.

HISTORY: SOURCES: Laws, 2012, ch. 505, § 1, eff from and after passage (approved May 1, 2012.)

CERTIFIED EMPLOYMENT PLAN FORM FOR CERTAIN PUBLIC WORKS PROJECTS*

Project No. _____

Bid Date: _____

Project Title: _____

Institution/Agency: _____

Please provide the information requested below:

1. List the types of jobs that will be involved in this Project:

2. List the skill level of the jobs involved in the Project:

3. List the wages for jobs involved in the Project:

4. List the number of vacant positions that will need to be filled if awarded this Project:

5. Explain how low wage and unemployed individuals will be recruited for job vacancies:

6. Attach proof of registration with MDES for taxation purposes.

I certify that the information provided above is true and accurate to the best of my knowledge.

Contractor Name & Authorized Representative: _____

Signature: _____ Title: _____ Date: _____

**Note: This form should only be included in your bid if Miss. Code Ann. § 31-5-37 (Mississippi First Law) applies to the project. This law requires contractors submitting bids for public works projects utilizing specified funding to submit an employment plan with their bid.*

If your bid is accepted, please submit a copy of your employment plan to the Mississippi Department of Employment Security via fax at 601-407-1707, or via e-mail at disasterjobs@mdes.ms.gov.

AGREEMENT

City of D'Iberville, Mississippi
I-10/I-110 Interchange Project

Pursuant to the provisions of Mississippi Code of 1972, Section 31-5-37 (2012) which states:
"All public works projects utilizing funds received by state or local governmental entities resulting from a federally declared disaster or a spill of national significance, including damages, penalties, fines or supplemental projects paid or financed by responsible parties pursuant to a court order, negotiated settlement, or other instrument, including under any law distributing such fines and penalties including the federal Resources and Ecosystems Sustainability, Tourist Opportunities and Revived Economy of the Gulf Coast Act of 2011 (R.E.S.T.O.R.E.), the Oil Pollution Act of 1990 or the Federal Water Pollution Control Act or similar legislation, shall be subject to the hiring policies established by this section"

The parties herein agree as follows:

1. **REGISTRATION**
Contractor must register with the Mississippi Department of Employment Security and must provide proof to the Grant Administrator of such registration.

2. **CONTRACTOR'S CERTIFIED EMPLOYMENT PLAN**
Contractor submitting bids for public works projects utilizing specified funding must submit an employment plan to the Mississippi Department of Employment Security and Grant Administrator via fax and/or email.

3. **HIRING**
If Contractor has no vacant positions in its workforce at the time of award of the contract, they must send a letter stating so.

If Contractor has VACANT positions that must be filled to complete the workforce for the project, the Contractor is required to place a job order with MDES for a list of qualified individuals for those vacant positions. Once the job order with MDES is opened, the Contractor will be required to ONLY hire MDES referred job applicants for the open positions for a period of 10 days. The Contractor is not prohibited from hiring any MDES referrals during this 10 day period and may hire such persons immediately. The Contractor must review all job applicants referred by MDES during this 10 day period. Documentation will be required on any hired individuals or lack of hired individuals if company does not hire.

Witness our signatures on this the _____ day of _____, 2013.

_____ _____
CONTRACTOR MDOT

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904- NOTICE TO BIDDERS NO. 4449 **CODE: (SP)**

DATE: **03/26/2013**

SUBJECT: **Right to Audit**

PROJECT: **NHS-0010-01(144) / 105281301 -- Harrison County**

Bidders are hereby advised that this project is funded with Community Development Block Grant (CDBG) funds made available by the City of D'Iberville. In conjunction therewith, Gouras & Associates has been designated as the City's Administrator and shall have access to any and all of the Contractor's records necessary to insure project compliance.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-101-4 **CODE: (IS)**

DATE: 11/05/2008

SUBJECT: **Definitions**

Section 101, Definitions and Terms, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-101.02--Definitions. Replace the following definitions in Subsection 101.02 on pages 3 through 13.

Contract - The written agreement between the Mississippi Transportation Commission and the Contractor setting forth the obligations of the parties thereunder, including but not limited to, the performance of the work, the furnishing of labor and materials, and the basis of payment.

The contract includes the invitation for bids, proposal, contract form and contract bonds, specifications, supplemental specifications, interim specifications, general and detailed plans, special provisions, notices to bidders, notice to proceed, and also any agreements that are required to complete the construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument.

Contract Bonds - The approved form of security, executed by the Contractor and the Contractor's Surety(ies), guaranteeing complete execution of the contract and all supplemental agreements pertaining thereto and the payment of all legal debts pertaining to the construction of the project. This term includes Performance and Payment Bond(s).

Surety - A corporate body, qualified under the laws of Mississippi, which is bound with and for the successful bidder by "contract bond(s)" to guarantee acceptable performance of the contract and payment of all legal taxes and debts pertaining to the construction of the project, including payment of State Sales Tax as prescribed by law, and any overpayment made to the Contractor.

Add the following to the list of definitions in Subsection 101.02 on pages 3 through 13.

Performance Bond - The approved form of security, executed by the Contractor and issued by the Contractor's Surety(ies), guaranteeing satisfactory completion of the contract and all supplemental agreements pertaining thereto.

Payment Bond - The approved form of security, executed by the Contractor and issued by the Contractor's Surety(ies), guaranteeing the payment of all legal debts pertaining to the construction of the project including, but not limited to, the labor and materials of subcontractors and suppliers to the prime contractor.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-102-8

DATE: 10/25/2012

SUBJECT: Bidding Requirements and Conditions

Delete Subsection 907-102.06 on page 1, and substitute the following.

907-102.06--Preparation of Proposal. Delete the first, fifth, sixth, and seventh paragraphs of Subsection 102.06 on pages 17 & 18, and substitute the following.

The bidder's complete original proposal shall be submitted upon the forms (Certification of Performance, Certification Regarding Non-Collusion, etc.) furnished by the Department and shall include Expedite Bid printed bid sheets along with the bid data on the MDOT-supplied USB Flash Drive. Expedite Bid System (EBS) files shall be downloaded from the Department's website www.goMDOT.com. In case of discrepancy between a unit price and the extension, the unit price will govern and the extension along with the total amount of the proposal will be corrected.

Bid sheets generated by the Department's Electronic Bid System (Trns•port Expedite Bid) along with a completed proposal package (with all forms completed and signed) will constitute the official bid and shall be signed on the last sheet of the Expedite Bid generated bid sheets and delivered to the Department in accordance with the provisions of Subsection 102.09. Bids submitted using any other form, format or means will result in an irregular bid. The bidder's bid data shall be saved on the MDOT-supplied USB Flash Drive and submitted with the bid. Failure to return the USB Flash Drive with bid data will result in an irregular bid.

Bidders are cautioned that using other versions of the Expedite Bid may result in improperly printed bid sheets. The correct version of Expedite Bid can be obtained at no cost from the MDOT Contract Administration Division or at the MDOT website, www.gomdot.com. The current version of Expedite Bid is also included on the MDOT-supplied USB Flash Drive.

The Expedite Bid generated bid sheets should be stapled together in order beginning with page 1, signed and included in the bid proposal package in the sealed envelope. Only the Expedite Bid generated sheets will be recognized as the official bid. The MDOT-provided USB Flash Drive containing the information printed on the Expedite Bid generated bid sheets should be placed in the padded envelope included with the bid proposal package and enclosed in the sealed envelope. Bid sheets printed from Expedite Bid should be a representation of the data returned on the flash drive. To have a true representation of the bid sheets, the Bidder must copy the EBS and EBS amendment files used to prepare the bid sheets to the flash drive. Otherwise, the unit prices bid will not be recorded to the flash drive. Bidders are cautioned that failure to follow proper flash drive handling procedures could result in the Department being unable to process the flash drive. Any modification or manipulation of the data contained on the flash drive, other than entering unit bid prices and completing all required Expedite Bid sections, will not be allowed and will cause the Contractor's bid to be considered irregular.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-102-8 **CODE: (IS)**

DATE: 01/20/2011

SUBJECT: Bidding Requirements and Conditions

907-102.06--Preparation of Proposal. Delete the fifth, sixth, and seventh paragraphs of Subsection 102.06 on page 18 and substitute the following:

Bid sheets generated by the Department's Electronic Bid System (Trns•port Expedite Bid) along with a completed proposal package will constitute the official bid and shall be signed on the last sheet of the Expedite Bid generated bid sheets and delivered to the Department in accordance with the provisions of Subsection 102.09.

Bidders are cautioned that using other versions of the Expedite Bid may result in improperly printed bid sheets. The correct version of Expedite Bid can be obtained at no cost from the MDOT Contract Administration Division or at the MDOT website, www.gomdot.com.

If bidders submit Expedite Bid generated bid sheets, then the bid sheets included in the proposal should not be completed. The Expedite Bid generated bid sheets should be stapled together, signed and included in the bid proposal package in the sealed envelope. If both the forms in the proposal and the Expedite Bid generated bid sheets are completed and submitted, only the Expedite Bid generated sheets will be recognized and used for the official bid. The USB Flash Drive containing the information printed on the Expedite Bid generated bid sheets should be placed in the padded envelope included with the bid proposal package and enclosed in the sealed envelope. Bid sheets printed from Expedite Bid should be a representation of the data returned on the flash drive. To have a true representation of the bid sheets, the Bidder must copy the EBS and EBS amendment files used to prepare the bid sheets to the flash drive. Otherwise, the unit prices bid will not be recorded to the flash drive. Bidders are cautioned that failure to follow proper flash drive handling procedures could result in the Department being unable to process the flash drive. Any modification or manipulation of the data contained on the flash drive, other than entering unit bid prices and completing all required Expedite Bid sections, will not be allowed and will cause the Contractor's bid to be considered irregular.

907-102.08--Proposal Guaranty. Delete the first and second paragraphs in Subsection 102.08 on page 20 and substitute the following:

No proposal will be considered unless accompanied by certified check, cashier's check or bid bond, made payable to the State of Mississippi, in an amount of not less than five percent (5%) of the total amount of the proposal offered. The guaranty shall be evidence of good faith that, if awarded the contract, the bidder will execute the contract and give performance and payment contract bond(s) as stipulated in Subsection 907-103.05.1, 907-103.05.2, and as required by law.

If a bid bond is offered as guaranty, the bond must be on a form approved by the Executive Director, made by a Surety acceptable to the Executive Director and signed or countersigned by a Mississippi Agent or Qualified Nonresident Agent and the Bidder. Such bid bond shall also conform to the requirements and conditions stipulated in Subsection 907-103.05.2 as applicable.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-103-8 **CODE: (SP)**

DATE: 12/15/2009

SUBJECT: Award and Execution of Contract

Section 103, Award and Execution of Contract, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-103.04--Return of Proposal Guaranty. Delete the second paragraph of Subsection 103.04 on page 23 and substitute the following:

Certified checks or cashier's checks submitted as proposal guaranties, except those of the two lowest bidders, will be returned within 10 days of contract award. The retained proposal guaranty of the unsuccessful of the two lowest bidders will be returned within ten days following the execution of a contract with the successful low bidder. The retained proposal guaranty of the successful bidder will be returned after satisfactory performance and payment bonds have been furnished and the contract has been executed.

In the event all bids are rejected by the Commission, certified checks or cashier's checks submitted as proposal guaranty by all bidders will be returned within 10 days of rejection.

Delete Subsection 103.05 on page 23 and substitute the following:

907-103.05--Contract Bonds.

907-103.05.1--Requirement of Contract Bonds. Prior to the execution of the contract, the successful bidder shall execute and deliver to the Executive Director a performance and payment bond(s), in a sum equal to the full amount of the contract as a guaranty for complete and full performance of the contract and the protection of the claimants and the Department for materials and equipment and full payment of wages in accordance with Section 65-1-85 Miss. Code Ann. (1972 as amended). In the event of award of a joint bid, each individual, partnership, firm or corporation shall assume jointly the full obligations under the contract and the contract bond(s).

907-103.05.2--Form of Bonds. The form of bond(s) shall be that provided by or acceptable to the Department. These bonds shall be executed by a Mississippi agent or qualified nonresident agent and shall be accompanied by a certification as to authorization of the attorney-in-fact to commit the Surety company. A power of attorney exhibiting the Surety's original seal supporting the Mississippi agent or the qualified nonresident agent's signature shall be furnished with each bond. The Surety company shall be currently authorized and licensed in good standing to conduct business in the State of Mississippi with a minimum rating by A.M. Best of (A-) in the latest printing "Best's Key Rating Guide" to write individual bonds up to ten percent of the policy holders' surplus or listed on the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as

published by the United States Department of the Treasury, Financial Management Service, Circular 570 (latest revision as published and supplemented on the Financial Management Service Web site and in the Federal Register) within the underwriting limits listed for that Surety. All required signatures on the bond(s) and certifications shall be original signatures, in ink, and not mechanical reproductions or facsimiles. The Mississippi agent or qualified nonresident agent shall be in good standing and currently licensed by the Insurance Commissioner of the State of Mississippi to represent the Surety company(ies) executing the bonds.

Surety bonds shall continue to be acceptable to the Commission throughout the life of the Contract and shall not be canceled by the Surety without the consent of the Department. In the event the Surety fails or becomes financially insolvent, the Contractor shall file a new Bond in the amount designated by the Executive Director within thirty (30) days of such failure, insolvency, or bankruptcy. Subsequent to award of Contract, the Commission or the Department may require additional security for any supplemental agreements executed under the contract or replacement security in the event of the surety(ies) loss of the ratings required above. Suits concerning bonds shall be filed in the State of Mississippi and adjudicated under its laws without reference to conflict of laws principles.

907-103.08--Failure to Execute Contract.. In the first sentence of Subsection 103.08 on page 24, change "bond" to "performance and payment bonds".

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-104-4 **CODE: (SP)**

DATE: 03/01/2011

SUBJECT: Disposal of Materials

Section 104, Scope of Work, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-104.05--Removal and Disposal of All Materials From the Project. Delete the second sentence of the first full paragraph of Subsection 104.05 on page 30 and substitute the following:

The Contractor shall also furnish the Engineer a certified letter stating that the area of disposal is not in a wetland or in Waters of the U.S.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-105-6

DATE: 12/12/2011

SUBJECT: Control of Work

After Subsection 907-105.05 on page 1, add the following.

907-105.14--Maintenance During Construction. Before the first sentence Subsection 105.14 on page 39, add the following:

The Contractor will be responsible for the maintenance of existing roadways within the limits of this project starting on the date of the Notice To Proceed / Beginning of Contract Time. Anytime work is performed in a travel lane, the Contractor shall install portable lane closure signs meeting the requirement of the MDOT Standard Drawing or MUTCD.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-105-6 **CODE: (IS)**

DATE: **01/20/2011**

SUBJECT: **Control of Work**

Section 105, Control of Work, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is modified as follows:

907-105.05--Cooperation by Contractor. In the third sentence of the second paragraph of Subsection 105.05 on page 35, change "Notice to Proceed" to "Notice of Award".

Delete the fourth paragraph of Subsection 105.05 on page 35, and substitute the following.

On projects that include erosion control pay items, the Contractor shall also designate a responsible person whose primary duty shall be to monitor and maintain the effectiveness of the erosion control plan, including NPDES permit requirements. This responsible person must be a Certified Erosion Control Person certified by an organization approved by the Department. Prior to or at the pre-construction conference, the Contractor shall designate in writing the Certified Erosion Control Person to the Project Engineer. The designated Certified Erosion Control Person shall be assigned to only one (1) project. When special conditions exist, such as two (2) adjoining projects or two (2) projects in close proximity, the Contractor may request in writing that the State Construction Engineer approve the use of one (1) Certified Erosion Control Person for both projects. The Contractor may request in writing that the Engineer authorize a substitute Certified Erosion Control Person to act in the absence of the Certified Erosion Control Person. The substitute Certified Erosion Control Person must also be certified by an organization approved by the Department. A copy of the Certified Erosion Control Person's certification must be included in the Contractor's Protection Plan as outlined in Subsection 907-107.22.1. This in no way modifies the requirements regarding the assignment and availability of the superintendent.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-107-9

DATE: 08/23/2011

SUBJECT: Legal Relations and Responsibility to Public

907-107.14.2.2--Railroad Protective. Delete the first sentence of subparagraph (b) of Subsection 907-107.14.2.2 on page 3 and substitute the following.

(b) **Contractor's Liability - Railroad**, including subcontractors, XCU and railroad contractual with limits of $1,000,000 each occurrence; $2,000,000 aggregate.

After Subsection 907-107.17 on page 4, add the following:

907-107.18--Contractor's Responsibility for Utility Property and Services. After the first sentence of Subsection 107.18 on page 63, add the following:

Prior to any excavation on the project, the Contractor shall contact MS 811 and advise them to mark all known utilities in the area of the excavation.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-107-9 **CODE: (IS)**

DATE: **01/20/2011**

SUBJECT: **Legal Relations and Responsibility to Public**

Section 107, Legal Relations and Responsibility to Public, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-107.02--Permits, Licenses and Taxes. Delete in toto Subsection 107.02 on page 49 and substitute the following:

The Contractor or any Subcontractor shall have the duty to determine any and all permits and licenses required and to procure all permits and licenses, pay all charges, fees and taxes and issue all notices necessary and incidental to the due and lawful prosecution of the work. At any time during the life of this contract, the Department may audit the Contractor's or Subcontractor's compliance with the requirements of this section.

The Contractor or any Subcontractor is advised that the "Mississippi Special Fuel Tax Law", Section 27-55-501, et seq. and the Mississippi Use Tax Law, Section 27-67-1, et seq., and their requirements and penalties, apply to any contract or subcontract for construction, reconstruction, maintenance or repairs, for contracts or subcontracts entered into with the State of Mississippi, any political subdivision of the State of Mississippi, or any Department, Agency, Institute of the State of Mississippi or any political subdivision thereof.

The Contractor or any Subcontractor will be subject to one or more audits by the Department during the life of this contract to make certain that all applicable fuel taxes, as outlined in Section 27-55-501, et seq., and any sales and/or use taxes, as outlined in Section 27-67-1, et seq. are being paid in compliance with the law. The Department will notify the Mississippi State Tax Commission of the names and addresses of any Contractors or Subcontractors.

907-107.14--Damage Claims and Insurance.

907-107.14.2--Liability Insurance. Delete Subsection 107.14.2 beginning on page 60 and substitute:

907-107.14.2.1--General. The Contractor shall carry Contractor's liability, including subcontractors and contractual, with limits not less than: $500,000 each occurrence; $1,000,000 aggregate; automobile liability - $500,000 combined single limit - each accident; Workers' Compensation and Employers' Liability - Statutory & $100,000 each accident; $100,000 each employee; $500,000 policy limit. Each policy shall be signed or countersigned by a Mississippi Agent or Qualified Nonresident Agent of the Insurance Company.

The Contractor shall have certificates furnished to the Department from the insurance companies providing the required coverage. The certificates shall be on the form furnished by the Department and will show the types and limits of coverage.

907-107.14.2.2--Railroad Protective. The following provisions are applicable to all work performed under a contract on, over or under the rights-of-way of each railroad shown on the plans.

The Contractor shall assume all liability for any and all damages to work, employees, servants, equipment and materials caused by railroad traffic.

Prior to starting any work on railroad property, the Contractor shall furnish satisfactory evidence to the Department that insurance of the forms and amounts set out herein in paragraphs (a) and (b) has been obtained. Also, the Contractor shall furnish similar evidence to the Railroad Company that insurance has been obtained in accordance with the Standard Provisions for General Liability Policies and the Railroad Protective Liability Form as published in the Code of Federal Regulations, 23 CFR 646, Subpart A. Evidence to the Railroad Company shall be in the form of a Certificate of Insurance for coverages required in paragraph (b), and the original policy of the Railroad Protective Liability Insurance for coverage required in paragraph (a).

All insurance herein specified shall be carried until the contract is satisfactorily complete as evidenced by a release of maintenance from the Department.

The Railroad Company shall be given at least 30 days notice prior to cancellation of the Railroad Protective Liability Insurance policy.

For work within the limits set out in Subsection 107.18 and this subsection, the Contractor shall provide insurance for bodily injury liability, property damage liability and physical damage to property with coverages and limits no less than shown in paragraphs (a) and (b). Bodily injury shall mean bodily injury, sickness, or disease, including death at anytime resulting therefrom. Property damage shall mean damages because of physical injury to or destruction of property, including loss of use of any property due to such injury or destruction. Physical damage shall mean direct and accidental loss of or damage to rolling stock and their contents, mechanical construction equipment or motive power equipment.

(a) **Railroad Protective Liability Insurance** shall be purchased on behalf of the Railroad Company with limits of $2,000,000 each occurrence; $6,000,000 aggregate applying separately to each annual period for lines without passenger trains. If the line carries passenger train(s), railroad protective liability insurance shall be purchased on behalf of the Railroad Company with limits of $5,000,000 each occurrence; $10,000,000 aggregate applying separately to each annual period.

Coverage shall be limited to damage suffered by the railroad on account of occurrences arising out of the work of the Contractor on or about the railroad right-of-way, independent of the railroad's general supervision or control, except as noted in paragraph 4 below.

Coverage shall include:

(1) death of or bodily injury to passengers of the railroad and employees of the railroad not covered by State workmen's compensation laws,

(2) personal property owned by or in the care, custody or control of the railroads,

(3) the Contractor, or any of the Contractor's agents or employees who suffer bodily injury or death as a result of acts of the railroad or its agents, regardless of the negligence of the railroads, and

(4) negligence of only the following classes of railroad employees:

(i) any supervisory employee of the railroad at the job site

(ii) any employee of the railroad while operating, attached to, or engaged on, work trains or other railroad equipment at the job site which are assigned exclusively to the Contractor, or

(iii) any employee of the railroad not within (i) or (ii) above who is specifically loaned or assigned to the work of the Contractor for prevention of accidents or protection or property, the cost of whose services is borne specifically by the Contractor or Governmental authority.

(b) **Regular Contractor's Liability**, including subcontractors, XCU and railroad contractual with limits of $1,000,000 each occurrence; $2,000,000 aggregate. **Automobile** with limits of $1,000,000 combined single limit any one accident; **Workers' Compensation and Employer's Liability** - statutory and $100,000 each accident; $100,000 each employee; $500,000 policy limit. **Excess/Umbrella Liability** $5,000,000 each occurrence; $5,000,000 aggregate. All coverage to be issued in the name of the Contractor shall be so written as to furnish protection to the Contractor respecting the Contractor's operations in performing work covered by the contract. Coverage shall include protection from damages arising out of bodily injury or death and damage or destruction of property which may be suffered by persons other than the Contractor's own employees.

In addition, the Contractor shall provide for and on behalf of each subcontractor by means of a separate and individual liability and property damage policy to cover like liability imposed upon the subcontractor as a result of the subcontractor's operations in the same amounts as contained above; or, in the alternative each subcontractor shall provide same.

907-107.15--Third Party Beneficiary Clause. In the first sentence of the first paragraph of Subsection 107.15 on page 61, change "create the public" to "create in the public".

907-107.17--Contractor's Responsibility for Work. Delete the fifth sentence of the fifth paragraph of Subsection 107.17 on page 63 and substitute the following:

The eligible permanent items shall be limited to traffic signal systems, changeable message signs, roadway signs and sign supports, lighting items, guard rail items, delineators, impact attenuators, median barriers, bridge railing or pavement markings. The eligible temporary items shall be limited to changeable message signs, guard rail items, or median barriers.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-107-10

DATE: 01/17/2013

SUBJECT: Contractor's Erosion Control Plan

Delete the first paragraph of Subsection 907-107.22.1 on page 1, and substitute the following.

If an early Notice to Proceed is desired, the Contractor's Erosion Control Plan should be submitted to the Engineer as soon as possible after award since an approved erosion control plan is required for an early Notice to Proceed. Otherwise, at the preconstruction conference or prior to starting any work on the project, the Contractor shall submit to the Project Engineer for concurrence a comprehensive erosion and siltation control plan. The plan shall utilize temporary measures and permanent erosion control features to provide acceptable controls during all stages of construction.

Delete the first sentence of the second paragraph of Subsection 907-107.22.1 on page 1, and substitute the following.

Approximately 60 calendar days, the time between the Notice of Award and Notice to Proceed/Beginning of Contract Time in the proposal, has been allowed for the submittal and concurrence of the Contractor's erosion control plan, MDOT's review of the plan, and any revisions that may be necessary.

Delete the paragraph under Subsection 907-107.22.2 on page 2, and substitute the following.

Unless otherwise determined by the Engineer from a study of overall job conditions, the exposed surface area of erodible material at any one time on this project shall not exceed 19 acres without prior approval by the Engineer.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-107-10 **CODE: (SP)**

DATE: 03/14/2011

SUBJECT: Contractor's Erosion Control Plan

Section 107, Legal Relations and Responsibility to Public, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in toto Subsection 107.22.1 on pages 65 and 66, and substitute the following:

907-107.22.1--Contractor's Erosion Control Plan. At the preconstruction conference or prior to starting any work on the project, the Contractor shall submit to the Project Engineer for concurrence a comprehensive erosion and siltation control plan utilizing temporary measures and permanent erosion control features to provide acceptable controls during all stages of construction.

The contract time for this project has allowed 60 calendar days for the submittal and concurrence of the Contractor's erosion control plan, MDOT's review of the plan, and any revisions that may be necessary. The original contract time shall not be adjusted unless delays are caused solely by the Department for the submission, review, and concurrence of the Contractor's erosion control plan.

As a minimum, the plan shall include the following:

1. Erosion Control Plan (ECP) sheets or the plan profile sheets, 11" x 17" or larger, of all areas within the rights-of-way from the Beginning of the Project (BOP) to the End of the Project (EOP) showing the location of all temporary erosion control devices. Erosion control devices should be identified by exact type, temporary or permanent, configuration, and placement of each item to prevent erosion and siltation. A narrative of the Contractor's temporary erosion control plan shall be submitted in a format similar to the form attached to this special provision, but must include the heading and sub-heading information. As a minimum, the narrative shall include the following:
   - A detailed description, including locations (station numbers) of the Contractor's proposed sequence of operations including, but not limited to, clearing and grubbing, excavation, drainage, and structures.
   - A detailed description, including locations, and best management practices (BMP) that will be used to prevent siltation and erosion from occurring during the Contractor's proposed sequence of operations.
2. A copy of the certification for the Contractor's Certified Erosion Control Person whose primary duty shall be monitoring and maintaining the effectiveness of the erosion control plan, BMPs, and compliance with the NPDES permit requirements.
3. A plan for the disposal of waste materials on the project right-of-way which shall include but not be limited to the following:

- containment and disposal of materials resulting from the cleaning (washing out) of concrete trucks that are delivering concrete to the project site.
- containment and disposal of fuel / petroleum materials at staging areas on the project.

The erosion and siltation control plan shall be maintained on the project site at all times, updated as work progresses to show changes due to revisions in the sequences of construction operations, replacement of inadequate BMPs, and the maintenance of BMPs. Work shall not be started until an erosion control plan has been concurred with by the MDOT. The Engineer will have the authority to suspend all work and/or withhold payments for failure of the Contractor to carry out provisions of MDEQ's Storm Water Construction General Permit, the erosion control plan, updates to the erosion control plan, and /or proper maintenance of the BMPs.

907-107.22.2--Clearing and Grubbing, Haul Roads, Waste Areas, Plant Sites or Other Areas Occupied by the Contractor. Delete the fourth paragraph of Subsection 107.22.2 on page 66 and substitute the following:

Unless otherwise determined by the Engineer from a study of overall job conditions, the exposed surface area of erodible material at any one time for each of the separate operations of this subsection shall not exceed 19 acres without prior approval by the Engineer.

EXAMPLE
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
Storm Water Pollution Prevention Plan (SWPPP)
Narrative

General Permit Coverage No: MSR_____
Project Number: _____
County: _____
Route: _____

SITE INFORMATION

This project consists of grading and installing drainage structures necessary to construct approximately 6 miles of parallel lanes on SR 31 between the Hinds County Line and the Rankin County Line.

SEDIMENT AND EROSION CONTROLS

VEGETATIVE CONTROLS: Clearing and grubbing areas will be minimized to comply with the buffer zones (minimum of 15 feet along the ROW lines and 5 feet along creeks) as per the contract documents. A combination of temporary and permanent grassing will be used to protect slopes as construction progresses. **Should a disturbed area be left undisturbed for 14 days or more, temporary or permanent vegetation will be placed within 7 calendar days.**

STRUCTURAL CONTROLS: Gravel construction entrance/exit will be installed near Stations 145+50, 159+50, 164+50 & 172+50. Riprap ditch checks will be constructed at Stations 144+50, 151+75, 162+00 & 166+25. The Concrete washout area will be at Stations 140+25, 152+00 & 168+50.

HOUSEKEEPING PRACTICES: Structural BPM's will be cleaned out when sediment reaches 1/3 to 1/2 of the height of the BMP. Maintenance and repair of equipment will be performed off-site, material wash out will occur either off-site or within designated wash out areas.

POST-CONSTRUCTION CONTROL MEASURES: As construction is completed, permanent vegetative growth will be established on disturbed soils to improve soil stability and provide a buffer zone for loose material. Paved ditches and flumes will be placed as specified in the ECP to reduce erosion in concentrated flow areas and rip rap will be placed as specified to dissipate flow energy and reduce flow velocity.

IMPLEMENTATION SEQUENCE

Perimeter controls will be installed first. Clearing and grubbing will be performed in 19-acre sections beginning at the BOP and temporary grassing will be installed as needed. Temporary erosion control BMP's will be installed at the drainage structures prior/during construction of the drainage structures. Grading activities will commence at the BOP and proceed towards the EOP, fill slopes will be permanently grassed in stages for fill heights that exceed 5 feet. Base materials will be installed on completed grading sections with the paving to follow.

MAINTENANCE PLAN

All erosion and sediment control practices will be checked for stability and operation following every rainfall but in no case less than once every week. Any needed repairs will be made immediately to maintain all practices as designed. Sediment basins will be cleaned out when the level of sediment reaches 2.0 feet below the top of the riser. Sediment will be removed from behind BMP's when it becomes about 1/3 to 1/2 height of BMP.

_____ _____
Prime Contractor's Signature Date

_____ _____
Printed Name Title

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-108-24

DATE: 11/13/2012

SUBJECT: Prosecution and Progress

Before the first sentence of the second paragraph after the Table of Anticipated Productive Days in Subsection 907-108.06.2.2 on page 3, add the following.

Available productive days will start being assessed at the original Notice to Proceed/Beginning of Contract Time date shown in the contract documents, regardless of whether or not the Contractor has been issued an early Notice to Proceed.

Before Subsection 907-108.10 on page 5, add the following.

907-108.07--Failure to Complete the Work on Time. Delete the Schedule of Deductions table in Subsection 108.07 on page 85, and substitute the following.

Schedule of Deductions for Each Day of Overrun in Contract Time

Original Contract Amount		Daily Charge
From More Than	To and Including	Per Calendar Day
$ 0	100,000	$ 150
100,000	500,000	360
500,000	1,000,000	540
1,000,000	5,000,000	830
5,000,000	10,000,000	1,200
10,000,000	20,000,000	1,800
20,000,000	----------	3,500

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-108-24 **CODE: (SP)**

DATE: 03/15/2011

SUBJECT: Prosecution and Progress

Section 108, Prosecution and Progress, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-108.01--Subletting of Contract.

907-108.01.1--General. At the end of the last paragraph of Subsection 108.01.1 on page 73, add the following:

The Engineer will have the authority to suspend the work wholly or in part and to withhold payments because of the Contractor's failure to make prompt payment within 15 calendar days as required above, or failure to submit the required OCR-484 Form, Certification of Payments to Subcontractors, which is also designed to comply with prompt payment requirements.

907-108.02--Notice To Proceed. Delete the second paragraph of Subsection 108.02 on page 75 and substitute the following:

The anticipated date of the Notice to Proceed (NTP) / Beginning of Contract Time (BCT) will be specified in the proposal.

Delete the fourth paragraph of Subsection 108.02 on page 75 and substitute the following:

Upon written request from the Contractor and if circumstances permit, the Notice to Proceed may be issued at an earlier date subject to the conditions stated therein. The Contractor shall not be entitled to any monetary damages or extension of contract time for any delay claim or claim of inefficiency occurring between the early issuance Notice To Proceed date and the Notice to Proceed date stated in the contract.

907-108.03--Prosecution and Progress. Delete Subsection 108.03.1 on pages 75 & 76, and substitute the following:

907-108.03.1--Progress Schedule. Prior to or at the Pre-Construction Conference, the Contractor shall furnish a progress schedule and be prepared to discuss both its proposed methodologies for fulfilling the scheduling requirements and its sequence of operations. The Engineer will review the schedule and approve the schedule as it relates to compliance with the specifications and logic. The progress schedule must be approved by the Engineer prior to commencing work. The schedule shall be a bar-chart type schedule submitted on 11”x17” paper meeting the below minimum requirements. These activities shall be significantly detailed enough to communicate the Contractor's understanding of the construction sequencing and phasing of the project.

When preparing the progress schedule, the Contractor shall include the following:

- Show a time scale to graphically show the completion of the work within contract time.
- Define and relate activities to the contract pay items.
- Show all activities in the order the work is to be performed including submittals, submittal reviews, fabrication and delivery.
- Show all activities that are controlling factors in the completion of the work.
- Show the time needed to perform each activity and its relationship in time to other activities.

Should the schedule not include the above requirements or becomes unrealistic during construction, the Contractor should immediately submit a revised, more realistic schedule for approval.

907-108.03.2--Preconstruction Conference. Delete the first paragraph of Subsection 108.03.2 on page 76 and substitute the following:

Prior to commencement of the work, a preconstruction conference shall be held for the purpose of discussing with the Contractor essential matters pertaining to the prosecution and satisfactory completion of the work. The Contractor will be responsible for scheduling the preconstruction conference. The Contractor will advise the Project Engineer in writing 14 days prior to the requested date that a conference is requested. When the contract requires the Contractor to have a certified erosion control person, the Contractor's certified erosion control person shall be at the preconstruction conference. The Department will arrange for utility representatives and other affected parties to be present.

Delete the third paragraph of Subsection 108.03.2 on page 76.

907-108.06--Determination and Extension of Contract Time. Delete Subsections 108.06.1 and 108.06.2 on pages 79 thru 85 and substitute the following:

907-108.06.1--Blank.

907-108.06.2--Based on Calendar Date Completion.

907-108.06.2.1--General. Contract Time will be established on the basis of a Completion Date, as indicated in the contract. The span of time allowed for the completion of the work included in the contract will be indicated in the contract documents and will be known as "Contract Time".

The span of time allowed in the contract as awarded is based on the quantities used for comparison of bids. If satisfactory fulfillment of the contract requires performance of work in greater quantities than those set forth in the proposal, the time allowed for completion shall be increased in Calendar Days in the same ratio that the cost of such added work, exclusive of the cost of work altered by Supplemental Agreement for which a time adjustment is made for such altered work in the Supplemental Agreement, bears to the total value of the original contract unless it can be established that the extra work was of such character that it required more time

than is indicated by the money value.

The Contractor shall provide sufficient materials, equipment and labor to guarantee the completion of the work in the contract in accordance with the plans and specifications within the Contract Time.

907-108.06.2.2--Contract Time. The following TABLE OF ANTICIPATED PRODUCTIVE DAYS indicates an average/anticipated number of productive days per month.

TABLE OF ANTICIPATED PRODUCTIVE DAYS

Month	Available Productive Days
January	6
February	7
March	11
April	15
May	19
June	20
July	21
August	21
September	20
October	16
November	11
December	5
Calendar Year	172

Allocation of anticipated productive days for a fractional part of the month will be computed as a proportion of the listed anticipated productive days for the applicable month.

An available productive day will be assessed (a) any day of the week, Monday through Friday, exclusive of legal holidays recognized by the Department in Subsection 108.04.1, in which the Contractor works or could have worked for more than six (6) consecutive hours on the controlling items of work, as determined by the Engineer, or (b) any Saturday, exclusive of legal holidays recognized by the Department in Subsection 108.04.1, in which the Contractor works for more than six (6) consecutive hours on the controlling items of work, as determined by the Engineer. When the Contractor works less than four consecutive hours during the day, no time will be charged for that day. When the Contractor works more than four but less than six consecutive hours, one-half (0.5) of an available work day will be charged for that day. When the Contractor works six or more consecutive hours during the day, one (1.0) available work day will be charged for that day.

Should the weather or other conditions be such that four (4) consecutive satisfactory hours are not available prior to noon (for daytime operations) or midnight (for nighttime operations), no time will be assessed for that day regardless of the above conditions. However, if the Contractor elects to work, time will be assessed in accordance with the previous paragraph.

Weather delays will not be considered for Saturdays, Sundays or legal holidays recognized by the Department in Subsection 108.04.1.

Available productive days will be based on soil and weather conditions and other specific conditions cited in the contract. The Engineer will determine on each applicable day the extent to which work in progress could have been productive, regardless of whether the Contractor actually worked.

Each month the Engineer will complete, and furnish to the Contractor, an "Assessment Report for Available Productive Days" (CSD-765). This report shows the number of available productive days during the estimate period and the cumulative available productive days to date. The Contractor should review the Engineer's report as to the accuracy of the assessment and confer with the Resident or Project Engineer to rectify any differences. Each should make a record of the differences, if any, and conclusions reached. In the event mutual agreement cannot be reached, the Contractor will be allowed a maximum of 15 calendar days following the ending date of the monthly report in question to file a protest Notice of Claim in accordance with the provisions of Subsection 105.17. Otherwise, the Engineer's assessment shall be final unless mathematical errors of assessment are subsequently found to exist, and any claim of the Contractor as to such matter shall be waived.

At any given date, the ratio of the accumulated monetary value of that part of the work actually accomplished to the total contract bid amount adjusted to reflect approved increases or decreases shall determine the "percent complete" of the work.

The "percentage of elapsed time" shall be calculated as a direct ratio of the expired calendar days to the total calendar days between the Beginning of Contract Time and the Specified Completion Date in the contract.

When the "percent complete" lags more than 20 percent behind the "percentage of elapsed time", the Contractor shall immediately submit a written statement and revised progress schedule indicating any additional equipment, labor, materials, etc. to be assigned to the work to ensure completion within the specified contract time. When the "percent complete" lags more than 40 percent behind the "percentage of elapsed time", the contract may be terminated.

907-108.06.2.3--Extension of Time. The Contractor may, prior to the expiration of the Contract Time, make a written request to the Engineer for an extension of time with a valid justification for the request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time.

No extension of the specified completion date will be granted except as provided herein. An extension of contract time may be granted for unusually severe weather, abnormal delays caused

solely by the State or other governmental authorities, or unforeseeable disastrous phenomena of nature of the magnitude of earthquakes, hurricanes, tornadoes, or flooded essential work areas which are deemed to unavoidably prevent prosecuting the work.

Unusually severe weather is defined as when the actual available productive days for the contract time are less than the number of available productive days shown in the Table of Anticipated Productive Days.

Any extension of contract time will be based on a calendar days basis, excluding Saturdays, Sundays or legal holidays recognized by the Department in Subsection 108.04.1. No proration of contract time will be made. Any extension of contract time will be made on or after the specified completion date. No extension of contract time will be made on a monthly basis.

Any revision of the specified completion date provided in the contract will be made automatically on the specified completion date as established in the contract, and at a later date if additional conditions so warrant.

If the completion of the project is extended into a season of the year in which completion of certain items of work would be prohibited or delayed because of seasonal or temperature limitations, the Engineer may waive the limitations provided the completion of the work will not result in a reduction in quality. When determined that the completion of the out-of-season items will cause a reduction in the quality of the work, the completion of the project will be further extended so the items may be completed under favorable weather conditions. In either case, the Engineer will notify the Contractor in writing.

Liquidated damages as set forth in Subsection 108.07 under the heading "Daily Charge Per Calendar Day" in the Table titled "Schedule of Deductions for Each Day of Overrun in Contract Time", shall be applicable to each calendar day after the specified completion date, or authorized extension thereof, and until all work under the contract is completed.

907-108.06.2.4--Cessation of Contract Time. When the Engineer by written notice schedules a final inspection, time will be suspended until the final inspection is conducted and for an additional 14 calendar days thereafter. If after the end of the 14-day suspension all necessary items of work have not been completed, time charges will resume. If the specified completion date had not been reached at the time the Contractor called for a final inspection, the calendar day difference between the specified completion date and the date the Contractor called for a final inspection will be added after the 14-day period before starting liquidation damages. If a project is on liquidated damages at the time a final inspection is scheduled, liquidated damages will be suspended until the final inspection is conducted and for seven (7) calendar days thereafter. If after the end of the 7-day suspension all necessary items of work have not been completed, liquidated damages will resume. When final inspection has been made by the Engineer as prescribed in Subsection 105.16 and all items of work have been completed, the daily time charge will cease.

907-108.10--Termination of Contractor's Responsibility. In the last sentence of Subsection 108.10 on page 88, change "bond" to "performance and payment bond(s)".

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-109-5

DATE: 05/15/2012

SUBJECT: Measurement and Payment

After the last paragraph of Subsection 907-109.01 on page 1, add the following.

After the second sentence of the fourth full paragraph of Subsection 109.01 on page 90, add the following.

Where loose vehicle measurement (LVM) is used, the capacity will be computed to the nearest one-tenth cubic yard and paid to the whole cubic yard. Measurements greater than or equal to nine-tenths of a cubic yard will be rounded to the next highest number. Measurements less than nine-tenths of a cubic yard will not be rounded to the next highest number. Example: A vehicle measurement of 9.9 cubic yards will be classified as a 10-cubic yard vehicle. A vehicle measurement of 9.8 cubic yards will be classified as a 9-cubic yard vehicle.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-109-5 **CODE: (IS)**

DATE: 1/20/2011

SUBJECT: Measurement and Payment

Section 109, Measurement and Payment, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-109.01--Measurement of Quantities. Delete the third full paragraph of Subsection 109.01 on page 90 and substitute the following.

When requested by the Contractor, material specified to be measured by the cubic yard or ton may be converted to the other measure as appropriate. Factors for this conversion will be determined by the District Materials Engineer and agreed to by the Contractor. The conversion of the materials along with the conversion factor will be incorporated into the contract by supplemental agreement. The supplemental agreement must be executed before such method of measurement is used.

907-109.04--Extra and Force Account Work. In the last sentence of subparagraph (b) in Subsection 109.04 on page 91, change "bond" to "bond(s)".

Delete the first sentence of the second paragraph of subparagraph (d) in Subsection 109.04 on page 92 and substitute the following:

In the event an agreement cannot be reached for a particular piece of equipment, the book entitled "Rental Rate Blue Book For Construction Equipment" as published by EquipmentWatch® and is current at the time the force account work is authorized will be used to determine equipment ownership and operating expense rates.

907-109.06--Partial Payment.

907-109.06.1--General. Delete the fourth and fifth sentences of the third paragraph of Subsection 109.06.1 on page 94, and substitute the following:

In the event mutual agreement cannot be reached, the Contractor will be allowed a maximum of 25 calendar days following the Contractor's receipt of the monthly estimate in question to file in writing, a protest Notice of Claim in accordance with the provisions Subsection 105.17. Otherwise, the Engineer's estimated quantities shall be considered acceptable pending any changes made during the checking of final quantities.

907-109.07--Changes in Material Costs. Delete the third full paragraph of Subsection 109.07 on page 96 and substitute the following:

A link to the established base prices for bituminous products and fuels will be included in the contract documents under a Notice to Bidders entitled "Petroleum Products Base Prices."

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-225-3 **CODE: (IS)**

DATE: **02/23/2012**

SUBJECT: **Grassing**

Section 907-225, Grassing, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in toto Section 225 on pages 158 thru 163, and substitute the following.

SECTION 907-225--GRASSING

907-225-01--Description. This work consists of furnishing, transporting, placing, plant establishment, and all work, including ground preparation, fertilizing, seeding, and mulching, necessary to produce a satisfactory and acceptable growth of grass.

At the Contractor's option, seeds and mulch may be incorporated using a hydraulically applied method under certain limitations. Under no circumstances shall fertilizer be incorporated hydraulically.

907-225.02--Materials.

907-225.02.1--Fertilizers. Fertilizers for purposes of this specification shall be understood to include standard manufactured products consisting of single or combination ingredients and agricultural limestone.

All fertilizer shall comply with the State fertilizer laws, Subsection 715.02, and the requirements of this specification.

907-225.02.2--Seeds. Seeds shall meet the requirements of Subsection 715.03, subject to the provisions of this subsection. The Contractor shall acquire seed from persons registered with the Mississippi Department of Agriculture and Commerce.

Except for the germination requirements, bags of seeds properly labeled or tagged according to law and indicating characteristics meeting or exceeding the requirements of Subsection 715.03 will be acceptable for planting.

The Contractor should provide adequate dry storage facilities for seeds, and shall furnish access to the storage for sampling stored seed.

907-225.02.3--Mulch.

907-225.02.3.1--Vegetative Mulch. The vegetative materials for mulch shall meet the

requirements of Subsection 215.02.

907-225.02.3.2--Hydraulically Applied Mulch (Hydromulch). Fibers for hydromulch shall be produced from wood, straw, cellulose, natural fibers, or recycled fibers which are free of non-biodegradable substances. The fiber shall disperse into a uniform slurry when mixed with water. Fibers shall be colored green, or other approved contrasting color, and shall not stain concrete or other surfaces. The use of tacifiers or activators will be allowed.

Hydromulch shall be listed on the Department's "Approved Sources of Materials".

907-225.02.3.2.1--Wood Fiber Mulch. Wood fiber mulch shall be made from wood chip particles manufactured particularly for discharging uniformly on the ground surface when dispersed by a hydraulic water sprayer. It shall remain in uniform suspension in water under agitation and blend with grass seed and fertilizer to form a homogeneous slurry. The fibers shall intertwine physically to form a strong moisture-holding mat on the ground surface and allow rainfall to percolate the underlying soil. The fiber material shall be heat processed so as to contain no germination or growth-inhibiting factors. The mulch shall be dyed an appropriate color to facilitate the application of material using non-toxic dye.

907-225.02.3.2.2--Cellulose Fiber Mulch. Cellulose fiber mulch consist of recycled paper stock products which are shredded into small pieces particular for application by hydraulic seeding equipment. It shall mix readily and uniformly under agitation with water and blend with grass seed and fertilizer to form a homogeneous slurry. When applied to the ground surface, the material shall form a strong moisture-holding mat, allow rainfall to percolate the underlying soil, and remain in place until the grass root system is established. The material shall contain no growth inhibiting characteristic or organisms. The mulch shall be dyed an appropriate color to facilitate the application of material using non-toxic dye.

907-225.02.3.2.3--Wood/Cellulose Fiber Mulch. Wood/cellulose fiber mix hydroseeding mulch shall consist of a combination of the above wood and cellulose fibers at a ratio recommended by the manufacturer of the products.

907-225.02.3.2.4--Straw Mulch. Straw mulch shall consist of a natural straw fiber. This material shall be a minimum 90% straw and essentially free from plastic materials or other non-bio degradable substances. The material shall be disperse into a uniform mulch slurry when mixed with water.

907-225.02.3.2.5--Tackifier. The tackifier will serve the purpose of an adhesive to form a bond between the soil, fiber, and seed particles. It will also allow the soil to retain moisture. The tackifier shall be of the organic or synthetic variety.

907-225.03--Construction Requirements.

907-225.03.1--Ground Preparation. Ground preparation, light or standard, consists of plowing, loosening, and pulverizing the soil to form suitable beds for erosion control items in reasonably close conformity with the established lines and grades without appreciable humps or depressions.

When grassing an area that has been previously planted with temporary grassing, a standard ground preparation will be required. The previously planted grasses shall be disked, tilled, plowed, etc. to assure that the existing temporary grasses are thoroughly mixed into the soil.

Any equipment used for ground preparation shall be approved units suitable to perform the work and subject to the requirements of Subsection 108.05.

The Contractor shall take full advantage of weather and soil conditions, and no attempt shall be made to prepare soil when it is wet or in a condition which will not allow the soil to be properly tilled.

Light ground preparation should be used on areas where seeding is required to improve the coverage of partially vegetated areas.

Standard ground preparation should be used on areas designated to be solid sodded and unvegetated areas designated to be seeded.

Aerating, moistening, or otherwise bringing the soil to a suitable condition for ground preparation shall be considered as incidental to the work and will not be measured for separate payment.

907-225.03.1.1--Light Ground Preparation. Light ground preparation consists of scratching the surface with a close-tooth harrow, disk-harrow, or similar equipment. The depth of scratching should be at least three-quarters inch but not deep enough to damage existing grasses of the type being planted.

907-225.03.1.2--Standard Ground Preparation. Standard ground preparation consists of plowing or disk-harrowing and thoroughly pulverizing the areas immediately before the application of erosion control (vegetative) items. Unless otherwise specified, the pulverized and prepared seedbed should be at least four inches deep and shall be reasonably free of large clods, earthballs, boulders, stumps, roots and other objectionable matter. Incorporation of fertilizer and ground preparation may be performed simultaneously.

907-225.03.2--Fertilizing. Fertilizing consists of furnishing, transporting, spreading, and incorporating fertilizers. The Contractor shall furnish all equipment necessary to properly handle, store, uniformly spread, and incorporate the specified application of fertilizer.

Unless otherwise specified in the contract, the Contractor shall incorporate bag fertilizer at a rate of 1000 pounds per acre of 13-13-13 commercial fertilizer. The equivalent rate of other type fertilizers will be allowed if the equivalent percentages of Nitrogen, Phosphorus and Potassium are obtained. The Contractor shall incorporate agricultural limestone at a rate of 5000 pounds per acre. Fertilization shall be applied uniformly on the areas to be planted or seeded and uniformly incorporated into the soil.

Fertilizers should be applied on individual areas of not more than three acres.

All fertilizer should be incorporated within 24 hours following spreading.

907-225.03.3--Seeding. Seeding consists of furnishing and planting seeds in a prepared seedbed, covering the seeds, and providing plant establishment on all areas seeded.

Prior to planting the seeds, ground preparation and fertilizing shall be satisfactorily performed.

The required type of seeds, minimum rates of application, and planting dates of seeds are shown in the vegetation schedule in the plans.

When a vegetation schedule is not shown in the plans, the following types of seed and application rates shall be used, unless otherwise approved by the Engineer.

Bermudagrass	20 pounds per acre
Bahiagrass	25 pounds per acre
Tall Fescue	15 pounds per acre
Crimson Clover	20 pounds per acre

It is the Contractor's responsibility to apply an ample amount of each type of seed to produce a satisfactory growth of grass and of the seed type required. At the completion of the project, a satisfactory growth of grass will be required. Reference Section 210 for satisfactory growth and coverage of dormant seed.

Seeding should not be done during windy weather or when the ground is frozen, extremely wet, or in a condition which will not allow the soil to be properly tilled.

907-225.03.3.1--Conventional Application. Legume seeds should be treated in accordance with Subsection 715.03.4 immediately before sowing. Seeds should be uniformly sown over the entire area with mechanical seeders. Seeds of different sizes may necessitate separate sowing. When legume seeds become dry, they should be re-inoculated.

All seeds should be covered lightly with soil by raking, rolling, or other approved methods, and the area compacted with a cultipacker.

Mulching should be performed as soon as practicable after seeding.

907-225.03.3.2--Hydroseeding Application. Seeds may be applied using the hydroseeding method except during the months of June, July, August, and September. During these months, the seeding shall be incorporated in accordance with the above Conventional Application method.

The seed(s) shall be combined into a distribution tank with all required ingredients on the project site. The application of the seed(s) and all ingredients shall be performed in one operation.

Mulching should be performed simultaneously with or as soon as practicable after seeding.

907-225.03.3.3--Plant Establishment. The Contractor should provide plant establishment on all areas seeded until release of maintenance. At the completion of the project, a satisfactory growth of grass will be required. The Contractor should reference Subsection 210 for satisfactory growth and coverage of dormant seed.

Plant establishment should be provided for a minimum period of 45 calendar days after completion of seeding. In the event satisfactory growth and coverage has not been attained by the end of the 45-day period, plant establishment should be continued until a satisfactory growth and coverage is provided for at least one kind of plant as referenced in Section 210. The Contractor shall perform plant establishment on all areas of temporary seeding until the Engineer determines that the temporary seeding has served its purpose.

Plant establishment shall consist of preserving, protecting, watering, reseeding, mowing, and other work necessary to keep the seeded areas in satisfactory condition.

Areas requiring reseeding should be prepared and seeded and all other work performed as if the reseeding was the initial seeding. The types and application rates of fertilizer will be at the discretion of the Contractor.

907-225.03.3.4--Growth and Coverage. It shall be the Contractor's responsibility to provide satisfactory growth and coverage of grasses, legumes, or combination produced from the specified seeding.

Growth and coverage on seeded areas will be considered to be in reasonably close conformity with the intent of the contract when the type of vegetation specified, exclusive of that from seeds not expected to have germinated and shows growth at that time, has reached a point of maturity where stems or runners overlap adjacent similar growth in each direction over the entire area.

907-225.03.4--Mulching. Mulching consists of furnishing, transporting, and placing mulch on slopes, shoulders, medians, and other designated areas. Unless otherwise noted in the contract or directed by the Engineer, the Contractor has the option to place mulch by the conventional method or by the hydraulic method.

907-225.03.4.1--Vegetative Mulch.

907-225.03.4.1.1--Equipment. Mulching equipment should be capable of maintaining a constant air stream which will blow or eject controlled quantities of mulch in a uniform pattern.

Mulch stabilizers should consist of dull blades or disks without camber and approximately 20 inches in diameter. The disks should be notched, should be spaced at approximately 8-inch intervals, and should be equipped with scrapers. The stabilizer should weigh approximately 1000 to 1200 pounds, should have a working width of no more than eight feet, and should be equipped with a ballast compartment, so that weight can be increased.

907-225.03.4.1.2--Placement of Vegetative Mulch. Mulching should be placed uniformly on designated areas within 24 hours following seeding unless weather conditions are such that

mulching cannot be performed. Placement should begin on the windward side of areas and from tops of slopes. In its final position, the mulch should be loose enough to allow air to circulate but compact enough to partially shade the ground and reduce erosion.

The baled material should be loosened and broken thoroughly before it is fed into the machine to avoid placement of unbroken clumps.

907-225.03.4.1.3--Anchoring Mulch. The mulch should be anchored by using a mulch stabilizer when not hydraulically applied. If a mulch stabilizer is used, the mulch should be punched into the soil for a minimum depth of one inch.

When mulch stabilizers are used, anchoring the mulch should be performed along the contour of the ground surface.

907-225.03.4.2--Hydromulch. Hydromulch shall be applied in accordance with the installation instructions and recommendations of the manufacturer. Hydromulch shall be uniformly applied at the manufacturer's recommended application rate. In no case shall the application rate be less than one (1) ton per acre.

907-225.03.4.3--Protection and Maintenance. The Contractor should maintain and protect mulched areas until the Release of Maintenance of the project. The Contractor should take every precaution to prevent unnecessary foot and vehicular traffic.

The Contractor should mow, remove or destroy any undesirable growth on all areas mulched as soon as any undesirable growth appears. This will prevent competition with the desired plants and to prevent reseeding of undesirable growth.

907-225.03.5--Hydro Equipment. The equipment for hydraulically applying seed and mulch shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix slurry of the specified amount of fiber, seed, and water. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of hydraulic spray nozzles, which will provide even distribution of the slurry on the various areas to be seeded.

The mixture shall all be combined into the slurry tank for distribution of all ingredients in one operation as specified herein. The materials shall be combined in a manner recommended by the manufacturer. The slurry mixture shall be so regulated that the amounts and rates of application shall result in a uniform application of all materials at rates not less than the amounts specified. Using the color of the mulch as a guide, the equipment operator shall spray the prepared seedbed with a uniform visible coat. The slurry shall be applied in a sweeping motion, in an arched stream, so as to fall like rain, allowing the mulch to build upon each other until an even coat is achieved.

907-225.04--Method of Measurement. Grassing will be measured by the acre. Acceptance will be based on a satisfactory growth and coverage of seeds planted.

Acceptable quantities of agricultural limestone will be measured by the ton.

Acceptable quantities for mulch will be measured by the ton. For vegetative mulch, the weight for measurement will be the product of the number of bales acceptably placed and the average weight per bale as determined on approved scales provided by the Contractor. Anchoring of vegetative mulch will not be measured for separate payment. The cost of anchoring shall be absorbed in the prices bid for other items of work. For hydromulch, the weight for measurement will be the dry weight of the packaged fibers used in the mixture. No payment will be allowed for water, additives, tackifier, or other liquids used in the mixture.

907-225.05--Basis of Payment. Grassing, measured as prescribed above, will be paid for at the contract unit price per acre, which will be full compensation for all required materials, equipment, labor, testing and all work necessary to establish a satisfactory growth of grass.

Hard rock agricultural limestone will be paid for at the contract unit price per ton. Hard rock agricultural limestone with a relative neutralizing value (RNV), determined in accordance with Subsection 907-715-02.2.1.3, of between 60.0% and 62.9% will be paid for at half (½) the contract unit price per ton. No payment will be made for hard rock agricultural limestone with an RNV less than 60.0%.

Mulch, measured as prescribed above, will be paid for at the contract unit price per ton, which price shall be full compensation for all materials, equipment, labor, and incidentals necessary to complete the work.

Payment will be made under:

907-225-A:	Grassing	- per acre
907-225-B:	Agricultural Limestone	- per ton
907-225-C:	Mulch, Vegetative Mulch	- per ton
907-225-D:	Mulch, Hydromulch	- per ton

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-226-2 **CODE: (IS)**

DATE: 05/13/2011

SUBJECT: Temporary Grassing

Section 907-226, Temporary Grassing, is hereby added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-226 -- TEMPORARY GRASSING

907-226.0l--Description. This work consists of furnishing, transporting, placing, plant establishment and all work necessary to produce rapid-growing grasses, grains or legumes to provide an initial, temporary cover of grass. This work includes ground preparation, fertilizing, seeding and mulching necessary to establish a satisfactory growth of temporary grass. The Contractor may elect to place temporary grassing using the hydroseeding method as set out in Special Provision No. 907-227, as modified by this special provision.

The Engineer or the plans will designate areas to be temporarily grassed. Any other areas the Contractor desires to grass will be measured for payment only if agreed upon by the Engineer.

907-226.02--Materials.

907-226.02.1--Fertilizers. Fertilizers for purposes of these specifications shall be understood to include standard manufactured products consisting of a combination of ingredients.

All fertilizer shall comply with the State fertilizer laws and Subsection 715.02.

Agricultural limestone will not be requirement for temporary grassing.

907-226.02.2--Seeds. Seeds shall meet the requirements of Subsection 715.03, subject to the provisions of this subsection. The Contractor shall acquire seed from persons registered with the Mississippi Department of Agriculture and Commerce.

Except for the germination requirements, bags of seeds properly labeled or tagged according to law and indicating characteristics meeting or exceeding the requirements of Subsection 715.03 will be acceptable for planting.

The Contractor should provide adequate dry storage facilities for seeds, and shall furnish access to the storage for sampling stored seed.

907-226.02.3--Mulching. The vegetative materials for mulch shall meet the requirements of Subsection 715.05.

When used, bituminous material for mulch shall be Emulsified Asphalt, Grade SS-1, meeting the requirement of Subsection 702.07.

907-226.03--Construction Requirements. The rates of application shall not exceed the rates shown on the temporary vegetation schedule, unless otherwise approved by the Engineer. Any unauthorized overage due to increased application rates will not be measured for payment.

907-226.03.1--Ground Preparation. Any equipment used for ground preparation shall be approved units suitable to perform the work and subject to the requirements of Subsection 108.05.

Light ground preparation should be used on areas where seeding is required.

Light ground preparation consists of scratching the surface with a close-tooth harrow, disk-harrow, or similar equipment. The depth of scratching should be at least three-quarters inch but not deep enough to damage existing grasses of the type being planted.

Aerating, moistening, or otherwise bringing the soil to a suitable condition for ground preparation shall be considered as incidental to the work and will not be measured for separate payment.

907-226.03.2--Fertilizing. The Contractor shall furnish all equipment necessary to properly handle, store, uniformly spread, and incorporate the specified application of fertilizer.

The Contractor shall incorporate fertilizer at a rate of 500 pounds per acre of 13-13-13 commercial fertilizer. The equivalent rate of other type fertilizers will be allowed if the equivalent percentages of Nitrogen, Phosphorus and Potassium are obtained. Fertilization shall be applied uniformly on the areas to be seeded and uniformly incorporated into the soil.

Fertilizer should be applied on individual areas of not more than three acres.

All fertilizer should be incorporated within 24 hours following spreading.

907-226.03.3--Seeding.

907-226.03.3.1--General. Prior to planting the seeds, ground preparation and fertilizing should have been satisfactorily performed.

The required type of seeds, recommended rates of application and recommended planting dates of seeds are shown in the vegetation schedule in the plans.

When a temporary vegetation schedule is not shown in the plans, the following types of seed and application rates should be used.

Spring & Summer
Browntop Millet ---------- 20 pounds per acre - April 1 to August 31

Fall & Winter
Rye Grass ---------- 25 pounds per acre - September 1 to March 31
Oats ---------- 90 pounds per acre - September 1 to December 15

It is the Contractor's responsibility to apply an ample amount of each type of seed to produce a satisfactory growth of grass and of the seed type required.

Legume seeds should be treated in accordance with Subsection 715.03.4 immediately before sowing. Seeds should be uniformly sown over the entire area with mechanical seeders. Seeds of different sizes may necessitate separate sowing. When legume seeds become dry, they should be reinoculated.

Seeding should not be done during windy weather or when the ground is frozen, extremely wet, or in an untillable condition.

All seeds should be covered lightly with soil by raking, rolling, or other approved methods, and the area compacted with a cultipacker.

907-226.03.3.2--Plant Establishment. Plant establishment shall consist of preserving, protecting, watering, reseeding, and other work necessary to keep the seeded areas in satisfactory condition.

Areas requiring reseeding should be prepared and seeded and all other work performed as if the reseeding was the initial seeding. The types and application rates of fertilizer will be at the discretion of the Contractor. No additional measurement and payment will be made for re-seeding when payment was made for the initial seeding.

907-226.03.3.3--Growth and Coverage. It shall be the Contractor's responsibility to provide satisfactory growth and coverage of grasses, legumes, or combination produced from the specified seeding.

Growth and coverage on seeded areas will be considered to be in reasonably close conformity with the intent of the contract when the type of vegetation specified, exclusive of that from seeds not expected to have germinated and shows growth at that time, has reached a point of maturity where stems or runners overlap adjacent similar growth in each direction over the entire area.

907-226.03.4--Mulching.

907-226.03.4.1--Equipment. Mulching equipment should be capable of maintaining a constant air stream which will blow or eject controlled quantities of mulch in a uniform pattern. If asphalt is used, a jet or spray nozzle for applying uniform, controlled amounts of asphalt to the vegetative material as it is ejected should be located at or near the discharge spout.

Mulch stabilizers should consist of dull blades or disks without camber and approximately 20 inches in diameter. The disks should be notched, should be spaced at approximately 8-inch intervals, and should be equipped with scrapers. The stabilizer should weigh approximately 1000 to 1200 pounds, should have a working width of no more than eight feet, and should be equipped with a ballast compartment, so that weight can be increased.

907-226.03.4.2--Placement of Vegetative Mulch. If required, mulching should be placed uniformly on designated areas within 24 hours following seeding unless weather conditions are such that mulching cannot be performed. Placement should begin on the windward side of areas and from tops of slopes. In its final position, the mulch should be loose enough to allow air to circulate but compact enough to partially shade the ground and reduce erosion.

The baled material should be loosened and broken thoroughly before it is fed into the machine to avoid placement of unbroken clumps.

907-226.03.4.3--Rates of Application and Anchoring Mulch. The recommended rate of application of vegetative mulch shall be as shown in the vegetation schedule in the plans. The mulch should be anchored by either the use of a mulch stabilizer or by tacking with bituminous material. If a mulch stabilizer is used, the mulch should be punched into the soil for a minimum depth of one inch. If bituminous material is used, the rate of application should be 150 gallons per acre.

Where steep slopes or other conditions are such that anchoring cannot be performed satisfactory with a mulch stabilizer, the Contractor may elect to use bituminous material applied at the time or immediately following the mulch placement.

When mulch stabilizers are used, anchoring the mulch should be performed along the contour of the ground surface.

907-226.03.4.4--Protection and Maintenance. The Contractor should take every precaution to prevent unnecessary foot and vehicular traffic.

907-226.04--Method of Measurement. Temporary grassing will be measured by the acre. Acceptance will be based on a satisfactory growth and coverage of seeds planted.

907-226.05--Basis of Payment. Temporary grassing, measured as prescribed above, will be paid for at the contract unit price per acre, which will be full compensation for all required materials, equipment, labor, testing and all work necessary to establish a satisfactory growth of grass.

Payment will be made under:

907-226-A: Temporary Grassing - per acre

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-227-10 **CODE: (IS)**

DATE: 01/25/2012

SUBJECT: Hydroseeding

Section 907-227, Hydroseeding, is hereby added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-227--HYDROSEEDING

907-227.0l--Description. This work consists of furnishing, transporting, placing, plant establishment and all work necessary to produce a satisfactory and acceptable growth of grass. The seeds, fertilizers, tackifier, and mulch shall be incorporated using the hydroseeding process. These items shall be combined into a mixture and force-applied to the areas to be grassed.

907-227.02--Materials. The Contractor shall, prior to application, furnish the Engineer with invoices of all materials used in the grassing operation.

907-227.02.1--Fertilizers. Fertilizers for purposes of these specifications shall be understood to include standard manufactured products consisting of single or combination ingredients.

All fertilizers shall comply with the State fertilizer laws and Subsection 715.02.

907-227.02.2--Seeds. Seeds shall meet the requirements of Subsection 715.03, subject to the provisions of this subsection. The Contractor shall acquire seed from persons registered with the Mississippi Department of Agriculture and Commerce.

Except for the germination requirements, bags of seeds properly labeled or tagged according to law and indicating characteristics meeting or exceeding the requirements of Subsection 715.03 will be acceptable for planting.

The Contractor should provide adequate dry storage facilities for seeds, and shall furnish access to the storage for sampling stored seed.

907-227.02.3--Mulching. The rate of application of fiber mulch shall be as recommended by the manufacture of the fibers mulch.

907-227.02.3.1--Wood Fiber Mulch. Wood fiber mulch shall be made from wood chip particles manufactured particularly for discharging uniformly on the ground surface when dispersed by a hydraulic water sprayer. It shall remain in uniform suspension in water under agitation and blend with grass seed and fertilizer to form a homogeneous slurry. The fibers shall intertwine physically to form a strong moisture-holding mat on the ground surface and allow rainfall to percolate the underlying soil. The fiber material shall be heat processed so as to

contain no germination or growth-inhibiting factors. The mulch shall be dyed an appropriate color to facilitate the application of material using non-toxic dye.

907-227.02.3.2--Cellulose Fiber Mulch. Cellulose fiber mulch consist of recycled paper stock products which are shredded into small pieces particular for application by hydraulic seeding equipment. It shall mix readily and uniformly under agitation with water and blend with grass seed and fertilizer to form a homogeneous slurry. When applied to the ground surface, the material shall form a strong moisture-holding mat, allow rainfall to percolate the underlying soil, and remain in place until the grass root system is established. The material shall contain no growth inhibiting characteristic or organisms. The mulch shall be dyed an appropriate color to facilitate the application of material using non-toxic dye.

907-227.02.3.3--Wood/Cellulose Fiber Mulch. Wood/cellulose fiber mix hydroseeding mulch shall consist of a combination of the above wood and cellulose fibers at a ratio recommended by the manufacturer of the products.

907-227.02.3.4--Straw Mulch. Straw mulch shall consist of a natural straw fiber. This material shall be a minimum 90% straw and essentially free from plastic materials or other non-bio degradable substances. The material shall be disperse into a uniform mulch slurry when mixed with water.

907-227.02.3.5--Tacifier. The tackifier will serve the purpose of an adhesive to form a bond between the soil, fiber, and seed particles. It will also allow the soil to retain moisture.

The tackifier shall be of the organic or synthetic variety.

907-227.03--Construction Requirements.

907-227.03.1--Ground Preparation. Light ground preparation consists of plowing, loosening, and pulverizing the soil to form suitable beds for seeding items in reasonably close conformity with the established lines and grades without appreciable humps or depressions. Unless otherwise specified, the pulverized and prepared seedbed should be at least four inches deep and shall be reasonably free of large clods, earth balls, boulders, stumps, roots and other objectionable matter. The Engineer may eliminate or alter the requirements for ground preparation due to site conditions.

907-227.03.2--Fertilizing. The Contractor shall furnish all equipment necessary to properly handle, store, uniformly spread, and incorporate the specified application of fertilizer.

The Contractor shall incorporate bag fertilizer at a rate of 1000 pounds per acre of 13-13-13 commercial fertilizer. The equivalent rate of other type fertilizers will be allowed if the equivalent percentages of Nitrogen, Phosphorus and Potassium are obtained. Any changes in the type or rate of application of the fertilizers shall be approved by the Engineer prior to being incorporated.

Agricultural limestone will be incorporated into the area and paid for in accordance with Section 213 of the Standard Specifications.

907-227.03.3--Seeding.

907-227.03.3.1--General. The Contractor shall use the vegetation schedule in the plan for the correct types of seed and application rates, unless otherwise noted or approved by the Engineer.

When a vegetation schedule for permanent grass is not shown in the plans, the following types of seed and application rates shall be used, unless otherwise approved by the Engineer.

Bermudagrass	20 pounds per acre
Bahiagrass	25 pounds per acre
Tall Fescue	15 pounds per acre
Crimson Clover	20 pounds per acre

At the completion of the project, a satisfactory growth of grass will be required. The Contractor should reference Subsection 210 for satisfactory growth and coverage of dormant seed.

907-227.03.3.2--Plant Establishment. The Contractor should provide plant establishment on all areas seeded until release of maintenance. Plant establishment shall consist of preserving, protecting, watering, reseeding, mowing, and other work necessary to keep the seeded areas in satisfactory condition.

Plant establishment should be provided for a minimum period of 45 calendar days after completion of seeding. In the event satisfactory growth and coverage has not been attained by the end of the 45-day period, plant establishment should be continued until a satisfactory growth and coverage is provided for at least one kind of plant. The Contractor should reference Section 210 of the Standard Specifications for more information.

907-227.03.3.3--Growth and Coverage. It shall be the Contractor's responsibility to provide satisfactory growth and coverage of grasses, legumes, or combination produced from the specified seeding.

Growth and coverage on seeded areas will be considered to be in reasonably close conformity with the intent of the contract when the type of vegetation specified, exclusive of that from seeds not expected to have germinated and shows growth at that time, has reached a point of maturity where stems or runners overlap adjacent similar growth in each direction over the entire area.

Final acceptance of the project will not be made until a satisfactory growth of grass has been acknowledged by the Engineer.

907-227.03.4--Mulching. At the Contractor's option, mulch may be wood fiber, cellulose fiber, a mixture of wood and cellulose fibers, or straw fiber. The mulch shall be applied at the rate recommended by the manufacturer in a mixture of water, seed and fertilizer. Any changes in the rate of application of the mulch shall be approved by the Engineer prior to its use.

907-227.03.5--Equipment. Hydraulic equipment shall be used for the application of fertilizers, seeds and slurry of the prepared mulch. This equipment shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix slurry of the specified amount of fiber, fertilizer, seed and water. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of hydraulic spray nozzles, which will provide even distribution of the slurry on the various areas to be seeded.

The seed, fertilizer, mulch and water shall all be combined into the slurry tank for distribution of all ingredients in one operation as specified herein. The materials shall be combined in a manner recommended by the manufacturer. The slurry mixture shall be so regulated that the amounts and rates of application shall result in a uniform application of all materials at rates not less than the amounts specified. Using the color of the mulch as a guide, the equipment operator shall spray the prepared seedbed with a uniform visible coat. The slurry shall be applied in a sweeping motion, in an arched stream, so as to fall like rain, allowing the mulch to build upon each other until an even coat is achieved.

907-227.03.6--Protection and Maintenance. The Contractor should maintain and protect seeded areas until release of maintenance of the project. The Contractor should take every precaution to prevent unnecessary foot and vehicular traffic.

The Contractor should mow or otherwise remove or destroy any undesirable growth on all areas mulched to prevent competition with the desired plants and to prevent reseeding of undesirable growth.

907-227.04--Method of Measurement. Hydroseeding, complete and accepted, will be measured by the acre. No separate payment will be made for ground preparation, seeds, fertilizers, or mulch. Acceptance will be based on a satisfactory growth and coverage of seeds planted.

Agricultural limestone shall be measured and paid for under Section 213 of the Standard Specifications.

907-227.05--Basis of Payment. Hydroseeding, measured as prescribed above, will be paid for at the contract unit price per acre, which will be full compensation for all required materials, equipment, labor, testing and all work necessary to establish a satisfactory growth of grass.

Payment will be made under:

907-227-A: Hydroseeding - per acre

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-234-5 **CODE: (SP)**

DATE: **09/23/2010**

SUBJECT: **Siltation Barriers**

Section 234, Silt Fence, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-234.01--Description. Delete the first paragraph of Subsection 234.01 on page 177 and substitute the following:

This work consists of furnishing, constructing and maintaining a water permeable filter type fence, inlet siltation guard or turbidity barrier for the purpose of removing suspended soil particles from the water passing through it in accordance with the requirements shown on the plans, directed by the Engineer and these specifications. Fence, inlet siltation guards and turbidity barriers measured and paid as temporary shall be removed when no longer needed or permanent devices are installed.

Delete the first sentence of the second paragraph of Subsection 234.01 on page 177 and substitute the following:

It is understood that measurement and payment for silt fence, inlet siltation guards, and turbidity barriers will be made when a pay item is included in the proposal.

907-234.02--Materials. After the first paragraph of Subsection 234.02 on page 177, add the following:

Inlet siltation guards shall be listed on the Department's "Approved Sources of Materials".

Turbidity barriers shall be one of the following, or an approved equal.

1. SiltMax Turbidity Barrier by Dawg, Inc., 1-800-935-3294, www.dawginc.com
2. Turbidity Barrier by IWT Cargo-Guard, Inc., 1-609-971-8810, www.iwtcargoguard.com
3. Turbidity Curtain by Abasco, LLC, 1-281-214-0300, www.abasco.net

Chain link fence and hardware for super silt fence shall meet the requirements of Section 607, as applicable. Geotextile for super silt fence shall meet the requirements of Subsection 714.13 for a Type II Woven fabric.

907-234.03--Construction Requirements. After the last paragraph of Subsection 234.03.1 on page 178, add the following:

Super Silt Fence. Super silt fence shall be constructed in accordance with the plans and these specifications.

All posts shall be installed/driven so that at least 34 inches of the post will protrude above the ground. The chain link wire and geotextile shall be stretched taut and securely fastened to the posts as shown on the plans. The bottom edge of the fence and geotextile shall be buried at least eight inches below ground surface to prevent undermining. When splicing of the geotextile is necessary, the fabric shall be overlapped approximately 18 inches.

907-234.03.1.1--Placement of Inlet Siltation Guards and Turbidity Barriers. The inlet siltation guards and turbidity barriers shall be constructed at the locations shown on the erosion control plans. Inlet siltation guards and turbidity barriers shall be installed in accordance with the erosion control drawings in the plans. A copy of the manufacturer's instructions for placement of inlet siltation guards and turbidity barriers shall be provided to the Engineer prior to construction.

907-234.03.2--Maintenance and Removal. At the end of the first paragraph of Subsection 234.03.2 on page 178, add the following:

The Contractor shall maintain the inlet siltation guards. The geotextile shall be removed and replaced when deteriorated to such extent that it reduces the effectiveness of the guard. Replacement geotextile shall be the same type and manufacture as the original. Excessive accumulations against the guard shall be removed and disposed of at a location approved by the Engineer.

The Contractor shall maintain the turbidity barriers. Excessive accumulations against the turbidity barrier shall be removed and disposed of at a location approved by the Engineer.

Delete the second paragraph of Subsection 234.03.2 on page 178 and substitute the following:

Unless otherwise directed, all temporary silt fences, inlet guards and turbidity barriers shall be removed. Upon removal, the Contractor shall remove and dispose of any excess silt accumulations, shape the area to the line, grade, and cross section shown on the plans and vegetate all bare areas in accordance with the contract requirements. The temporary fence, inlet guard materials and turbidity barriers will remain the property of the Contractor and may be used at other locations provided the materials are acceptable to the Engineer.

After Subsection 234.03.2 on page 178, insert the following:

907-234.03.3--Resetting Inlet Siltation Guards and Turbidity Barriers. When inlet siltation guards and turbidity barriers are no longer needed at one location, they may be removed and reset at other needed locations. The Engineer may allow the resetting of siltation guards and turbidity barriers upon an inspection and determination that the siltation guards (frame and geotextile) and turbidity barriers are adequate for their intended purpose. When they have to be stored until needed at another location, payment for resetting will not be made until they are reset at their needed location.

907-234.04--Method of Measurement. Delete the sentence in Subsection 234.04 on page 178, add the following:

Silt fence and super silt fence will be measured by the linear foot.

Inlet siltation guard and resetting siltation guards will be measured per each. Turbidity barrier will be measured per linear foot.

907-234.05--Basis of Payment. Delete the sentence in Subsection 234.05 on page 178, add the following:

Silt fence and super silt fence, measured as prescribed above, will be paid for at the contract unit price per linear foot which shall be full compensation for completing the work.

Inlet siltation guard, resetting inlet siltation guards, and turbidity barrier, measured as prescribed above, will be paid for at the contract unit price per each or linear foot, which shall be full compensation for furnishing, constructing, and maintaining the work and for the removal and disposal of all items comprising the devices.

After the last pay item listed on page 178, add the following:

907-234-C:	Super Silt Fence	- per linear foot
907-234-D:	Inlet Siltation Guard	- per each
907-234-E:	Reset Inlet Siltation Guard	- per each
907-234-F:	Turbidity Barrier	- per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-237-4 **CODE: (SP)**

DATE: 03/13/2012

SUBJECT: Wattles

Section 907-237, Wattles, is hereby added to and made a part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

SECTION 907-237 - WATTLES

907-237.01--Description. This work consists of furnishing, constructing and maintaining wattles for the retention of soil around inlets, swale areas, small ditches, sediment basins and other areas as necessary. Also, the work includes removing and disposing of the wattles and silt accumulations.

Measurement and payment for wattles will be made only when a pay item is included in the bid schedule of the proposal. The quantity is estimated for bidding purposes only and will be dependent upon actual conditions which occur during construction of the project.

907-237.02--Materials. Wattles used around inlets shall have a diameter of twelve inches (12") and a length adequate to meet field conditions. Wattles used at other locations shall have a diameter of twenty inches (20") and a length adequate to meet field conditions. The minimum diameter for the above wattle sizes shall be one inch (1") less than the specified diameter.

The stakes used in securing the wattles in place shall be placed approximately three feet (3') apart throughout the length of the wattle. Stakes shall be wooden and of adequate size to stabilize the wattles to the satisfaction of the Engineer.

In addition to the requirements of this specifications, wattles shall be listed on the Department's "Approved Sources of Materials".

907-237.03--Construction Requirements.

907-237.03.1--General. The wattles shall be constructed at the locations and according to the requirements shown on the erosion control plan.

907-237.03.2--Maintenance and Removal. The Contractor shall maintain the wattles and remove and dispose of silt accumulations.

When the wattles are no longer needed, they shall be removed and the Contractor shall dispose of silt accumulations and treat the disturbed areas in accordance with the contract requirements.

907-237.04--Method of Measurement. Wattles of the size specified will be measured per linear foot.

907-237.05--Basis of Payment. Wattles, measured as prescribed above, will be paid for at the contract unit price per linear foot, which price shall be full compensation for installation, maintaining and removal of the wattles, the removal and disposal of silt accumulations and any required restoration of the disturbed areas.

Payment will be made under:

907-237-A: Wattles, Size - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-246-3 **CODE: (SP)**

DATE: 11/08/2010

SUBJECT: Sandbags and Rockbags

Section 907-246, Sandbags and Rockbags, is hereby added to and made a part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

SECTION 907-246 -- SANDBAGS AND ROCKBAGS

907-246.01--Description. This item of work shall consist of the furnishing, installing, and maintaining sandbags and rockbags for the purpose of temporary erosion control by intercepting and slowing the flow of sediment-laden runoff water, or for use as a temporary dam.

907-246.02--Materials. The filler material for sandbags shall consist of a fine aggregate meeting the requirements of Subsection 703.02. The filler material for rockbags shall consist of a size 57 aggregate meeting the requirements of Subsection 703.03.

The bag material shall be woven polypropylene, polyethylene or polyamide fabric with a minimum unit weight of four (4) ounces per square yard. The bags shall be a minimum of 21 inches in length, 12 inches in width, and four (4) in thickness when filled.

907-246.03--Construction Requirements. Sandbags and rockbags shall be used to construct a berm/dam which will intercept sediment-laden storm water runoff from disturbed areas, create a retention pond, detain sediment, and release water in sheet flow. Sand or rock shall be placed in the bag so that at least the top six (6) inches of the bag is unfilled to allow for proper tying of the open end. Any subsequent rows of bags shall be offset one-half the length of the preceding row to provide a layered brick-type arrangement.

The sandbag and rockbag berm/dam installation shall be maintained in good condition by the Contractor. All necessary work and materials to maintain the integrity of the installation shall be provided until earthwork construction is complete and permanent erosion-control features are in place. The maintenance of the bags will not be paid for separately and will be included in the cost for sandbags or rockbags.

907-246.04--Method of Measurement. Sandbags and rockbags will be measured per linear foot or each.

Sandbags and rockbags measured by the linear foot shall be in accordance with the details in the erosion control drawing. The length of the sandbag or rockbag berm/dam will be measured end-to-end along the cross-section of the ditch in accordance with the erosion control drawing.

907-246.05--Basic of Payment. Sandbags and rockbags, measured as prescribed above, will be

paid for per linear foot or each, which prices shall be full compensation for furnishing bags, fine aggregate, size 57 aggregate, placement of bags, maintenance of the installation, removal and disposal of the sediment deposits and removal after construction has been completed, and for all labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

907-246-A: Sandbags	- per linear foot or each
907-246-B: Rockbags	- per linear foot or each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-249-1 **CODE: (SP)**

DATE: 03/01/2011

SUBJECT: Riprap for Erosion Control

Section 907-249, Riprap for Erosion Control, is hereby added to and made a part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

SECTION 907-249 -- RIPRAP FOR EROSION CONTROL

907-249.01--Description. Riprap for erosion control consists of furnishing and installing riprap for the purpose of temporary erosion control by intercepting and slowing the flow of sediment-laden runoff water, or for use as a temporary dam. It also includes the maintenance and removal of riprap when no longer needed.

Remove and reset riprap consists of the removal and relocation of riprap to other locations shown on the plans, directed by the Engineer, or indicated on the Contractor's Erosion Control Plan.

Riprap shall be installed in accordance with the specifications in reasonably close conformity with the locations and dimensions shown on the plans or established.

907-249.02--Materials. Stones for riprap shall be Size 100 meeting the requirements of Subsection 705.04.

907-249.03--Construction Requirements. Riprap shall be used to construct a berm/dam which will intercept sediment-laden storm water runoff from disturbed areas, create a retention pond, detain sediment, and release water in sheet flow.

The riprap installation shall be maintained in good condition by the Contractor. All necessary work and materials to maintain the integrity of the installation shall be provided until earthwork construction is complete and permanent erosion-control features are in place. The maintenance of the riprap will not be paid for separately and will be included in the cost for riprap for erosion control.

When required, existing riprap may need to be removed and reset at other locations. These locations may be for additional temporary erosion control or may be placed in permanent locations designated by the Engineer.

907-249.04--Method of Measurement. Riprap for erosion control will be measured per ton. Remove and reset riprap shall be measured per cubic yard, FM.

907-249.05--Basic of Payment. Riprap for erosion control, measured as prescribed above, will

be paid for per ton, which prices shall be full compensation for furnishing, installation, maintenance of the installation, and removal/disposal after construction has been completed; and for all labor, tools, equipment and incidentals necessary to complete the work.

Remove and reset of riprap, measured as prescribed above, will be paid for per cubic yard, which prices shall be full compensation for loading, transporting, installing, maintenance of the new installation, and removal/disposal after construction has been completed; and for all labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

907-249-A: Riprap for Erosion Control - per ton

907-249-B: Remove and Reset Riprap - per cubic yard

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-260-4 **CODE: (SP)**

DATE: 02/12/2013

SUBJECT: Sewage Pumping Station

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Section 907-260, Sewage Pumping Station, is hereby added to and made a part of the 2004 Edition of the Mississippi Standard Specification for Road and Bridge Construction as follows.

SECTION 907-260--SEWAGE PUMPING STATION

907-260.01--Description. The work covered by this section consists of furnishing all labor, equipment and materials and performing all operations in connection with the installation of solids handling, submersible pumps, pump station, wetwell, valve vault, piping and valves per details as indicated on the plans and as specified herein. The work includes clearing, grubbing, dewatering, bedding, pipe laying, backfilling, testing, fittings, and appurtenances required for a complete installation. The Contractor shall comply with all applicable city ordinances and regulations.

907-260.01.1--Manufacturer's Experience. It is the intention of this Specification to cover minimum acceptable quality equipment for a complete installation. The Equipment Manufacturer shall have not less than five (5) successful years of experience in the design, construction and operation of equipment of the type specified at a minimum of five (5) different collection system entities.

The Engineer may require evidence, in the form of operating records, from these collection system entities to substantiate any claims concerning the ability of the proposed sewage pumping equipment to perform as required.

907-260.01.2--Supplier's/Manufacturer's Services. A supplier's and/or manufacturer's representative for the equipment specified herein shall be made available at the job site in the event of failure or other malfunction of the equipment or basin to verify the problem and take whatever action is necessary for correction thereof. The cost of this service shall be included in the pump supplier's cost.

Upon completion of pump station installation, a supplier's and/or manufacturer's representative for the equipment specified herein shall be made available at the job site for start-up, check-out, and testing of all pumps, controls, and other associated pump station equipment to the satisfaction of the Construction Manager, Owner, and the Engineer. The cost of this service shall be included in the pump supplier's cost.

907-260.02--Materials.

907-260.02.1--Pumping System. Contractor shall furnish all labor, materials, equipment and incidentals required to provide duplex pumping system as specified herein. The system shall consist of compatible pumps and controls so as to insure suitability and assurance in matching the equipment together. Submersible pump and motor shall be Goulds, or Owner approved equal.

System shall consist of submersible sewage pumps (solids handling), level control switches, discharge plumbing and valve vault and aluminum hatch, pump mounting support, and cord sealing plate for conduit to panel; to be installed in concrete wetwell with an aluminum access cover. Structure and dimensions shall be as shown on drawings.

Each pump shall have a pumping capacity against a total head as shown on the drawings. Pump motor shall be 60 Hertz and to the horsepower, phase, voltage, and speed as shown herein and on the drawings.

Controls shall be detailed on the plans and per Special Provision No. 907-266, Duplex Pump Control Panel.

On sump level rise lower switch shall first be energized, then upper level switch shall next energize and start lead pump. With lead pump operating, sump level shall lower to low switch turn-off setting and pump shall stop. Alternating relay shall index on stopping of pump so that lag pump will start first on next operation and become lead pump. If sump level continues to rise when lead pump is operating, override switch shall energize and start lag pump. Both lead and lag pump shall operate together until low-level switch turns off both pumps. If level continues to rise when both pumps are operating, alarm switch shall energize and signal the alarm. If one pump should fail for any reason, the second pump shall operate on the override control and if level rises above override control, alarm shall signal. All level switches shall be adjustable for level setting, from the surface.

907-260.02.2--Pumps. Each pump shall be a non-clog submersible type, model as shown on the drawings, or an Owner approved equivalent. All openings in pump shall be large enough to pass a 3-inch diameter sphere. Discharge flange shall be sized as shown on the drawings.

907-260.02.2.1--Impeller. The pump impeller shall be cast iron, two vane closed design and recessed type. Impeller shall be dynamically balanced. Impeller shall be driven by stainless steel key, and impeller shall be held in position with lock screw and washer. Impeller and motor shall have top lift-out of case so that the assembly can be removed without disturbing any piping.

907-260.02.2.2–Pump Case. The volute case shall be of high tensile strength cast iron and have a flanged center line discharge. Discharge flange shall be standard flange with bolt holes straddling center line.

907-260.02.2.3--Pump and Motor Casting. All castings shall be of high tensile strength cast iron. Castings shall be treated with phosphate and chromate rinse and shall be painted before machining. All machined surfaces to be exposed to sewage water shall be re-painted.

907-260.02.2.4--Painting. The pumps shall be painted after assembly in accordance with the recommendations of the manufacturer.

907-260.02.2.6--Spare Parts. A suggested spare parts list for pumps, drive systems, and special tools shall be furnished to the Owner by the pump supplier.

907-260.02.2.7--Pedestal Mount. The pump manufacturer shall provide a common pump and motor base, constructed of 3/8 inch thick, minimum thickness, fabricated steel, suitably reinforced to support the full weight of the pump and motor. The pedestal base shall include support legs of sufficient length to provide clear access to the suction port of the pump without impeding the flow of liquids and solids into the pump suction.

907-260.02.3—Motors. This specification details the mechanical and electrical requirements for squirrel-cage induction motors, both single and three phase, designed for wet well submersible applications in water and sewage. It is the intent of this specification to define submersible premium quality motors which will provide efficient operation with high mechanical integrity under adverse operating conditions for maximum life and minimum life cycle costs. This specification covers sewage wet well applications defined by the National Electric Code as Class 1; Division 1, hazardous locations section 501-8(a) requiring explosion proof construction.

Motors covered by this specification shall conform to the latest applicable requirements of NEMA, IEEE, ANSI and NEC standards; shall be designed for continuous submerged duty in water and sewage, and minimum 15 minute duty continuous in air under full load operating conditions. Motors shall be three(3) phase rated 230/460, volts, based upon 40°C ambient conditions. Motor construction shall be designed to withstand 200 psi water pressure at all seal locations. Motors shall be furnished with Class F rated insulation materials or better; shall be rated as Class F, 1.15 service factor, Class 1 Groups C&D. Motors will be CSA (Canadian Standards Association) and U.L. (Underwriters Laboratories) approved and name plated accordingly and shall be manufactured in the United States of America. The ability to provide any/all replacement parts, engineering design support, complete dynamometer testing, and U/L rerate capability shall be provided domestically.

907-260.02.3.1--Bearing and Lubrication. Bearings shall be ball, single row, deep groove, Conrad type, and shall have a Class 2 internal fit conforming to AFBMA Std. 20; shall be selected to provide minimum L10 rating life of 17,500 hours. The motor shall be designed to limit the bearing temperature rise to a maximum of 60°C under full load conditions. Motors shall be greased by the manufacturer with a premium moisture resistant polyurea thickened grease containing rust inhibitors and suitable for operation over a temperature range of -25°C to +120° C.

907-260.02.3.2--Shaft Seal. Two independently-mounted mechanical face type seals shall be provided. The inner and outer seals shall be separated by an oil filled chamber. The oil shall act as a barrier to trap moisture and provide sufficient time for a planned shutdown. The oil shall also provide lubrication to the internal seal. Standard John Crane Type 21, Sealol type 43, or Sealol type 42, U/L approved seals shall be provided. The inner seal shall be provided with

carbon rotating face and ceramic stationary face. The outer seal shall be provided with a solid tungsten carbide rotating face and a silicon carbide or tungsten carbide stationary face. The outer seal construction shall be designed for easy replacement. In compliance with U/L Standards for explosion proof motors, a flame path shall be provided by a labyrinth slinger in the bottom flange in order to prevent the ignition of ambient gases. Under such conditions the seal design shall allow for pressure relief across either seal face.

907-260.02.3.3--Moisture Protection System. Dual (2) moisture sensing probes are to be provided that extend into the oil chamber located between the outer and inner seal and used to detect the presence of moisture should the outer seal fail. The moisture protection system shall also be designed to detect water in the motor chamber and provide a warning signal prior to water levels reaching the bearing or wound stator assemblies.

907-260.02.3.4--Cap/Cable Assembly. The power cable and cap assembly shall be designed to prevent moisture from wicking through the cable assembly even when the cable jacket has been punctured. Power and control cable entry into the lead connection chamber shall be epoxy encapsulated for positive moisture sealing. Compression type fittings or connectors shall not be considered equal. A Buna-N power and control cable grommet shall be provided in addition to the epoxy to the epoxy sealed leads.

907-260.02.3.5--Enclosure and Shaft. The motor enclosure including: frame, end brackets, flange and cap assembly shall be cast iron, ASTM type A-48, Class 25 or better. Motor frame construction will not have fins and will be a smooth surface to prevent the clogging of solids and provide for easy cleaning. The top end bracket will include integrally cast provisions for vertical lifting capability. All mating frame fits to have rabbet joints with large overlap as well as O-ring seals for a water tight seal. O-rings shall be Buna-N (nitrile). Viton O-rings may be supplied as an option and are required for ambient conditions of 61°C and higher. Motor shaft shall be 416 stainless steel (303, 304, 410 stainless steel 17-4 PH, Carpenter 20, all types of Monel or Nitronic 50 stainless steel may be provided). All external hardware including the motor nameplate shall be made of stainless steel. Motor rotor construction shall be die cast aluminum or fabricated copper or their respective alloys. Rotors on frames 213T and above shall be keyed to shaft and rotating assembly dynamically balanced to NEMA limits per MG1-25.05. Balance weights if required, shall be secured to the rotor resistance ring or fan blades by rivets. Machine screws and nuts are prohibited. All exposed motor parts including frame, brackets, flange, and cap assembly shall receive an alkyd primer and epoxy ester finish coat of high grade paint to resist rust and corrosion.

907-260.02.3.6--Electrical. All motors shall successfully operate under power supply variations per NEMA MG1-14.30. Motors shall be designed to limit the maximum surface temperature to NEC specifications for Division 1: Class 1, Group D, or Class 1, Group C & D for hazardous locations. All motors shall be NEMA design B. Motors shall have copper windings. Motor insulation system shall be Class F minimum, utilizing materials and insulation systems evaluated in accordance with IEEE 117 classification test. Motor leads shall be non-wicking types, Class f temperature rating or better and permanently numbered for identification. Entire wound stator assembly shall receive a minimum of two (2) coats of varnish applied using a dip and bake process. All motors to include two (2) normally closed automatic reset thermostats connected in

series and embedded in adjoining phases as required by Underwriters Laboratories for motors of 1-HP or higher. Each completed and assembled motor shall receive a routine factory test per NEMA and IEEE standards.

907-260.02.4--Concrete Wetwell and Valve Vault. The concrete wetwell shall be built with precast concrete materials and accessories shown on the plans. The barrel of the wet-well shall be constructed of sections of reinforced concrete pipe conforming to ASTM 3 Specification Designation C76, Class II. Concrete for pipe shall be Type II Portland Cement with 100 percent calcareous aggregate. The diameter, height, opening and other details shall be as shown on the Plans. Joints shall be made with rubber gaskets or an approved equal.

The valve vault, concrete slab and miscellaneous concrete items shall be constructed of concrete having the minimum compressive strength required at 28days of 3,000 pounds per square inch. Field specimens and laboratory tests shall be made in accordance with the standards of the American Society of Testing Materials. The minimum amount of water shall be used to produce a workable mix and shall not exceed six (6) U.S. gallons per sack of cement.

907-260.02.4.1--Concrete Wetwell Surfacing and Lining. 100% Solids Polymer Liner system shall be applied to the interior of the sewage pumping station wetwell. Application shall be performed after installation of the wet well. Materials shall be in accordance with the CCI Spectrum SpectraShield Liner System, or approved equal. Application and minimum physical standards shall be as specified in Subsection 907-604.03.10, 100% Solids Polymer Liner.

907-260.02.4.2--Covers. Covers shall be aluminum access hatch with externally operating locking devices. Access covers shall be sized for the wet well and/or the valve vault; the covers shall be manufactured by Halliday Products, Inc., Bilco, U.S. Foundry, Inc. or an Owner approved equivalent. Locking devices and hardware shall be a non-corrosive locking bar with a stainless steel handle and hardware; said hardware shall be furnished with the access door. Design loading shall be 150 pounds per square foot, minimum.

907-260.02.5--Submittals. Operating and Maintenance manuals, installation instructions, and Shop Drawings shall be submitted in accordance with these specifications.

Shop Drawings for all pumps, drive motors and accessories shall be submitted to the Construction Manager and Engineer for approval and shall give make, size, style, model, capacity, weight and all other data required to show compliance with the requirements of the Plans and Specifications. Shop Drawings shall include performance curves of the pump unit showing capacity of pump at its motor speed or range of speeds from shut-off heads to minimum head, recommended head and capacity range for continuous operation of the pump, pump efficiencies, brake horsepower, NPSH requirements and solids handling capabilities. Shop Drawings shall include motor data noting horsepower, voltage, current, enclosure type, NEMA design, dimensions and all other data as required to show compliance with Specification requirements. Shop Drawings shall cover all items directly associated with the pump assembly.

Shop Drawings for wetwell, valve vault, and control panel shall also be submitted to the Construction Manager and Engineer for approval and shall include all items described in the

specifications and the drawings for them. Information included with these submittals shall include but not be limited to the following: wetwell and valve vault structural drawing(s), wetwell and valve vault accessories, proposed wetwell gravity sewer invert(s) and force main invert elevations based on "cut sheet" calculations of the proposed gravity sewers submitted to the Construction Manager and Engineer, control panel features, control panel drawings, control panel equipment list, control panel accessories, control panel schematics, and any additional information to ensure compliance with these specifications and the contract drawings.

Instruction manual(s) for the installation of the pump station shall be securely attached to and readily visible on the outside of the packaging of the pumps. Five operation and maintenance manuals, all clean and unused, shall be delivered to the Construction Manager for the pumps, motors and all accessories at the start-up of the pump station. Each operation and maintenance manual will include parts lists of components and complete service procedures and troubleshooting guide.

907-260.03--Construction Requirements. All excavation and backfill for the pump station wetwell and valve vault shall be performed in accordance with MDOT Section 203**.** All equipment specified under this Section shall be installed in accordance with the manufacturers' recommendations. The pump station equipment, concrete wetwell, and concrete valve vault shall be installed in compliance with the pump station details as shown on the construction drawings. All precast concrete section work for the pump station wetwell and valve vault shall be performed in accordance with MDOT Section 604 and Special Provision No. 907-604, entitled "Manholes, Inlets And Catch Basins". All concrete work for the concrete foundation pad of the concrete wetwell and valve vault shall be performed in accordance with MDOT Section 604 and Special Provision No. 907-604, entitled "Manholes, Inlets And Catch Basins".

907-260.03.1--Testing.

907-260.03.1.1--Factory Testing. The pump shall be visually inspected to confirm that it is built in accordance with the specification as to horsepower, voltage, phase and hertz.

The motor and seal housing chambers shall be hi-potted to test for moisture content and/or insulation defects.

Pump shall be allowed to run dry to check for proper rotation.

Discharge piping shall be attached; the pump submerged in water and amp readings taken in each leg to check for an imbalanced stator winding. If there is a significant difference in readings, the stator windings shall be checked with a bridge to determine if an unbalanced resistance exists. If so, the stator will be replaced and retested.

907-260.03.1.2--Field Testing. The Contractor shall be responsible for providing water to the pump station for pump station testing.

Upon completion of pump station installation, a supplier's and/or manufacturer's representative for the equipment specified herein shall be made available at the job site for start-up, check-out,

and testing of all pumps, controls, and other associated pump station equipment to the satisfaction of the Construction Manager, Owner, and the Engineer. The cost of this service shall be included in the pump supplier's cost.

907-260.04--Method of Measurement. Sewage pumping station will be measured complete in place as a unit lump sum. Excavation, dewatering, backfilling, thrust blocks, pipe, valves, fittings, wire, concrete slabs, sheathing and shoring will not be measured separately, but shall be absorbed as a part of the lump sum item of the sewage pumping station, furnished and installed. The cost of all testing and startup shall be included in the measurement for this lump sum item.

All equipment testing, factory and field, equipment start-up, bypass pumping, pressure testing, plugging and blocking will be considered subsidiary obligations of the Contractor and will not be measured for separate payment.

Aggregate for pipe bedding, if ordered by the Engineer or authorized representative, will be measured and paid for under its appropriate pay item.

100% Solids Polymer Liner System shall be measured by square feet for which the system is applied. The cost shall include any corrections or additions. 100% Solids Polymer Liner System will be paid for at the contract unit price per square foot complete in place under pay item 907-604-E.

907-260.05--Basis of Payment. Sewage pumping station, measured as prescribed above, will be paid for at the contract lump sum price per unit specified, which shall be full compensation for completing the work. Materials or work for which a pay item is not included and are necessary to complete the work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

Payment will be made under:

907-260-A: Sewage Pumping Station - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-262-9 **CODE: (SP)**

DATE: 02/12/2013

SUBJECT: Sanitary Sewer System

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Section 907-262, Sanitary Sewer System, is hereby added to and made a part of the 2004 Edition of the Mississippi Standard Specification for Road and Bridge Construction as follows.

SECTION 907-262 -- SANITARY SEWER SYSTEM

907-262.01--Description. The work covered by this section consists of furnishing all labor, equipment and materials and performing all operations in connection with the installation of sanitary sewer lines, as indicated on the plans and as specified herein. The work includes clearing, grubbing, trenching, dewatering, bedding, pipe laying, backfilling, testing, bypass pumping, connections to existing manholes, fittings, and appurtenances required for a complete installation.

907-262.02--Materials.

907-262.02.1--Polyvinyl Chloride (PVC) Sewer Pipe. Polyvinyl chloride sewer pipe with a diameter of six inches (6") or larger, including pipe for house connections, shall be specifically designed to carry domestic sewage by gravity flow and shall be green in color and shall meet the requirements of ASTM D3034-81 with a maximum SDR equal to 26 and a minimum F/AY stiffness of 115 psi when tested in accordance with ASTM D2412. An acceptable equivalent is AWWA C900-07, DR 18 pipe (green in color).

All joints shall consist of an integral bell with a factory installed "locked in" elastomeric gasket. The spigot end of each joint shall be factory beveled.

All fittings shall be standard manufactured fittings, which meet the requirements of ASTM D3034-81 SDR-26 or AWWA C900-07, DR 18 pipe.

907-262.02.2--Ductile Iron Sewer Pipe. Ductile iron pipe for gravity sewers or sewer force main shall conform to ANSI Specifications A21-51. Wall thickness shall not be less than Class 50 unless otherwise specified. The words "Ductile Iron" and thickness class shall be conspicuously marked on each joint of pipe. Pipe shall be furnished with a coal tar coating inside and outside.

Mechanical joints shall meet the requirements of ASA A-21.11 except as amended by ASA A-21.51.

Fittings for ductile iron pipe shall be mechanical joint ductile iron castings with a coal tar coating in accordance with ANSI-AWWA C110/A21.10.

Bolting shall be of the type recommended by the pipe supplier and shall be of a material with a minimum 45,000 psi tensile strength, with semi-finished heavy nuts in accordance with ANSI/AWWA C111/A21.11.

907-262.02.3--Connectors and Adapters. Connectors and adapters shall be especially made for joining pipes of different materials and diameters. Pipe connectors between two different types of pipes shall be made by using flexible couplings with stainless steel shear rings with necessary donuts and bushings as required. These couplings will be 1002, 1003, 1006, 1051, and the 1056 series as manufactured by Fernco or equal. All connectors must comply with the requirements of ASTM C425.

907-262.02.4--Pipe Gaskets at Manholes. Gaskets around PVC pipe as it passes through the wall of new or existing sanitary manholes shall be flexible concrete manhole adapters or waterstops as manufactured by Fernco or equal.

907-262.02.5--Grout. An approved non-shrink grout shall be used for all necessary grouting.

907-262.02.6--Polyvinyl Chloride (PVC) Pressure Pipe for Force Mains. PVC sanitary sewer force mains shall be in accordance with AWWA C-900-81, SDR21, approved by the National Sanitation Foundation (NSF) and shall be U.L. listed. Pipe shall be white in color and furnished in standard lengths (minimum 20 feet) with integrally cast bells or couplings using elastomeric gaskets, which meet the requirements of ASTM D1869 and F477. An acceptable equivalent is AWWA C900-07, DR 18 pipe (white or green in color). All necessary adapters and retaining glands for connection to fittings shall be provided.

907-262.02.7--Fittings for Force Mains. Fittings for sewer force mains of four-inch (4") diameter and larger shall be seal coated ductile iron with mechanical joints ends. Mechanical joints shall be recommended by the manufacturer for use with AWWA C900 pipe. Fittings shall be manufactured in accordance with AWWA C104. Bolts shall be of the type recommended by the pipe supplier and shall be of material with a minimum 45,000 psi tensile strength with semi-finished heavy nuts in accordance with ANSI/AWWA C111/A21.11.

907-262.02.8--Air Release Valves. Valves shall function automatically to release to the atmosphere air that may accumulate in the pipeline, and shall prevent leakage of wastewater. Each valve shall be furnished with all required accessories for maintenance of the valves.

Materials used in manufacture of air release valves and accessories shall be new and shall be in accordance with all ASTM and other industry standards and as specified herein.

The body and cover shall be cast iron Class 30 in accordance with ASTM A48 or Class B in accordance with ASTM A126.

The float and guide shaft shall be stainless steel in accordance with ASTM A240.

The internal linkages shall be stainless steel in accordance with ASTM A240; or bronze in accordance with ASTM B584; or delrin in accordance of ASTM D2133.

907-262.02.8.1--Design. The valve shall have a float stem and body, which keeps the valve operating mechanism as free from contact with the sewage as possible. The float shall hang freely in the center of the valve body with about one-half inch (1/2") clearance all around to prevent large solids getting above the float and float's free suspension.

The valve inlet shall have an internal diameter of four inches (4") and shall have a minimum orifice diameter of 7/16 inches.

The air release valve required in each manhole shall be carefully evaluated. The overall height of the valve shall be such that when in place, as indicated on the plans, a minimum clearance between the top of the valve cover and the bottom of the concrete slab of the manhole shall be six inches (6"). Whenever possible, the valve furnished shall be such that when in place the clearance between the valve cover and the bottom of the concrete slab shall permit removal of the internal float and guide shaft without dismantling the valve.

The valve and accessories shall be suitable for operation at pressures of seventy-five pounds per square inch (75 psi).

The valve inlet end shall be flanged in accordance with ANSI 816.1, Class 125 and as required to match the valve to which it connects. The valve shall be vented by installing one inch (1") schedule 40 pipe to the nearest sanitary sewer manhole. The one-inch (1") pipe shall be installed to a minimum grade of one-eighth inch (1/8") fall from the valve to the manhole.

907-262.02.8.2--Accessories. Each valve shall be constructed to permit the flushing out of any sediment, which may settle or otherwise impede the operation of the valve.

All accessories including valves, rubber hoses, quick disconnect couplings and other equipment required for flushing out sediment and de-clogging orifices shall be furnished and assembled to the valve.

907-262.02.9--Bedding Material. Aggregate bedding material shall meet the requirements of Size II Stabilizer Aggregate of Section 907-304 or Borrow Excavation of Section 907-203. Bedding material is required where directed by the Engineer or the Engineer's authorized representative.

907-262.02.10--Marking Tape & Locator Wire. Metallic marking tape shall be placed in all trenches at a depth of one foot (1') above sanitary sewer service lines, sanitary sewer gravity lines and sanitary sewer force mains. Tape shall be three inches (3") wide metallic tape with the words "CAUTION SEWER LINE BURIED BELOW" printed on it for all sanitary sewer service lines and sanitary sewer gravity lines, and "CAUTION FORCE MAIN BURIED BELOW" printed on it for all force main installations. No additional compensation will be allowed for this operation.

All sanitary sewer gravity lines, sanitary sewer force mains, & sanitary sewer services shall be installed with a fourteen (14) gauge solid copper insulated locator wire placed directly on the center of the sewer line for its entire length. Wire shall be tied to a step inside the sanitary sewer manhole and shall be a continuous piece of wire for its entire length. For sanitary sewer services and force mains the locator wire shall be tied to an appurtenance at the start of the new service or main and shall be a continuous piece of wire for its entire length. The Contractor shall supply the splice kits and other accessories necessary for one continuous locator wire. No additional compensation will be allowed for this operation.

907-262.02.11--Sewer Clean-out Plugs. All sanitary sewer clean-out plugs shall be brass with a countersunk nut as manufactured by Plumbest, "P51-600", or approved equal.

907-262.02.12--Steel Pipe Encasement. Steel pipe encasement shall be new, in good condition, and conform to ASTM Specification A-252 Gr. 2 or better. Wall thickness shall be as shown on the drawings. Spacers shall be manufactured from injection molded high density polyethylene, or other approved material, and installed at six (6) foot intervals. Wood spacers are not permitted. End seals shall be seamless 1/8-inch thick synthetic rubber secured with T-304 stainless steel banding straps as manufactured by Advance Products & Systems, Fernco, or approved equal. Spacers and end seals will not be measured separately for payment, but shall be absorbed as a part of the casing pipe, furnished and installed.

907-262.03--Construction Requirements.

907-262.03.1--Sewer Flow Control. The City will assist in lift station operations during work on the sewer system. The Contractor will not shutdown any pump stations in the collection system, if such is necessary, for the performance of this work. The Contractor shall notify the Owner who shall supply an operator for the lift station.

907-262.03.1.1--Plugging or Blocking. When sewer line flows are low, lines may be blocked or plugged with City approval while work is performed on the lines. The Contractor is responsible for monitoring the effects of this blockage to prevent overflow of sewage and damage or inconvenience to the citizens.

907-262.03.1.2--Bypassing-Pumping. When bypass-pumping from one manhole to the next, around a manhole or segment of force mains or portions of sewer lines to be replaced is required, the Contractor shall supply the necessary pumps, conduits and other equipment to divert the flow of sewage around the sewer section on which work is to be performed. The Contractor will be responsible for furnishing the necessary labor and supervision to set up and operate on a 24-hour basis and all engines shall be equipped with super silencers. The Contractor shall be responsible for correcting any problems that arise as a result of bypassing-pumping operations.

907-262.03.2--Trenching. The Contractor shall comply with the sewer flow control requirements of Subsection 907-262.03.1 before conducting any trenching operations that cut into existing sewer lines or force mains.

Trenches shall be dug so that the existing pipe can be removed and the new pipe can be laid to the alignment and depth required, and shall be excavated only so far in advance of pipe removal and laying as to reveal obstructions. The trench shall be so braced and drained that workmen may work therein safely and efficiently. Discharge from dewatering pumps shall be conducted to natural drainage channels, drains or storm drains. No water shall be discharged in the sanitary sewer system. Bell holes shall be excavated at each joint to permit the proper joining of pipe sections.

The width of the trench shall be ample to permit the existing pipe to be removed and the new pipe to be laid and jointed properly and the backfill to be placed and compacted as specified. The trench shall be excavated to the depth required so as to remove the existing pipe and to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground at every point between bell holes.

Where trench conditions are such that adequate support for the pipe cannot be obtained on the native material, aggregate bedding shall be used only with the approval of the Engineer or the Engineer's authorized representative.

No greater length of trench shall be opened in advance of a completed pipeline nor left unfilled to the rear than shall seem proper to the Engineer or his authorized representative. No trench shall be left without being backfilled at the end of a workday.

907-262.03.3--Sheathing and Shoring. The Contractor shall place such sheathing and shoring in the trenches or utilize a trench box as may be necessary to properly support the trench walls and any adjacent structures. The type and amount of sheathing and shoring shall be such as the nature of the ground and attendant condition may require. It shall be the sole responsibility of the Contractor to provide such sheathing, shoring and bracing as may be required for the safe conduct of the work. The Engineer or the Engineer's authorized representative may, however, order the placement of sheathing, shoring or bracing if, in his opinion, it is required to properly execute the work in accordance with these specifications. No additional compensation will be allowed for this operation.

No actions or instructions by the Engineer or the Engineer's authorized representative shall be regarded as his responsibility for the security of the trench or protection of workmen. The full responsibility shall remain with the Contractor.

907-262.03.4--Dewatering. The Contractor shall keep all excavations free from water at the Contractor's own expense while laying pipe is in progress and to such extent as may be necessary while excavation work alone is being carried on. He shall provide for the disposal of the water removed from excavations in such manner as shall not cause injury to the public health, to public or private property, or to any portion of the work completed or in progress, or any impediment to the use of the streets by the public. No water shall be discharged into the sanitary sewer system.

907-262.03.5--Pipelaying. Except as provided in these specifications, all pipe and fittings shall be installed in accordance with the manufacturer's recommendations. PVC pipe shall be

installed in accordance with the pipe manufacturer's installation manual. All sewer pipe and specials shall be carefully inspected before being laid and no cracked, broken and/or defective pipe or special shall be used in the work. Each piece of pipe shall be sounded before being placed in the line. The outside of the spigot, the inside of the bell, and any couplings used shall be brushed and wiped clean and dry and free from all foreign matter before the pipe is joined.

The pipe and fittings shall be so laid in the trench that after the invert thereof shall conform accurately to the grades and alignment established by the construction drawings. At any stage of construction of a straight stretch between two consecutive manholes the zero or starting end of the pipe shall be clearly visible on looking through the pipe from the other end, with the full cross-section of the interior of the pipe in clear view.

After the pipe has been laid in the best material available from excavation in the immediate vicinity of where the pipe is being laid, the excavated material shall be used to backfill around and over the pipe in a manner specified in Subsection 907-262.03.8. If, in the opinion of the Engineer or the Engineer's authorized representative, material suitable for bedding the pipe is not available where pipe is being laid, suitable material may be ordered hauled in.

Each newly made joint will be inspected and if it is not found to be satisfactory, the last laid length of pipe shall be removed at once. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. If the pipe laying crew cannot put the pipe into the trench and in place without getting earth into it, a heavy, tightly woven canvas bag of suitable size shall be placed over each end and left there until the connection is to be made to the adjacent pipe. During the laying operations, no debris, tools, clothing or other materials shall be placed in the pipe.

At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or other method approved by the Engineer or the Engineer's representative. This provision shall apply during the noon hour as well as overnight. If water is in the trench, the seal shall remain in place until the trench is completely dry.

Cutting of pipes for inserting fittings or closure pieces shall be done in a neat and workmanlike manner in accordance with instructions of the pipe manufacturer and without damage to the pipe.

907-262.03.6--Sewer Service Lines. New six-inch (6") diameter PVC sewer service lines shall be installed from the wyes in all existing and in all new sewer mains. They shall be installed from the main to the right-of-way of the new streets to replace each existing service line and each new service line. Additional services can be installed as indicated on the plans or as authorized by the Engineer or the Engineer's authorized representative. Unless otherwise directed or permitted by the Engineer or the Engineer's authorized representative, new service lines shall follow the line and grade of the existing service, which will, in most cases, ensure removal of the old services from the ground. All existing service lines shall be removed upon installation of the new service. Removal of existing service lines shall be included in the cost of the installation of the new service line.

The depth of the service line at the point of connection for each property owner shall be sufficient to permit connection to the existing private sewer lines at a minimum grade of one-eighth inch (1/8") per foot.

The Contractor shall verify house connections during excavation. The installation of new service lines to accommodate future development may be directed by the Engineer or the Engineer's authorized representative.

All sewer service lines shall join the main sewer at a wye. Wyes shall be placed at all existing service locations. When the installation of a service line connection to an existing PVC main is required by the Engineer or the Engineer's authorized representative, the use of an approved saddle type connection will be permitted. All metal parts on saddle type connectors must be stainless steel.

New clean-outs shall be installed on all new service lines in accordance with the details on the plans. A brass clean-out plug with countersunk nut shall be installed at all clean-outs. Sewer clean-outs located in unpaved areas shall have a 24-inch by 24-inch by 4-inch thick concrete pad placed around the cleanout in accordance with the detail on the Drawings. In the event that a sewer clean-out location is in a driveway, parking lot, etc., the Contractor will install either a standard sewer clean-out casting and cover or a high traffic sewer clean-out casting and cover as noted on the drawings and/or as directed by the Engineer or the Engineer's authorized representative. The standard sewer clean-out casting and cover shall be East Jordan Iron Works (EJIW) Model No. 48503047A0 or approved equal and the high traffic sewer clean-out cover shall be East Jordan Iron Works (EJIW) Model No. 4161027A01 or an approved equal in accordance with the standard details on the Drawings. Prior to installing storm drains, the Contractor shall verify sewer lateral locations and grades. Should a service tie-in conflict arise due to the new storm drain, the Contractor shall install additional sanitary sewer pipe to tie the services into. In the event that a sanitary sewer service conflicts with an existing or proposed storm drain line, the sewer service shall be rerouted over or under the storm drain, whichever will allow the proper flow from the clean-out to the main. This includes the lateral and parallel sewer if necessary. If rerouting is not possible, the Contractor shall contact the Engineer or the Engineer's authorized representative to discuss alternate methods to resolve the problem. This additional work shall be paid for under the line item for sanitary sewer main or service whichever is applicable. Any of the above additional work shall be subject to the approval of the Engineer.

Sewer service lines shall be connected to existing private lines at the property line with an approved adapter. Contractor shall notify the sewer customer when he will be changing out the sewer service line and approximately how long it will take. Lines installed for future use shall be plugged with an approved adapter, which can be removed without damage to the pipe bells.

The Contractor shall mark the face of the curb with an "S" stamped into the wet concrete where the curb is finished over the sewer service and shall keep construction records showing all lines, fittings, taps, etc., with sufficient data to accurately located these items after the trench has been backfilled. In the event of a failure, by the Contractor, to accurately locate all items listed herein, the Contractor will be held responsible in relocating these items at his own expense.

907-262.03.7--Connection to Existing Manholes. When removing sewer lines, the Contractor shall break out the existing sewer at all manholes and grout a new gasket in the manhole wall. The new sewer pipe shall be installed after the grout has been given sufficient time to set up. The Contractor shall repair any damage done to the invert of the existing manhole at his own expense.

907-262.03.8--Backfilling Trenches. Backfilling shall be made with the material excavated from the trench provided that the excavated material is suitable for backfilling. Suitable materials shall be construed as material that will compact readily when the usual methods of mechanical tamping are used.

All backfill material shall be free from cinders, ashes, roots, refuse, vegetative matter, excess organic material, rocks, stones or other unsuitable materials.

Existing/native material shall be utilized as backfill wherever possible. In the event that existing material is unsuitable for backfill, borrow material may be used. This borrow material must be from a pre-approved source. The placement of borrow material must be approved by the Engineer or the Engineer's authorized representative. The excavation and disposal of unsuitable material shall be measured and paid for as Excess Excavation.

All trenches shall be backfilled by hand or by approved mechanical methods from the bottom of the trench to a depth of one foot (1') above the pipe with fill placed in layers of six inches (6") and compacted by tamping to ninety-five percent (95%) density in accordance with ASTM D 1557, so as to insure that the backfill is well placed and compacted beneath the haunches of the pipe. Backfilling material shall be deposited in the trench for its full width of each side of the pipe, fittings, and appurtenances simultaneously. Care shall be exercised to prevent distortion or damage to the pipe. The Contractor shall use special care in placing this portion of the backfill so as to avoid injuring or moving pipe.

From one foot (1') above the pipe to the grade shown on the drawings or specified herein, the trench shall be backfilled in layers which do not exceed eight inches (8") before compaction and shall be compacted with approved mechanical equipment to ninety-five percent (95%) density in accordance with ASTM D 1557, unless approved otherwise by the Engineer or the Engineer's authorized representative.

The Engineer or the Engineer's authorized representative shall have the right to forbid the use of any compacting tools or machines that he considers dangerous to the pipe or incapable of compacting the backfill properly.

The Contractor shall take random density tests in the trench lines to assure that proper compaction has been achieved.

Where any sheathing or bracing is withdrawn as the backfilling progresses, all voids or spaces left thereby shall be carefully and thoroughly filled and compacted with properly shaped tools.

After completion of backfilling, all materials not used therein, including any excess excavation shall be removed and disposed of and all roads, shoulders, and other places in the line of work shall be left free, clean and in good order.

907-262.03.09--Sewer Line Inspection. All new sewer lines shall be "lamped" between manholes. The Contractor shall provide mirrors, adequate battery operated lights and other necessary equipment and personnel to make this inspection.

All new PVC sewer lines shall be tested for diametric deflection by the Contractor at his expense using a GO-NO-GO type mandrel as manufactured by Hurco Technologies, Inc. or approved equal. The mandrel shall have an outside diameter of not less than ninety-five percent (95%) of the PVC pipe inside diameter. Deflection of PVC pipe after installation and backfill shall not exceed five percent (5%). Pipe found to be deflected more than five percent (5%) shall be replaced at the Contractor's expense. This testing shall be accomplished prior to final acceptance and after all of the sewer pipe has been completely installed, backfilled, and in place for thirty (30) calendar days.

Upon completion of "lamping" and mandrel test, the Contractor shall video all new sewer mains and sewer services on the project after a minimum of thirty (30) calendar days from installation. The Contractor shall give a copy of the video to the Engineer or the Engineer's authorized representative for review and approval of the new sewer lines and services prior to the installation of road base. The Contractor shall make arrangements for the Engineer or the Engineer's authorized representative to be present to witness the "lamping", mandrel test, and making of the video.

In the event that any imperfection in any of the new sewer lines or services is discovered during the 'lamping", mandrel test or review of the video, the Contractor shall correct the problem(s) immediately at his own expense. Once the Contractor believes the problem(s) has been corrected, the entire section(s) of pipe (i.e. manhole to manhole) containing the imperfection(s) shall be re-lamped, re-mandreled and re-videoed following all the same requirements as imposed for the original testing. This procedure shall be repeated until the pipe segment(s) is approved for acceptance by the Engineer or the Engineer's authorized representative. All cost incurred for correcting problems and re-testing shall be the responsibility of the contractor.

907-262.03.10--Parallel Installation. All proposed sewer lines, sewer services and sewer force mains shall be laid at least ten feet (10') horizontally and eighteen inches (18") vertically below any existing or proposed water main or service. The distance shall be measured edge to edge. Any deviations must be approved by the City on a case-by-case basis, if supported by field data.

907-262.03.11--Crossings. Sewer services and sewer force mains crossing water mains or water services shall be laid to provide a minimum vertical distance of eighteen inches (18") between the outside of the water line and the outside sewer line. Special structural support for the water and sewer pipes may be required. Any deviation must be approved by the City on a case-by-case basis, if supported by field data.

907-262.03.12--Air Release Valve Installation. The Contractor shall keep construction records showing the profile of the new force main. Air release valves shall be installed wherever the profile indicates a peak in the grade of the force main. Installation shall be in accordance with the details on the plans.

907-262.03.13--Pressure Tests. The sections and complete sewer force main shall be subjected to pressure tests conforming with AWWA Standard C-600-87, Section 4 and shall successfully pass the leakage test as determined by the following formula:

$$L = \frac{SD(8.66)}{133{,}200}$$

Where:

L = allowable leakage, in gallons per hour
S = length of pipe tested, in feet
D = nominal diameter of the pipe, in inches

The test pressure shall be seventy-five pounds per square inch (75 psi). The duration of the test shall be at least four (4) hours

907-262.04--Method of Measurement. Measurement for sewer items will be measured in place, by length in linear feet along the centerline of each line from the center to center of the intersecting line or to the farthest extent of terminal fittings with no deductions for valves, fittings, etc. Excavation, dewatering, backfilling, thrust blocks, PVC fittings, marking tape, locator wire, concrete clean-out pads, sheathing and shoring will not be measured separately, but shall be absorbed as a part of the item of the sewer main furnished and installed.

Aggregate for pipe bedding, if ordered by the Engineer or the Engineer's authorized representative, will be measured and paid for under its appropriate pay item.

If existing/native material is used as backfill, there shall be no additional payment for excavation and backfill. If existing material is unsuitable for backfill, borrow material may be used. This borrow material must be from a pre-approved source. Approved placement of borrow will be measured by volume in cubic yards. The excavation and disposal of the unsuitable material shall be measured and paid for as Excess Excavation.

The clean-outs shall be measured as linear feet of sewer service lines. Brass clean-out plugs will not be measured for separate payment but shall be included in the unit price bid for sewer service lines.

Stamping service line and valve locations in curb will not be measured for separate payment.

Standard and high traffic clean-out covers will be measured by the pound and paid as castings in accordance with Special Provision 907-604.

"Megalug" retainer glands shall be measured by the pound from the dimensions and shipping weights shown on the submittals and paid as ductile iron fittings in accordance with Special Provision 907-604. Ductile iron fittings will be measured by the pound in accordance with Special Provision 907-604.

Bypass pumping, pressure testing, plugging and blocking will be considered subsidiary obligations of the Contractor and will not be measured for separate payment.

Air release valves will be measured per each complete in place. The manhole, casting, stabilizer aggregate, saddle, valve, one inch (1") and two inch (2") PVC pipe will not be measured separately, but shall be included as a part of the air release valve furnished and installed.

Mandrel testing, "lamping" and making video of new sewer lines shall not be measured for separate payment. The cost thereof shall be absorbed in the bid price per linear foot of new sewer line.

907-262.05--Basis of Payment. This work will be paid for at the contract unit prices per unit specified, complete in place, which shall be full compensation for completing the work. Materials or work for which a pay item is not included and are necessary to complete the work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

Payment will be made under:

907-262-A:	___" _____ Sanitary Sewer Main	-per linear foot
907-262-C:	___" _____ Sanitary Sewer Service	-per linear foot
907-262-L:	___" _____ Sanitary Sewer Force Main	-per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO.907-265-6 **CODE: (SP)**

DATE: 02/13/2013

SUBJECT: Water Mains and Appurtenances

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Section 907-265, Water Mains and Appurtenances, is hereby added to and made a part of the 2004 Edition of the Mississippi Standard Specification for Road and Bridge Construction as follows.

SECTION 907-265, WATER MAINS AND APPURTENANCES

907-265.01--Description. The work covered by this section consists of furnishing all labor, equipment and materials and performing all operations in connection with the installation of potable water lines, as indicated on the drawings and as specified herein. The work includes clearing, grubbing, trenching, bedding, pipe laying, backfilling, pipe fittings, valves, hydrants, and all incidental items including testing and disinfection of the completed water lines, which are necessary for installation of the mains and connections to hydrants and existing mains and meters.

907-265.02--Materials.

907-265.02.1--Bedding Material. Aggregate bedding material shall meet the requirements of "Size II Stabilizer Aggregate" of Section 907-304-1 or "Borrow Excavation" of Section 907-203-1. Bedding material is required where directed by the Engineer.

907-265.02.2--Concrete. Concrete for use in thrust blocks and valve box slabs shall be non-reinforced and shall have a minimum 28 days compressive strength of 3000 psi.

907-265.02.3--Polyvinyl Chloride (PVC) Pipe. PVC water lines 4 inches through 12 inches shall be "Blue Brute" (blue in color), or an approved equal, Class 150, DR 18 polyvinyl chloride pipe manufactured in accordance with AWWA C-900 (latest edition) and shall be U.L. listed. PVC water lines 14 inches through 48 inches shall be "Big Blue" (blue in color), or approved equal, Class 235, DR 18 polyvinyl chloride pipe manufactured in accordance with AWWA C-905 (latest edition) and shall be U.L. listed. Pipe shall be furnished in standard lengths (minimum 20 feet) with integrally cast bells or couplings using elastomeric gaskets that meet the requirements of ASTM D 3139and F-477. All necessary adapters for connection to fittings shall be provided.

907-265.02.4--Ductile Iron Pipe. Ductile iron pipe shall be designed in accordance with AWWA Specification C150 and manufactured in accordance with AWWA Specification C151. Joints shall conform with AWWA Specification C111 or C115 as applicable and shall be of the

push on or mechanical type except where flanged joints are indicated on the plans. Ductile iron pipe 4" and less in diameter shall be of thickness Class 51 and pipe 6" and greater in diameter shall be of thickness Class 50 except pipe with threaded flanges shall be Class 53.

907-265.02.5--Fire Hydrants. Hydrants shall be three-way Clow Medallion, Meuller Super Centurion 250, or approved equal with five and one-quarter inch (5 1/4") valve opening. The length of the lower barrel on each hydrant shall be appropriate for the depth of the water main. The color shall be safety yellow 10-56 Rus-Kil or approved equal.

Hydrants that are installed or have been taken out of service shall be completely covered and identified as being "NOT IN SERVICE" until approved for use or removed from the site. "NOT IN SERVICE" bags shall be N.I.S. bags as manufactured by Assured Flow Sales, Inc. or approved equal. N.I.S. bags shall be 27" x 42" and made of 4 mil polypropylene material orange in color and in bold print clearly state in contrasting color "NOT IN SERVICE". "NOT IN SERVICE" labeling shall be visible from all sides. Ties straps shall be provided to firmly secure bags to hydrant and approved prior to use.

907-265.02.6--Water Valves. Water valves shall be resilient seat gate valves complying with the requirements of AWWA C509 "Standard Specifications for Gate Valves for Ordinary Water Service" or AWWA C515 "Standard for Reduced Wall, Resilient Seated Gate Valves for Water Supply Service". Valves shall be Mueller or approved equal. Valves shall be furnished with a non-rising stem and shall open by turning the operating nut counterclockwise. Valve ends shall be flanged or mechanical joint, as appropriate for the connection. Mechanical joints shall be recommended by the manufacturer for use with AWWA C-900 PVC or ductile iron pipe and shall be furnished with MJ retainer glands.

907-265.02.7--Valve Boxes. Except where concrete valve boxes are indicated on the plans, valve boxes shall be of cast or ductile iron as manufactured by Mueller, Kennedy, M& H or approved equal. Covers shall be cast or ductile iron with a designation of "WATER" embossed on the topside and shall be of the screw down type. Valve boxes shall be the two-piece type, adjustable in length and suitable for installation in roadway surfaces. Stack pipe for valve box adjustment shall be Class 150 DR 18 manufactured in accordance with AWWA C-900 PVC or ductile iron pipe. Adjustment risers shall be cast iron and approved prior to use by the Engineer.

907-265.02.8--Fittings. Fittings for water mains of six inch (6") diameter and larger shall be seal coated cast iron or ductile iron with flanged or mechanical joint ends, as appropriate for each connection. Mechanical joints shall be recommended by the manufacturer for use with AWWA C-900/C-905 PVC or ductile iron pipe and shall be furnished with MJ retainer glands. Standardfittings shall be manufactured in accordance with AWWA C110 and compact fittingsin accordance with AWWA C153.Fittings for use with ductile iron pipe may be of the push-on type. Fittings for connections between new main and existing mains and pipes shall be specifically designed for interconnection of the lines being joined and will be subject to the approval of the Engineer.

907-265.02.9--Corporation and Curb Stops. Corporation stops at the main and curb stops at the meter shall be Ford or approved equal of the type and size to fit the particular water service.

907-265.02.10--Water Service Tubing. Water service tubing shall be polyethylene "PE" tubing having copper tube O.D. sizes and complying with ASTM D2737, SDR 9, 200 psi as manufactured by Driscopipe or approved equal. The use of metal inserts in the tubing will not be permitted.

907-265.02.11--Water Meters. When listed as a pay item the Contractor shall replace existing water meters as shown on the plans or as directed by the Engineer, with Badger Recordall Disc or approved equal. The size of the meter shall be determined by the size of each individual service as determined in the field.

907-265.02.12--Water Meter Boxes. When contract calls for replacement of existing water meters, the Contractor shall replace existing meter boxes with plastic meter boxes with metal reader lids, except meters boxes located in driveways, parking lots, etc., shall be cast iron Vulcan Foundry Model VMB-1 or an approved equal.

907-265.02.13--Filter Fabric. Geotextile fabric shall be non-woven, needle punched, and weigh a minimum of eight ounces (8 oz.) per square yard, as manufactured by Terratex Construction Fabrics, "NO8", or approved equal.

907-265.02.14--Line Stop. The line stop pay item shall include all components required to plug an existing water main so that a newly installed and tested water main can be connected to the existing main currently under pressure. The line stop will allow this connection to occur without the disruption of pressure or service to the existing main upstream of the line stop. Each line stop shall include the following components: Linestop nozzle with closure plug, gate valve (which is paid for separately under Pay Item 907-265-D), housing unit, high-pressure jackscrew actuator with folding line stop head and miscellaneous gaskets, seals, etc. required to accommodate the line stop operation as shown on the plans.

907-265.02.15--Temporary Bypass. If required, the temporary bypass shall include constructing a temporary water line within the area where the existing water main is to be adjusted. Each temporary bypass shall include the following components: (1) two tees, (2) temporary water main (3) ductile iron fittings required for the temporary water main and (4) restraints, thrust blocks, etc. required to accommodate the bypass operation. If required, the temporary bypass operation shall work in conjunction with the line stopping operation.

907-265.03--Construction Requirements.

907-265.03.1--Trenching. Trenches shall be dug so that the pipe can be placed at the alignment and depth required. The trench shall be so braced and drained that workmen may enter and work safely and efficiently. Discharge from dewatering pumps shall be conducted to natural drainage channels, drains or storm drainage system. No water shall be discharged into the sanitary sewer system.

The Contractor shall confine his excavation to the least width that will allow the easy installation of the water main and fittings. An open trench in advance of pipe laying operations at the close of the workday will not be permitted.

Where elevations or profiles are shown on the plans, pipes shall be laid to the depth so indicated. When elevations or profiles are not shown, and unless otherwise indicated on the drawings, pipes shall be laid to such depths as will provide for a minimum cover of two foot six inches (2'-6").

907-265.03.2--Pipe Bedding. Where trench conditions are such that adequate support for the pipe cannot be obtained on the native material, aggregate bedding material shall be used with the approval of the Engineer.

907-265.03.3--Sheathing and Shoring. The Contractor shall place such sheathing and shoring in the trenches as may be necessary to support properly the trench walls and any adjacent structures. The type and amount of sheathing and shoring shall be such as the nature of the ground and attendant condition may require. It shall be the sole responsibility of the Contractor to provide such sheathing, shoring and bracing as may be required for the safe conduct of the work. The Engineer may, however, order the placement of sheathing, shoring or bracing if, in his opinion, it is required to properly execute the work in accordance with these specifications. No additional compensation will be allowed for this operation.

No actions or instructions by the Engineer shall be regarded as his responsibility for the security of the trench or protection of workmen. The full responsibility shall remain with the Contractor.

907-265.03.4--Dewatering. The Contractor shall keep all excavations free from water at his own expense while pipe laying is in progress and to such extent as may be necessary while excavation work alone is being carried on. The Contractor shall provide for the disposal of the water removed from excavations in such a manner as not to cause injury to the public health, to public or private property, or to any portion of the work completed or in progress, or any impediment to the use of the streets by the public. No water shall be discharged into the sanitary sewer system.

907-265.03.5--Pipe Laying. Proper implements, tools and facilities shall be provided and used by the Contractor for the safe and convenient prosecution of the work. All pipe, fittings, valves and appurtenances shall be carefully lowered into the trench, piece by piece by means of ropes or other suitable tools or equipment in such a manner as to prevent damage to materials and protective coatings and linings. Under no circumstances shall materials be dropped or dumped into the trenches.

All pipe, fittings, and appurtenances shall be inspected for defects and cracks prior to being lowered into the trench.

The outside of the spigot, the inside of the bell and any couplings used shall be brushed and wiped clean and dry and free from all foreign matter before pipe is joined.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being installed. If the pipe laying crew cannot put the pipe into the trench and in place without getting earth into it, a heavy, tightly woven canvas bag of suitable size shall be placed over each end and left there until the connection is to be made to the adjacent pipe. During the laying operations, no debris, tools, clothing or other material shall be placed in the pipe.

After placing a length of pipe in the trench, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material tamped under it as herein specified. Precautions shall be taken to prevent dirt from entering the joint space.

At times when pipe laying is not in progress, the open ends of pipe shall be closed by watertight plug or other means approved by the Engineer. This provision shall apply during the noon hour as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry.

Cutting of pipes for inserting fittings or closure pieces and to bring fittings, valves and hydrants to designated locations shall be done in a neat and workmanlike manner in accordance with instructions of the pipe manufacturer and without damage to the pipe.

All pipe and fittings shall be installed in accordance with the manufacturer's recommendations. PVC pipe shall be installed in accordance with applicable AWWA Specifications and the pipe manufacturer's installation manual. Ductile iron pipe shall be installed in accordance with AWWA C600. The Contractor shall have copies of this AWWA Specifications and the installation manual available on the project at all times.

907-265.03.6--Water Service Connections. At all locations within the right-of-way limits of the project where existing water services are in place, the Contractor shall provide new corporation stops and polyethylene service lines between the new main and the water meters to replace the existing service lines. New service lines shall be of equal size as the existing service lines, but no less than one-inch (1"), unless otherwise specified on the plans or as directed by the Engineer. Additional lines shall be installed for future use as directed by the Engineer or as indicated on the plans. A residential single service line shall be a minimum of one-inch (1"). A residential double service line shall be either one and one-half inch (1 ½") or two-inch (2"), as appropriate, or as directed by the Engineer.

Water services shall be installed in accordance with the recommendations of both the pipe main manufacturer and the service line manufacturer.

All new and replacement service lines shall extend from the water main to the meters in the meter boxes which are generally located near the back of the sidewalk. All new and replacement service lines shall be one continuous piece of tubing without any couplings from the main to the meter. All service lines shall be installed directly from the main to the meter and shall cross the street at right angles to the main. Where required by note or as directed in the field, water meter boxes shall be relocated to the street right-of-way line.

There may be instances where the existing meter/meter box is located outside of the right-of-way near a house, building, etc. In this instance, the water service shall be replaced and reconnected from the new main to the back of the existing meter. The old meter and box is to be removed. The new meter/meter box shall be installed at the right-of-way line.

In the event that a water meter location is in a driveway, parking lot, etc., and the existing meter box is not cast iron, the Contractor will provide and install a cast iron meter box. Meter boxes will be Vulcan Foundry Model VMB-1 or an approved equal.

A minimum of three (3) working days notice shall be given to the City Engineer so a press release can be given to notify water system customers of a cut off and an approximate time that will be required for connection of the new water service.

The time required for change out of an existing water service to the new water system shall be kept at minimum. No service shall be left off overnight.

Service lines shall have at least twenty-four inches (24") cover as measured from the completed roadway and sidewalk surfaces. Service lines may be installed in narrow trenches at the required depth.

New service lines which are not tied into a meter during construction shall terminate at a meter box at the right-of-way line.The proper stop valves will be installed on the line as necessary to protect the system. There may be instances where a new water meter will be furnished as part of this Contract, but not installed in the field. This situation will occur on parcels where a home and/or business existed pre-Hurricane Katrina, but that was destroyed by the storm. In this scenario, the Contractor shall install a new meter box at the right-of-way line as shown on the drawings and furnish the meter to the City for storage. No installation costs will be paid. This work shall be coordinated with the City Engineer or authorized representative.

The Contractor shall mark the face of the curb with a "W" stamped into the wet concrete where the curb is finished over the water service and shall keep construction records showing all lines, fittings, valves, taps, etc., with sufficient data to accurately locate these items after the trench has been backfilled. In the event of a failure, by the Contractor, to accurately locate all items listed herein, the Contractor will be held responsible in relocating these items at his own expense.

907-265.03.7--Backfilling Trenches. Backfilling shall be made with the material removed from the trench or excavation, provided that the excavated material is suitable for backfilling. Suitable material shall be construed as material that will compact readily when the usual methods of mechanical tamping are used. All backfill material shall be free from cinders, ashes, roots, refuse, vegetable matter, excess organic material, rocks, stones, or other unsuitable materials.

Existing/native material shall be utilized as backfill wherever possible. In the event that existing material is unsuitable for backfill, borrow material may be used. This borrow material must be from a pre-approved source. The placement of borrow material must be approved by the Engineer or authorized representative. The excavation and disposal of unsuitable material shall be measured and paid for as Excess Excavation.

All trenches shall be backfilled by hand or by approved mechanical methods from the bottom of the trench to a depth of one foot (1'-0") above the top of the pipe with fill placed in layers of six (6") inches and compacted by tamping to 95% density in accordance with ASTM D 1557, so as to insure that the backfill is well placed and compacted beneath the haunches of the pipe. Backfill material shall be deposited in the trench for its full width of each side of the pipe, fittings and appurtenances simultaneously. Care shall be exercised to prevent distortion or damage to the pipe. The Contractor shall use special care in placing this portion of the backfill so as to avoid injuring or moving pipe.

From one foot (1'-0") above the pipe to the grade shown on the drawings or specified herein, the trench shall be backfilled by hand or by approved mechanical methods and compacted in layers which do not exceed eight inches (8") to 95% density in accordance with ASTM D 1557, unless approved otherwise by the Engineer or authorized representative in non-paved areas.

The Engineer or authorized representative shall have the right to forbid the use of any compacting tools or machines that he considers dangerous to the pipe or incapable of compacting the backfill properly.

The Contractor shall take random density tests in the trench lines to assure that proper compaction has been achieved.

Where any sheathing or bracing is withdrawn as the backfilling progresses, all voids or spaces left thereby shall be carefully and thoroughly filled and compacted with properly shaped tools.

After completion of backfilling, all materials not used therein, including such earth that cannot be properly rounded up over the refilled excavation, shall be removed and disposed of and all roads, shoulders, and other places in the line of the work shall be left free, clean and in good order.

907-265.03.8--Thrust Blocks. Thrust blocks shall be installed at each change of direction of twenty two and one-half (22 1/2) degrees or more, at tees and at dead ends. Thrust blocks shall be made with non-reinforced concrete and shall have dimensions not less than those shown on the drawings. The thrust blocks shall be of sufficient size to resist the force resulting from the flow of water through the type of fitting to be blocked.

907-265.03.9--Restraints. Each fitting, valve, hydrant, etc. shall be restrained with the appropriate size "Megalug" retainer gland.

Where indicated of the drawings, metal harnesses or metal tie rods shall be used in addition to retainer glands and thrust blocks. The harness assembly shall be of adequate strength to prevent movement of the fittings being restrained.

All harness assemblies and the tie rods installed shall be hot dip galvanized in accordance with ASTM A123.

907-265.03.10--Connections to Existing Mains. Connections to existing mains shall be made at the locations shown on the plans. These connections shall be made without interrupting service in the existing lines unless circumstances make this type of connection impractical. Where it is necessary to interrupt the water service, these connections shall be made under the direct supervision of a representative of the City. The City shall determine the time at which these connections shall be made, and shall approve the operation of all valves on the existing system, and any operations, which might affect the potability of the water.

The Contractor shall at no time operate any valve on the existing system except with the direct authorization of the City.

Where a tie-in is to be made to an existing pipe or fitting, the Contractor shall excavate and expose the existing fitting or main, in order to ascertain its correct location and elevation. This excavation can then be backfilled until the tie-in is made. No additional compensation will be allowed for this operation.

907-265.03.11--Setting Hydrants. Hydrants shall be located as shown on the plans or as directed by the Engineer in a manner that will provide complete accessibility and prevent the possibility of damage from vehicles or injury to pedestrians. All hydrants shall be set plumb. Each hydrant shall be connected to the main with a six-inch (6") branch line. All hydrant caps shall be removed and greased with AWWA approved grease. After installation, all hydrants shall be tested for satisfactory operation.

Minimum height of hose nozzles shall be eighteen inches (18") above ground surface (or anticipated future ground surface) as shown on the plans.

Before ordering new hydrants, the Contractor shall determine the barrel length required for all hydrants on the project, both new and relocated. New hydrants shall be ordered in barrel lengths as needed to place a hydrant at each designated location on the project.

Hydrants that are installed or have been taken out of service, shall be completely covered and identified as being "NOT IN SERVICE" until approved for use or removed from the site.

907-265.03.12--Relocating Hydrants. Existing fire hydrants designated for relocation shall be carefully disconnected from the existing water main and shall be installed at the locations and in conformance with the details for new hydrants that are shown on the plans.

A new gasket and restraint clamp shall be provided for connection of the hydrant to the main. Existing mechanical joint or flange bolts may be reused if they are in satisfactory condition.

After installation is complete and before acceptance of the project, all relocated fire hydrants shall be cleaned and given one coat of suitable paint, safety yellow 10-56 Rus-Kil or approved equal, as directed by the Engineer.

Prior to disconnection of existing hydrants, the Contractor shall notify the City Fire Chief's office and give pertinent information as to when and where the hydrant will be relocated.

907-265.03.13--Setting Valves and Valve Boxes. Valves shall be installed with stems vertical. All valves not shown on the plans to be located in a concrete vault shall be provided with cast iron valve boxes as a means of protecting and permanently locating the operating nut on the valve. The top of the valve box shall be installed flush with the ground or roadway surface and shall be supported by a suitable foundation. Valve boxes shall be installed where a valve wrench can fit straight over the operating nut. If stack pipe is used, joints formed between the stack pipe and the valve and the stack pipe and the bottom of the valve box, shall be rapped with geotextile fabric in accordance with the details. Geotextile fabric shall be held in place by a suitable means as approved by the Engineer until backfill is complete. Width of the fabric shall be a minimum of two feet (2') centered over the joint, unless directed otherwise by the Engineer and length shall be suitable to wrap around the joint and overlap one-third the circumference of the joint.

If new water valve boxes need to be adjusted after installation one of the following methods shall be used for the adjustment.

(a) If threaded adjustment is available, the threaded pieces of the valve box shall be adjusted to the proper grade.
(b) If the valve box is to be raised less than three inches (3") and no threaded adjustment is available, risers shall be added to the valve box.
(c) If the valve box is to be raised more than three inches (3") and no threaded adjustment is available, the stack pipe shall be removed and replaced with the proper length pipe for the new grade.
(d) If the valve box is to be lowered and no threaded adjustment is available, the stack pipe shall be cut to proper length for the new grade.

The adjustment of casting for new water valves shall include the plumbing and centering of the valve box, riser and stack pipe on the valve nut. A valve wrench shall be used prior to acceptance of adjustment of casting to verify compliance with requirements stated in this section of the specification. There shall be no separate payment for adjustment of new water valve boxes.

All valves located outside walk and pavement areas shall be provided with concrete slabs. The concrete slab shall be two feet (2') square by four inches (4") thick.

The Contractor shall mark the face of the curb with a "V" stamped into the wet concrete where the curb is adjacent to water valves. If the valve is located within the limits of the street, each adjacent curb shall be marked with a "V" at the location of the valve. If the valve is located outside of the street, the adjacent curb shall be mark with a "V" at the location of the valve. The contractor shall keep construction records showing location of valves with sufficient data to accurately locate the valve after construction.

907-265.03.14--Pressure Tests. The sections and complete pipe line shall be subjected to pressure tests conforming with AWWA Standard C-600-87, Section 4 and shall successfully pass the leakage test as determined by the following formula:

$$L = \frac{SD(12.25)}{133{,}200}$$

Where:
L = allowable leakage, in gallons per hour
S = length of pipe tested, in feet
D = nominal diameter of the pipe, in inches

The test pressure shall be one hundred fifty pounds per square inch (150 psi). The duration of the test shall be at least four (4) hours.

907-265.03.15--Testing Hydrants. After the pressure and leakage tests have satisfactorily completed, the Contractor shall remove all hydrant caps (hose nozzle caps and pumper nozzle caps) and grease the nozzle threads. The hydrant caps shall be replaced and the main hydrant valves shall be fully opened. All hydrants shall be required to withstand the same pressure test as described in Subsection 907-265.03.14 without leakage.

907-265.03.16--Sterilization. After the water main has been completed and a satisfactory hydrostatic test has been made, the Contractor shall sterilize the water mains. The Contractor shall submit the method and/or individual who will provide the chlorination service for prior approval by the Engineer or authorized representative. Mains shall be thoroughly flushed before introduction of the chlorinating materials. All new mains and repaired portions of or extensions to, existing mains shall be chlorinated so that a chlorine residual of not less than twenty-five (25) PPM remains in the water after twenty-four (24) hours standing in the pipe. Granular chlorine shall not be applied in the new main, fittings, services, etc. All chlorinating materials shall be in a liquid or gas form.

907-265.03.16.1--Rate of Application. Water from the existing distribution system or other source of supply shall be controlled so as to flow slowly into the newly laid pipeline during the application of chlorine. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the pipe that the chlorine dose applied to the water entering the newly laid pipe shall produce a residual of at least twenty-five (25) PPM after twenty-four (24) hours standing. This may be expected with an application of fifty (50) PPM, although some conditions may require more.

907-265.03.16.2--Prevention of Reverse Flow. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supply water. Check valves may be used if desired.

907-265.03.16.3--Retention Period. Treated water shall be retained in the pipe long enough to destroy all non-spore-forming bacteria. This period shall be at least twenty-four (24) hours and should produce a residual not less than twenty-five (25) PPM at the extreme end of the retention period.

If the circumstances are such that a shorter retention period must be used, the chlorine concentration shall be increased accordingly. For instance, for a contact period of one (1) hour, a

one hundred (100) PPM chlorine concentration is required. Under these conditions special care shall be taken to avoid attack in pipe, valves, hydrants and other appurtenances.

907-265.03.16.4--Chlorinating Valves and Hydrants. In the process of chlorinating newly laid pipe, all valves or other appurtenances shall be operated while the pipeline is filled with the chlorinating agent.

907-265.03.16.5--Final Flushing and Testing. Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipeline and its extremities until the replacement water throughout its length shall, upon test, be proved comparable in quality to the water served the public from the existing water supply system and approved by the public health authority having jurisdiction. This satisfactory quality of water delivered by the new main should continue for a period of at least two (2) full days as demonstrated by laboratory examination of samples taken from a tap located and installed in such a way as to prevent outside contamination.

907-265.03.16.6--Repetition of Procedure. Should the initial treatment fail to result in the condition specified, the original chlorination procedure shall be repeated until satisfactory results are obtained. All testing shall be at no additional cost to the State.

907-265.03.16.7--Bacteriological Sampling of New Water Mains. After completion of the construction and disinfection of water distribution, the Contractor shall arrange for at least one sample to be collected, on two (2) consecutive days, in accordance with the latest Mississippi State Department of Health guidelines from every dead end line and every major looped line for bacteriological examination. A representative of the Department shall be present when the samples are collected. The samples shall be collected by the registered engineer in charge of the project, the water supply system's certified operator, or a representative of the Mississippi State Department of Health. Water being collected for testing shall not have a chlorine residual higher than is normally maintained in other parts of the distribution system. No chlorine shall be present which is a result of line disinfection. Less than one (1) coliform bacteria per one hundred (100) ml and no confluent growth indication shall constitute a satisfactory sample when analyzed by the Mississippi Department of Public Health Laboratory or a laboratory certified by the Mississippi State Department of Health.

907-265.03.17--Marking Tape & Locator Wire. All water lines and service lines must be installed with a non-corrosive metallic tape placed directly over and on the center of the facility at a depth of one foot (1') over the line for its entire length. Tape must be connected to all facilities or appurtenances. The tape shall have a three-inch (3") width and the words "Buried Waterline" should be printed on it along its entire length. Tape shall be Detect tape as manufactured by the Allen Systems, Inc., which is handled by the Mavor Kelly Company in New Orleans or approved equal. No additional compensation will be allowed for this operation.

All water mains and services shall be installed with a fourteen (14) gauge solid copper insulated locator wire placed directly on the center of the main for its entire length. Wire shall be tied to an appurtenance at the start of the new main and shall be a continuous piece of wire for its entire length. The Contractor shall supply the splice kits and other accessories necessary for one continuous locator wire.

907-265.03.18--Parallel Installation. Water mains and services shall be laid at least ten feet (10') horizontally and eighteen inches (18") vertically above any existing or proposed sewer main or service. The distance shall be measured edge to edge. Any deviations must be approved by the City on a case-by-case basis, if supported by field data.

907-265.03.19--Crossings. Water mains and services crossing sewers shall be laid to provide a minimum vertical distance of eighteen inches (18") between the outside of the water main and the outside of the sewer. The water main shall be installed above the sewer main. At crossings, one full length of water pipe shall be located so both joints will be as far from the sewer as possible. Special structural support for the water and sewer pipes may be required. Any deviation must be approved by the City on a case-by-case basis, if supported by field data.

907-265.03.20--Line Stop Procedure. The line stop procedure is a general approach only. Actual implementation means and methods are the responsibility of the Contractor and shall be submitted to the Engineer and/or his authorized representative prior to commencement of the work.

The Contractor shall clean the exterior of the main to remove debris, corrosion deposits and othersurface irregularities that might interfere with proper seating and sealing of the line stop fitting
against the main.

The line stop fitting shall be a split mechanical bolt-on type, fabricated from ASTM A-36 carbonsteel, epoxy coated, with 18-8 type 304 stainless steel nuts, bolts, and washers, and be completewith equalization fittings, blind flange with gaskets, nuts and bolts. Flanges are to be AWWA 207Class D, ANSI 150# drilling. Gaskets are to be compounded for use with water, salt solutions, and mildacids.

Line stop fittings installed on slip joints or mechanical joint pipe shall require that at least three standardlengths of pipe remain buried from the point of the line stop to where the line will be cut open.An alternative method is to anchor the line stop fitting with concrete. Line stop fittings shall beinstalled and pressure tested at 150 psi for 15minutes prior to tapping the main.

Concrete support/anchor shall be installed after pressure test. Concrete support should extend tothe "BEAM POINT or CENTER LINE" of the pipe main. This method should prevent movementlaterally where the line is isolated and cut open.

Temporary line stop valve is installed into the line stop fittings (flanged tee may be mounted tothe valve for temporary bypass). Drilling machine is mounted to line stop valve, and the wet tapis performed.

Coupon from the tap is retracted into the machine, stop valve is closed, drilling machine is depressurizedand removed. Coupon is measured to verify pipe I.D. for sizing adjustments of thefolding head stop sealing element.

Line stop machine is mounted on stopping valve and line stop assembly, valve is opened, andassembly enters the pipe and the line stop is performed.

Pipe main is de-pressurized and alterations/reconnections can now begin.

After alterations/reconnections are completed, and the new line has been sanitized, the line stop is repressurized,and the stopper head is removed from the line stop and the valve is closed.

Drilling machine with closure plug is mounted to stop valve. Valve is opened and the assembly isinstalled and locked into position inside the neck of the stop fitting.

The drilling machine is then removed, and blind flange is installed to the line stop fitting forcompletion of the job.

907-265.04--Method of Measurement. Water lines of the size specified will be measured in place, by length in linear feet along centerline to each line from center to center of intersecting lines or to the farthest extent of terminal fittings with no deductions for valves, fittings, etc.

Measurements to fire hydrants will stop at the vertical axis of the hydrant. Excavation, dewatering, marking tape, locator wire, blocking, thrust blocks, backfilling and tie-ins for water lines will not be measured for separate payment but shall be included as a part of the item of water line, valve, hydrant, fitting or service line furnished and installed.

Service lines shall be measured by the linear foot from the corporation stop at the main to the inlet side of the water meter.

Meter relocation, meter boxes and any other fittings required will not be measured for separate payment but shall be included in the cost of service lines.

Steel casing will be measured by linear foot installed and paid under line items 907-262-H. End seals and spacers will not be measured for separate payment.

Aggregate bedding, if ordered by the Engineer, will be measured by volume in cubic yards in accordance with 907-304-1 or 907-203-1.

If existing/native material is used as backfill, there shall be no additional payment for excavation and backfill. If existing material is unsuitable for backfill, borrow material may be used. This borrow material must be from a pre-approved source. Approved placement of borrow will be measured by volume in cubic yards. The excavation and disposal of the unsuitable material shall be paid for as Excess Excavation and measured by volume in cubic yard.

Stamping service line and valve locations in the curb will not be measured for separate payment.

All pressure testing, flushing and sterilization of new water lines shall be done by the Contractor and will not be measured for separate payment. These costs shall be included in the contract unit bid prices for water line items.

Water meters will be measured by the number of units as specified. Installation of water meters will be measured separately.

Water meter installation shall include all labor and materials required to install the meter in the meter box.

Water valves will be measured by the number and size of units as specified.

"Megalug" retainer glands shall be measured by the pound from the dimensions and shipping weights shown on the submittals and paid as ductile iron fittings in accordance with Special Provision 907-604-1. Ductile iron fittings will be measured by the pound in accordance with 907-604-1.

Tapping materials, corporation stops, curb stops, reducers, and other fittings used on service lines will not be measured separate payment but shall be included in the unit price bid for service lines.

Hot-tap and valve connected thereto shall be measured by the specified size of the hot-tap and valve. Both tapping sleeve and valve along with labor and other incidentals required to make the hot-tap shall be included in the bid price of the item.

Valve boxes shall be measured by the pound from the dimensions and weight shown on the submittals and paid as castings in accordance with Special Provision 907-604-8. Filter fabric shall not be measured for separate payment.

Line stops shall be measured per each, and shall include all items (with the exception of gate valves)described in Subsection 907-265.02.14. If required, bypass procedure shall include all items described in Subsection 907-265.02.15.Separatepayment will not be made for temporary water main, fittings, etc.

There shall not be separate payment for adjustment of new water valve boxes, the cost therefore shall be absorbed in other pay items. For adjustment of existing water valve boxes, see Section 613, "Adjustment of Castings, Gratings, and Utility Appurtenances" of this specification.

Fire hydrants will be measured by the number of units as specified. The water line from the hydrant to the main and the water valve will be measured for separate payment and shall be paid for under the appropriate pay items. The labor and materials necessary to paint relocated hydrants and new hydrants will not be measured for separate payment but shall be included in the unit price bid for the new hydrant or the relocation of the existing hydrant.

907-265.05--Basis of Payment. Water mains and appurtenances, measured as prescribed above, will be paid for at the contract bid price per linear foot or each, which prices shall be full compensation for completing the work specified. Materials or work for which a pay item is not included and are necessary to complete the work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

Payment will be made under:

907-265-A: ___" _____ Water Main	-per linear foot
907-265-B: ___" Ductile Iron Water Main	-per linear foot
907-265-D: ___" Water Valve	-per each
907-265-F: Fire Hydrant	-per each
907-265-I: Water Meter Installation	-per each
907-265-J: Relocate Fire Hydrant	-per each
907-265-K: ____" Line Stop	-per each
907-265-L: ___" Diameter Water Service	-per linear foot
907-265-M: ___" Water Meter	-per each
907-265-O: ___" X ___" Hot Tapping Sleeve & ___" Valve	-per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-266-1 **CODE: (SP)**

DATE: 02/12/2013

SUBJECT: Duplex Pump Control Panel

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Section 907-266, Duplex Pump Control Panel, is hereby added to and made a part of the 2004 edition of the Mississippi Standard Specification for Road and Bridge Construction as follows:

SECTION 907-266--DUPLEX PUMP CONTROL PANEL

907-266.01--Description. The work covered by this section consists of furnishing all labor, equipment and materials and performing all operations in connection with the installation of duplex pump control panel and control floats as specified herein and/or shown on the Drawings. The control panel shall provide power and logic control to operate two submersible pumps at the rated voltage and FLA of the pump motors. The control voltage shall be 120-Volt, single phase.

The control logic shall provide for the automatic operation and alternation of the lead pump under normal conditions. If the incoming flow exceeds the pumping capacity of the lead pump, the lag pump shall automatically operate to handle the increased flow. As the wet well level decreases, both pumps shall shut off at the pumps off level. In the event of a pump failure or a flow that exceeds the capacity of both pumps, a high alarm level shall operate a red flashing alarm light. The pump designated as lead pump shall alternate each duty cycle.

All electrical components and materials supplied shall function as a complete unit to automatically control the pump down of the sewage pump station wet well. All devices and material shall be new and of standard product design. Electrical work shall be in accordance with the latest edition of the National Electrical Code (NEC) and subject to local codes. Panel supplier shall be a certified UL 508 manufacturer. Panel shall be as manufactured by Best Controls Company or approved equal**.**

907-266.01.1--Manufacturer's Experience. It is the intention of this Specification to cover minimum acceptable quality equipment for a complete installation. The intent of the Plans and Specifications is to describe the required features, functions, and performance of the pumping system to be supplied. Bidder and pump system supplier shall familiarize themselves with the requirements of the project and the particulars of this installation. Any and all modifications or adjustments of any kind to any siting, foundation, piping, valving, electrical, controls, instrumentation and/or appurtenances of any nature that may be required to accommodate the particular sewage pump system manufacturer as proposed in any Bidder's Bid Proposal shall be included in the price bid therein. No additional compensation shall be paid for any accommodation of any particular sewage pump system supplier.

The Equipment Manufacturer shall have not less than 10 years successful experience in the design, construction and operation of electrical control equipment of the type specified. The Engineer may require and Bidder shall provide certified documentation, satisfactory to the Engineer, from the owner/operator of the equipment installations cited above to substantiate any claims concerning the ability of the proposed sewage pumping equipment to perform as required.

907-266.01.2--Supplier's/Manufacturer's Services. The manufacturer of the pump controller package shall be a UL 508A Certified facility. Proof of label availability shall be provided with submittals.

The pump controller package shall be designed, constructed and tested in accordance with NEMA, NEC, IEC and UL 508A standards.

Prior to shipment, the pump controller package shall be functionally tested at the factory, as an assembled unit with motors connected to ensure proper sequencing and operation. All pilot devices and controls shall be tested to verify proper operation. Temperature tests shall be conducted to assure that internal enclosure temperatures are suitable for the installed components operating in the site environment. Documentation of the tests shall be furnished at the engineer's request.

907-266.02--Materials.

907-266.02.1--General Requirements. The pump controls shall be housed in a NEMA 4X, 304 Stainless Steel enclosure sized to house all the required components and allow adequate space for testing and maintenance as necessary, with minimum enclosure size 36"X30"X12". The enclosure shall have a drip shield, padlockable three-point latch (clamp hasp are not acceptable), steel back plate painted white, continuous door hinge, and an aluminum inner door with continuous hinge to protect all live internal wiring from operator personnel. The inner door shall be able to open a minimum of 150 degrees to allow safe access to the components. All controls, switches, indicator pilot lights, and elapsed time meters shall be mounted through the inner door.

All other components shall be securely mounted to the backplate with stainless steel hardware through machine thread tapped holes in the backplate. The screws shall be of adequate size for the device being secured. Permanent marking to identify each component as shown on the drawing shall be provided on the back plate and schematic laminated on inside of enclosure door.

All power wire shall be stranded copper and sized as required for load and application according to NEC. All control and signal wire shall be a minimum of #16 AWG, 90 degree C insulated and color-coded. Colors shall be red for all AC control, blue for all DC control, yellow for external source control, white for AC neutral and green for equipment ground wiring. All wiring on the rear of the inner door shall be neatly bundled using tie wraps or other means. All internal wiring on the backplate shall be neatly routed in wire duct with removable covers. All wiring shall be continuous point to point (no splices) and be totally accessible.

All points necessary for external connection in the controller, whether power or control shall be wired to a terminal strip located at the bottom of the enclosure. The terminal strip shall be

permanently marked with the same designation as the wire connected to it. Neutral and grounding terminals shall be provided.

All power and control wires shall be marked at both ends using self-adhering wire markers. No two wires having different functions within the control panel shall have the same markings.

All circuit breakers, starters, and other control devices mounted within the controller panel shall be labeled for identification both within the panel and on the wiring schematic with corresponding designations.

Control power shall be 120 volts and shall be protected by a correctly sized circuit breaker. If required, provide a properly sized control power transformer with primary over current protection.

Each starter shall be provided with overload protection in all three phases and each individual starter shall have phase failure protection.

All circuit breakers, selector switches, pilot lights and control devices shall be visible and operable from an interior dead-front panel. The dead-front panel shall be constructed of anodized aluminum and shall have a continuous aluminum hinge.

A 15A, 120V GFI surface mounted duplex receptacle shall be provided in a metal outlet box on the back panel in the enclosure.

All drawings shall be prepared per J.I.C. standards and submitted prior to any fabrication of control equipment. The Controller shall be produced by a UL 508 listed shop. Proof of label availability shall be submitted with above drawing.

The enclosure shall be properly sized for the main breaker. The breaker shall include a door mounted operator mounted on the deadfront panel. The operator shall prevent the deadfront panel from being opened with the breaker in the on position.

907-266.02.2--Transient Voltage Surge Suppressor (TVSS). A properly sized TVSS shall be provided to protect the components in the enclosure. The TVSS shall be UL 1449 listed subject to IEEE C62.41 test standards for all category locations surge current rating of 78kA per phase minimum. Diagnostic indicator lights shall be provided for each phase, form C contacts connected to panel alarm, and coordinated and replaceable internal fusing.

907-266.02.2.1--Motor Controllers. The Contractor shall provide a properly sized circuit breaker combination NEMA rated motor starter with NEMA Class 10, ambient compensated overload protection and individual phase failure protection.

Overload relays shall be solid state Allen Bradley type SMP-2 or approved equal.

For UL listed combination starters, circuit breaker shall be a motor circuit protector type with instantaneous trip only.

Minimum NEMA rated starter size shall be Size 1.

907-266.02.2.2--Motor Controllers with Soft Starters. A soft starter shall be provided for each pump motor. The soft starter shall be wired in series with a combination starter in order to eliminate voltage on the motor leads when the starter is off.

A bypass contactor around the soft starter shall be provided to eliminate excessive heat in the enclosure. The bypass contactor closes after the starting sequence of the soft starter. Overload and loss of phase shall be provided during bypass.

The soft starter shall be provided with a pump control option, and other features as found in the Allen Bradley SMC Dialog Plus soft starter. Protection for the soft starter shall be provided including fast acting current limiting fuses and voltage surge suppressors.

907-266.02.2.3--Duplex Pump Controller Module Features and Functions. Float switch controller to be mounted through inner door of enclosure and shall be Model PC2000 manufactured by Best Controls Corp, or approved equal, including the following:

907-266.02.2.3.1--Operators and Front Panel Indicators. The Operators and Front Panel Indicators for each pump shall have the following.

Manual-Off-Automatic selector switch
Green "Pump Running" pilot light
Red "Pump Failure" pilot light
Red "Pump Seal Failure" pilot light

It shall also have a three-position selector switch, Pump NO. 1 LEAD or ALTERNATE or Pump NO. 2 LEAD, capable of selecting either pump as lead pump or to select that the pumps alternate the lead pump on each call for cycle.

It shall have signal inputs from float switches for: stop, lead pump start, lag pump start and high alarm. The sensors shall be optically isolated and operate on 24 Vdc with a maximum current of 16 ma for intrinsic safety.

Pilot light indicators for each signal input described above, as well as, pump no.1 and no.2 running inputs.

The controller shall operate pumps based upon various combinations of signal inputs. Normal operation shall operate pumps in the following automatic sequence:

With no signal inputs activated and both pumps off, a stop input activation shall not cause a pump to operate. With a stop input activated and a lead start input activated the controller shall start a single pump and the pump shall operate until the lead start and stop inputs are deactivated. With both the stop and lead start inputs activated and one pump operating, a lag start input being

activated shall operate the second pump. Both pumps shall operate until the lag start, lead start and stop inputs are deactivated.

In the event an input device(s) fails to activate the controller shall operate as follows:

With a stop input device failure, the controller shall operate a single pump based upon the status of the lead start input and a field adjustable short cycle delay. The short cycle delay shall keep the pump operating after the start input deactivates for the delay time setting. If the stop input device fails to activate, the controller shall operate one pump as described above with the lag start input starting the second pump. Both pumps shall operate until both start inputs are deactivated and the individual pump short cycle delays have expired. In the event both the stop and lead start inputs fail to operate the controller shall operate both pumps based upon the status of the lag start input and the individual pump short cycle delay timers.

Both pumps shall operate until the lag start input is deactivated and the individual pump short cycle delays have expired. If all input devices fail except the high alarm input, the controller shall operate both pumps based upon the status of the high alarm input and the individual pump short cycle delay timers. Both pumps shall operate until the high alarm input is deactivated and the individual pump short cycle delays have expired.

A field adjustable failure time delay for each pump, in the range of 5 seconds to 6½ minutes, to start the lag pump at the lead pump start point if the lead pump fails or if the lead pump selector switch is placed in the off position. If a pump fails, the remaining functional pump shall remain the lead pump on future cycles. The failed pump shall only be called to operate at the lag pump operating point. Normal pump alternation shall resume when the failure condition is corrected and the pump has been reset.

The controller shall have selectable soft start delays built into the software, which will ensure when both pumps are called the second pump cannot start for at least 6 or 12 seconds, and a minimum 4 second soft stop delay to insure both pumps cannot stop at the same time. These delays shall insure smooth pump operation and prevent excessive electrical surges and water hammer.

Individual field adjustable time controls to delay starting each pump in the automatic mode after power failure or during initial startup.

Pump failure, pump seal failure, and high alarm red pilot lights shall flash when activated. Field selectable controls shall be provided to allow the seal failure indicator to burn steady when activated.

Manual override inputs for each pump, which can be used to manually override the duplex controllers pump outputs when the controls are in the Auto mode shall be provided. Inputs shall be provided to start or stop each pump from a remote location.

A selectable improper sequence alarm shall be provided to activate the common alarm in the event the control inputs are activated in the wrong order. The proper order shall be: Stop, Lead

Start, and Lag Start. The High alarm shall not be included in the improper sequence test. A selectable Lag Stop Level control shall be provided to allow the lag pump to stop based upon the status of the lead start level input.

It shall provide automatic pump alternation on pump failure and seal failure when a failure condition is detected and the pumps are in the automatic mode. The failed pump shall be made the lag pump on future cycles until the failure condition is corrected. Pump failure shall require manual reset to clear the failure condition and the seal failure condition shall clear when the failure condition clears. Field selectable controls shall be provided to allow the seal failure condition to not automatically alternate the pumps.

An exterior alarm light output which will flash the light brightly during any common alarm condition which include pump failure, seal failure, improper sequence, and high alarm. The output shall allow the light to dim glow under normal conditions to indicate that power is on and the lamp is good. A normally open common alarm output contact shall be energized by these alarm conditions. Selectable controls shall be provided to prevent the seal failure input from activating the common alarm output and alarm light.

A lamp test feature shall be provided to light all of the front panel pilot lights activated by a momentary push-button switch.

907-266.02.2.4--Float Test Option Module. Float Test Option Module will not be used.

907-266.02.2.5--Telemetry Alarms. Auxiliary normally open relay contact outputs shall be provided for interface to a SCADA system for the following alarms.

1. Auxiliary Alarm
2. Improper sequence
3. M1 failure
4. M2 failure
5. M1 seal failure
6. M1 seal failure
7. High level

907-266.02.2.6--Float Switches. In the automatic mode, the Duplex Controller shall receive start and stop commands based upon the level in the station wet well as sensed by the float switches.

Four-float switches shall be provided for stop, lead pump start, lag pump start and high alarm.

The float switches shall be a direct acting switch and contain a single pole mercury switch which activates when the longitudinal axis of the float is horizontal and deactivates when the liquid level falls one inch (1") below the actuation elevation. The float shall have a chemical resistant polypropylene casing with a firmly bonded electrical cable protruding. One end of the cable shall be permanently connected to the enclosed mercury switch and the entire assembly shall be

capsulated to from a completely watertight and impact resistant unit. Float shall include a bracket for support pipe mounting.

907-266.02.2.7--Run Time Meters. Run time meters shall be provided for each pump and the time that both pumps are running. Meters shall be mounted on the interior swing out panel.

Unless otherwise shown on the drawings, run time meters shall have the features and functions of a Model T50B2 as manufactured by ENM Company, Chicago, IL including the following:

a. Sealed and tamper resistant case
b. Six digit AC hour meter
c. Quartz crystal time base
d. Frequency insensitive

907-266.02.2.8--Common Alarm Light. A weatherproof exterior common alarm light shall be provided with red Lexan lens as described below. The exterior alarm light shall be activated during high water level, pump failure, or seal failure.

Alarm light shall be above the fence and visible from the road. Mount the alarm light as shown on the plans. The light shall be PERFECT LINE catalog number B-100/PVG-1R or equal. The alarm light shall burn dim and steady during normal conditions to indicate electrical power "ON" and lamp good. During any alarm condition the alarm light shall flash brightly.

907-266.02.2.9--Submittals. Operating and Maintenance manuals, installation instructions, and Shop Drawings shall be submitted in accordance with the General Conditions and these specifications.

Submittal packages including drawings shall be furnished prior to factory assembly of the pump controller package. These packages shall consist of elementary power and control wiring, enclosure outline drawings as well as the complete Bill of Material (BOM). The enclosure drawings shall include front and side views of the enclosures with overall dimensions, and general component arrangement of the sub-plate. Drawings shall be produced using computer aided software compatible with AutoCAD V2010 or later. Drawing files shall be furnished to the Engineer on diskettes or compact disk. Standard catalog specification sheets showing applicable ratings shall be furnished as part of the submittal package.

907-266.02.2.10--Training. On-site training of one day per controller shall be provided by a factory trained representative of the manufacturer to plant and/or maintenance personnel.

907-266.03--Construction Requirements. Equipment shall be installed in accordance to manufacturer's instructions, drawings and recommendations. A factory trained technical representative shall be provided to inspect the installation, test and start-up the equipment furnished under this specification.

907-266.03.1--Documentation. All documentation including a copy of the complete schematics, product data sheets, interconnection instructions, inspection and/or certification reports, and any special instructions shall be bundled inside each enclosure.

Project closeout documentation shall be provided in accordance with the General Conditions of the contract.

The supplier shall provide a written warranty with submittal drawings covering all materials and parts furnished for a period ending one year after final acceptance of the project. This warranty shall cover all material replacement, all labor, and all travel expenses.

907-266.04--Method of Measurement. Duplex Pump Control Panel will be measured complete in place and operational as a lump sum unit. The cost of all testing and startup shall be included in the measurement for this lump sum item.

All equipment testing, setting of new service pole, coordination with electrical service provider, equipment start-up, and training will be considered subsidiary obligations of the Contractor and will not be measured for separate payment.

907-266.05--Basis of Payment. Duplex Pump Control Panel, measured as prescribed above, will be paid for at the contract lump sum unit price, which shall be full compensation for completing the work. Materials or work for which a pay item is not included and are necessary to complete the work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

Payment will be made under:

907-266-A: Duplex Pump Control Panel - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-267-1 **CODE: (SP)**

DATE: 02/12/2013

SUBJECT: Wireless Monitoring and Control Systems

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Section 907-267, Wireless Monitoring and Control Systems, is hereby added to and made a part of the 2004 Edition of the Mississippi Standard Specification for Road and Bridge Construction as follows:

SECTION 907-267--WIRELESS MONITORING AND CONTROL SYSTEMS

907-267.01--Description. This work consists of furnishing and installing a factory wireless data cellular based communication system on the proposed new Lift Stations UU and DD, and the existing Waste Water Treatment Facility (WWTF) Bypass Pump Station for the purpose of monitoring and controlling various equipment operations. The WWTF Bypass Pump Station and Lift Station UU shall be configured so as to not operate at the same time unless both High Level Alarmsare triggered. The M800 Remote Terminal Unit (RTU) manufactured by Mission Communications has been determined to be acceptable for installation on Lift Station UU and the WWTF Bypass Pump Station. The M100 RTU has been determined to be suitable for installation on Lift Station DD. The supplier of the communication system shall be responsible for coordination required to ensure equipment compatibility with monitoring systems currently in place. The communication system shall be provided complete, in place, as shown on the drawings, specified herein and needed for a complete, proper installation. The Contractor shall comply with all applicable city ordinances and regulations.

907-267.01.1--Submittals. The following product data shall be submitted in accordance with the approved Construction Schedule:

Shop Drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this Section with the work of adjacent trades;

Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work;

Test data required elsewhere in this Section.

Upon completion of this Portion of the Work, and as a condition of its acceptance, deliver to the Engineer three copies of the operation and maintenance manual.

907-267.01.2--Equipment Compatibility. The Contractor shall be responsible for coordinating the instrumentation equipment, communication equipment and other related equipment so that all

elements are compatible and form a complete working system. Shop drawing submittals shall include sufficient information regarding component compatibility to demonstrate compliance with this requirement.

907-267.01.3--Manufacturer's Qualifications. Products used in the work of this Section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of satisfactory production acceptable to the Engineer.

The submitting Company shall provide evidence of, and warrant compliance with, substantially all below listed requirements.

The submitting Company shall have been in business providing remote facility monitoring and control services through the data side of the cellular system to the water distribution / wastewater collection industry or a substantially similar industry for at least six years.

The submitting Company shall be the actual manufacturer and operator, or a duly authorized and trained agent of the manufacturing company or a combination of both, who will actually provide, maintain, and warranty the proposed system.

The Manufacturing Company of the field equipment shall also be the provider of all monitoring related services associated with the field equipment and all ongoing service agreements will be with the actual company providing the monitoring service, not a subcontractor or agent.

The submitting company shall have a primary central monitoring and control center and a fully redundant, physically separate, backup-computer monitoring center. Either center shall have the capability of operating all the remote monitoring and control field RTU's.

The submitting Company shall offer and provide 24 X 7 technical support.

907-267.01.4--Qualifications of Manufacturers Representative. Subject to the "or equal" provisions of the Contract Documents, the Engineer has determined that Mission Communications could supply the products specified in this Section.

907-267.02--Materials.

907-267.02.1--Monitoring and Control System.

907-267.02.1.1--Microprocessor Based Field Remote Terminal Unit (RTU).

907-267.02.1.1.1--Data Cellular Radio. The Remote Terminal Unit (RTU) shall incorporate a radio that utilizes the data side of any cellular system to transmit the data and alarms monitored, as well as receive manual or automated control commands. Cellular radios from all cellular carriers shall be able to mount in the same mounting port on the motherboard and consequently be interchangeable in no more than 10 minutes.

907-267.02.1.1.2--Enclosure Options. The RTU shall be offered in at least the following three enclosure options:

a. NEMA1 with battery inside the enclosure
b. NEMA1 "FlatPak" with a depth of less than 1.5 inches so it is able to fit between the inner and outer door of a double door control panel.
c. NEMA4X with the battery inside and which has front door and top "sun shades" to reduce internal temperatures when placed in the sun.

907-267.02.1.1.3--UL Approvals. RTU shall be fully UL 508 approved and shall not have approvals "pending".

907-267.02.1.1.4--Microprocessor Feature Updates. Microprocessor features like data transmission rates shall be able to be adjusted through the cellular system without any site visits necessary.

907-267.02.1.1.5--RTU Inputs and Outputs. RTU shall have eight (8) digital inputs. These eight (8) inputs must have end of line resistor supervision, or similar supervision, that can detect normal alarm trip inputs and detect input wiring disconnection/shorting as a distinctly different signal and report.

RTU shall have an optional expansion board of an additional eight (8) digital inputs.

The digital inputs shall be user selectable as normally open (NO) or normally closed (NC).

At least three of the RTU digital inputs must be capable of being programmed to record and report pump run times in one minute increments or less as indicated by a relay opening and closing. If only two pumps are monitored then the unit shall also be capable of recording and reporting simultaneous pump run times.

RTU shall have built-in alarms for input wiring fault, AC failure, communication failure and low battery detection.

RTU shall have two (2) analog inputs measuring 4-20mA or 1-5 VDC at 10 bit resolution with four (4) alarm thresholds per input.

RTU shall have an optional expansion board of an additional four (4) analog inputs.

RTU shall have an optional expansion board of an additional eight (8) digital inputs.

RTU shall have an optional expansion board of two (2) pulse counter inputs.

RTU shall have an electronic key reader input to monitor on-site personnel. The RTU shall utilize an audible tone to verify key reading. Each key in the system shall provide unique identification of the key holder when they are on site vs. "someone" is on site.

RTU shall have three (3) digital normally open or closed output relays rated at ½ ampere@ 120VAC.

907-267.02.1.1.6--Status LEDs on Motherboard. LED's above each digital input shall visually display the status of the digital input. Radio signal strength shall be displayed by at least eight (8) LED's in 5db increments between -75db and -110db to facilitate accurate antenna placement. Operational and diagnostic status of at least eight (8) criteria shall be displayed by individual LED's.

907-267.02.1.1.7--Power Requirements. The RTU shall be powered by 12 volts AC and have a built in battery backup capable of keeping the RTU powered for 30 hours in case of primary AC failure. All terminations inside the RTU enclosure shall be low voltage AC or DC (28 volts or less).

907-267.02.2--Communications Links

907-267.02.2.1--Communication System. Wireless communication links shall be through the data side of the cellular system. The voice side of the cellular system and satellite based links are not acceptable.

907-267.02.2.2--Cellular Carriers. The submitting company shall have direct relationships with the cellular companies and shall not use third parties to affect data transport through the cellular companies. The RTU will have interchangeable data cellular radios that will communicate through third generation GPRS (ATT), CDMA (Verizon) or iDEN (Nextel) to maximize the likelihood of reliable communication. If a GPRS (ATT) radio is used, the submitting company shall have PTCRB approval from ATT to use the radio, contract and product acceptance with ATT. If an iDEN radio is used the submitting company shall be have certified partner status, contract and product acceptance with Sprint/ Nextel. The Customer will not have or have to purchase cellular data contracts direct with the carrier(s).

907-267.02.2.3--Security Protocols. All the cellular radios shall all make continuous, secure socket connections (SSL) from the radio, through the cellular system, to the submitting company's servers and web pages. The RTU shall utilize a transmission scheme that encrypts the transmitted data utilizing a 128 bit encryption method that meets or exceeds the advanced encryption standard (AES). The 128 bit AES encryption shall be at all stages of data transfer and storage. The cellular radios shall all have private IP addresses. The submitting company shall have established multiple, private gateways through the cellular system, completely behind firewalls, with at least one of the cellular providers.

907-267.02.2.4--Data Transmission Rates. All alarms will be transmitted immediately upon occurrence; delays can be added by the customer at the RTU or the supplier's website.

The RTU shall either transmit non-alarm data updates every hour or continuously transmit all digital state changes on an as occurs basis; analog and pulse inputs will be transmitted at least once every two minutes. The customer may choose to utilize either type of RTU at any proposed site. The RTU will have an effective, continuous, transfer rate of at least 19,200 baud.

907-267.02.2.5--Communication Link Structure and Performance Criteria. The communication link structure shall be a secure socket connection from the RTU through the cellular system to the supplier's servers, and it shall be a continuous connection, 24 x 7, 365. Receipt of all data sent from the RTU to the server center shall be acknowledged by the server center back to the RTU in real time for every data packet sent. Such structure is called end-to-end data acknowledgement. The secure socket connection shall be from the RTU through the cellular system direct to the system supplier; no third parties shall receive the data from the cellular carrier and then pass it to the system supplier. The above mentioned secure socket connection shall be monitored for end-to-end uptime with interruptions as small as 15 seconds being captured. Both end-to-end uptime and the number of times the link was disconnected/reconnected shall be reported for each RTU continuously with daily summary statistics posted on the customer website. All the end-to-end uptime history of each RTU shall be available on the customer web site from when it first powered up to the present. Weekly management summaries of each RTUs end-to-end uptime shall be automatically emailed to the customer.

907-267.02.3--Centralized Server Centers: Hardware and Software Requirements

907-267.02.3.1--Server Center Physical Structure. The server center housing shall be able to withstand a direct hit from at least an F-3 tornado and continue operations. The server center housing shall have at least six (6) separate and redundant, on-site power generating facilities to backup the local utility power such that there can be stand-alone operation of the center for at least 24 hours. Entrance to the facility shall be controlled by armed guards at all entrances 24x7x365

907-267.02.3.2--Server Center Redundancy Structure. The server center shall house the manufacturers completely redundant and hot linked servers, interconnects, databases, power supplies, inbound cellular connections, and outbound internet hubs and providers.

907-267.02.3.3--Database Structure. All data from the RTU's shall be held for customer access forever. All databases shall be backed up and archived daily. The databases shall be capable of interfacing and transferring, on a continuous basis, all RTU data to an OPC compliant database for access by other OPC compliant HMI software packages. Client side OPC software will run as an executable or NT service. Client side OPC software will, on a user definable interval, establish a socket connection to static IP address(s) at providers' server center. OPC software shall retrieve all changed OPC tag values and close the socket. OPC software shall be set up so as customers OPC computers firewalls may be programmed to only allow Internet traffic to/from the designated service providers IP addresses and port numbers. OPC software will allow for multiple customer OPC software packages to establish, concurrently, OPC connections so as to provide for redundant HMI database operation at customers locations. Customer's firewalls will not be programmed to accept socket connections.

907-267.02.3.4--System Security. All data links shall be behind firewalls, 128 bit encrypted and never accessible, addressable or viewable via the general public Internet, Private IP's are required, pooled public IP's will not be accepted.

907-267.02.3.5--System Software. The system software shall collect and display alarms including individuals accepting alarms; RTU electronic key reads with user names, time of read, and site name; pump running status; pump run times with historical graphs; individual pump flow estimates; automatic daily analysis of pump runtimes for abnormalities with automatic customer notification of such abnormalities; pump starts with hourly analysis of excess pump starts with automatic notifications of excess pump starts; minute-by-minute radio health checks with automatic notification of non-reporting or poorly reporting RTU's; scaled and labeled pulse totalizations and if rainfall gauges are used, inter-day rainfall graphs and run time verses rain fall based on either rain gauges installed as part of the system or as run time verses a reporting airport rain gauge; performing and displaying volumetric inflow/outflow calculations from RTU supplied data for each pump cycle as they occur. Such volumetric calculations will utilize real-time pump start/stop data with simultaneously gathered level transducer data to perform the inflow/outflow and pump GPM calculations.

Utilizing real-time data collection have the ability to based on digital input closure, open or close digital output relay on the same or another real-time unit (Intertie)

907-267.02.4--Alarm System Structure and Software

907-267.02.4.1--Alarm Delivery Formats. Alarms shall be delivered in the following formats: Phone (voice call), fax, pager (numeric or alphanumeric (short alpha or long alpha format), text message, email, or any combination of the above simultaneously. Alarms shall be able to be acknowledged by phone, text message, 2-way pager, email or on the customer web site. Voice alarm acknowledgement shall be adjustable to be able to mimic the format of dialers. Alarms will be called out on alarm and upon return to normal conditions. Return to normal alarms can be adjusted to call the alarm callout group or a different callout group.

907-267.02.4.2--Alarm Callout Formats. Alarm callout groups shall be able to be setup to automatically switch between callout groups at different hours of the day and/or different days of the week. Alarm callout groups shall be able to have multiple teams within each group to easily facilitate rotation of teams of on-call personnel.

907-267.02.4.3--Alarm Message Formats. All alarms shall have the alarm condition, time, alarm location and pump status at the time of the alarm in each message. Alarm message format shall be adjustable to include just the above information when calling a phone where it is known who will answer the phone, or be adjustable to add an introductory message asking for a specific person when calling a phone where it is not known who will answer the phone (like a home phone). Alarms shall be able to be delivered individually or be able to be grouped into one message so that multiple, simultaneous alarms (like AC Fail at multiple sites) can be delivered and acknowledged in one phone call.

907-267.02.4.4--Alarm Dispatch Logs. Each alarm shall have a full log of each notification attempt of that alarm documenting the following:

a. Date, time, and alarm condition.

b. If each notification attempt was a success or failure and the reason for each failure if an attempt was a failure (like line busy, call dropped, etc)
c. A recording of each voice notification attempt so the specific reason for a notification failure can be known.
d. Date, time, and name of person who acknowledged the alarm.

907-267.02.4.5--Voice Alarm Delivery Capacity. Manufacturer shall provide at least 20 outbound lines to deliver voice alarms so as not delay delivery of current alarms.

907-267.02.5--Remote Data Access.

907-267.02.5.1--Remote Data Access Format. Data collected by the system shall be able to be remotely accessed by simple web browser. The system shall provide individual web pages for the User to access via any web browser.

To access the web pages, the User will have to enter a User Name and Password.

The User can set up any of three levels of access to the web pages:

a. Read only…can see but cannot make any changes
b. Read/Write…can see and can make changes
c. Read/Write/Control…can see, make changes and effect control functions, also add or remove logins/ passwords.

The system supplier will provide at least two separate web sites for each customer. One shall be designed to be viewed on a traditional laptop or desktop computer. The other shall be designed to be viewed on a web enabled cell phone or PDA. This web site will still have graphs showing trending of data, and will be designed to minimize the data sent so as to minimize the page loading times and size of the data plans necessary to view the site on a web enabled cell phone or PDA.

The system supplier will provide secure access through a specified phone without the need for web access (Voice SCADA). This will require login to system via numeric 5-digit code and must be set up in the system to an associated login for that site to a specific phone number to maintain site security.

In addition to the above web sites, if the User has Mission M800 Real-time RTUs, the User will be provided at no additional charge with a customizable software interface that will display real-time status and graphic trending of data collected by the M800 RTU.

a. The software will be downloadable from the Mission customer website.
b. The software will automatically update itself every time the User accesses the software.
c. The software will require NO programming to customize.
d. The software will be the Mission Real Time Viewer.

907-267.02.5.2--Remote Access Security. In addition to the Username and Password structure described above, all access of the User web site shall be logged. Such logging data to included date, time and duration of access, User Name and Password of user to access the site and IP address of the accessing computer. The log will be accessible through the User web site.

907-267.02.5.3--Automated Administrative Reports and Alerts. The User web site shall produce and automatically deliver weekly reports which summarize alarms and responses, pump runtimes and flow estimates, weekly end-to-end uptime percentages of each RTU, and all electronic key uses at the RTU sites.

The web site shall be capable of sending two (2) different categories of notifications, Alarms and Alerts. Alarms are for conditions that the User decides they want to be notified immediately about. Alerts are conditions that need attention, but are not so time sensitive that they cannot wait till the next morning. The Alarms callout list and the Alert callout list shall be able to be separate and distinctly different.

The User web site shall analyze daily pump run times at compared to a moving 30 day average of that pumps most recent runtimes and automatically Alert the User is the pump runs outside the normal runtime variation pattern.

The User web site shall analyze hourly pump runtimes and automatically compare it to two (2) User set thresholds. If the Alert threshold is exceeded, an Alert will be sent the following morning. If the Alarm threshold is exceeded, an alarm will send immediately.

The User web site shall send an Alert the first morning that units are in Communications fail even though Alarms have been sent at the time the RTUs went off-line. Such Alerts are a reminder to Management that they still have units that are off line.

907-267.02.6--RTU Locations. RTUs shall be located at Lift Station UU, Lift Station DD, and the bypass Pump Station at the D'Iberville Waste Water Treatment Facility. RTUs at each location shall be furnished with an omnidirectional antenna at grade plus eight feet (8').

907-267.02.7--Monitoring Points Per RTU. The inputs to be monitored at all sites are as follows:

1. Digital inputs

DI-1 - Pump #1

DI-2 - Pump #2

DI-3

DI-4 - High Wet Well

DI-5 - High/High (Station UU and WWTF Pump Station)

DI-6

DI-7

DI-8

2. Analog inputs with four (4) hi/low threshold alarms

AI-1 - Level Transducer (Station UU and WWTF Pump Station)

AI-2

3. Optional Pulse inputs

P-1

P-2

4. Relay Outputs

R-1 - Pump ON (Station UU and WWTF Pump Station)

R-2 - Pump OFF (Station UU and WWTF Pump Station)

R-3

B. Additional Site Inputs Follow Same Format As Above

907-267.02.8--Other Materials. The Contractor shall provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

907-267.03--Construction Requirements.

907-267.03.1--Surface Conditions. The Contractor shall examine the areas and conditions under which work of this Section will be performed. The Contractor shall correct conditions detrimental to timely and proper completion of the Work. The Contractor shall not proceed until unsatisfactory conditions are corrected.

907-267.03.2--Coordination. The Contractor shall coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.The Contractor shall inform D'Iberville Public Works prior to placing any pump station into operation.

907-267.03.3--Installation. The Contractor shall install the work of this Section in strict accordance with the manufacturer's recommendations and shop drawings as approved by the Engineer. Upon completion of the installation, the Contractor shall carefully inspect each component and verify that all items have been installed in their proper location, adequately anchored, and adjusted to achieve optimum operation. If required, the contractor shall adjust the antenna placement or elevation to obtain consistent, stable operation of the system. The Contractor shall delineate timing of RTU installation and commissioning.

907-267.03.4--Service. The Contractor shall demonstrate to the Owner's operation and maintenance personnel the proper methods for operating and maintaining the equipment, and the contents of the operation and maintenance manual required to be submitted under Subsection 907-267.01.1.

The Contractor shall furnish to the Owner, through the Engineer, a written report prepared by the instrumentation equipment manufacturer's field service technician certifying that:

a. The equipment has been properly installed in accordance with manufacturer's recommendations;

b. The equipment check out and initial start-up activities have been completed in accordance with manufacturer's recommendations and under the technician's supervision;

c. Antenna placement has been optimized;

d. The equipment is free from any undue stress imposed by connecting conduit or anchor bolts;

e. The equipment operates satisfactorily and in compliance with the requirements of this Section.

If applicable, the Contractor shall delineate whether or not the Contractor shall include with his bid, the on-site services of the instrumentation equipment manufacturer's field service technician, and for what period. This service shall be for the purpose of instruction of plant personnel and testing of the system.

907-267.04--Method of Measurement. Wireless monitoring and control system of the type specified will be measured as a unit quantity per each.

907-267.05--Basis of Payment. Wireless monitoring and control system, measured as prescribed above, will be paid for at the contract unit prices per each, complete in place, which shall be full compensation for all labor, materials, equipment, testing, and all incidentals necessary to complete the work under this section.

Payment will be made under:

907-267-A: Wireless Monitoring and Control System -per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-304-13 **CODE: (SP)**

DATE: **06/06/2012**

SUBJECT: **Granular Courses**

Section 907-304, Granular Courses, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-304.02--Materials. After the first paragraph of Subsection 304.02.1 on page 183, add the following.

Crushed concrete meeting the requirements of Subsection 907-703.04.3 may be used in lieu of granular courses or crushed stone courses specified in the contract. This applies to base courses, shoulders, or other required construction on a prepared foundation.

907-304.03--Construction Requirements.

907-304.03.5--Shaping, Compacting and Finishing. Delete the sixth paragraph of Subsection 304.03.5 on page 185.

Delete the first table in Subsection 304.03.5 on page 186 and substitute the following.

Granular Material Class	Lot Average	Individual Test
7,8,9 or 10	97.0	93.0
5 or 6	99.0	95.0
3 or 4	100.0	96.0
1 or 2	102.0	98.0
Crushed Courses*	99.0	95.0

* When placed on filter fabric on untreated subgrade, the individual tests and the average of the five (5) tests shall equal or exceed the following values.

Lot Average	Individual Test
96.0	92.0

907-304.05--Basis of Payment. Add the "907" prefix to the pay items listed on page 187.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-401-2

DATE: **10/25/2011**

SUBJECT: **Hot Mix Asphalt (HMA)**

Add the following before 907-401.02.6.2 on page 1.

907-401.02.4--Substitution of Mixture. Delete the table in Subsection 401.02.4 on page 242, and substitute the following:

Mixture	Single Lift Laying Thickness Inches	
	Minimum	Maximum
25 mm	3	4
19 mm	2 ¼	3 ½
12.5 mm	1 ½	2 ½
9.5 mm	1	1 ½
4.75 mm	½	¾

After Subsection 907-401-02.6.2 on page 2, add the following:

907-401.02.6.4.1--Roadway Density. Delete subparagraphs 1., 2., & 3. on page 251 and substitute the following:

1. For all leveling lifts, when full lane width and with a thickness as specified in the table in Subsection 401.02.4, the required lot density shall be 92.0 percent of maximum density.

2. For all single lift overlays, with or without leveling and/or milling, the required lot density shall be 92.0 percent of maximum density.

3. For all multiple lift overlays of two (2) or more lifts excluding leveling lifts, the required lot density of the bottom lift shall be 92. 0 percent of maximum density. The required lot density for all subsequent lifts shall be 93.0 percent of maximum density.

4. For all pavements on new construction, the required lot density for all lifts shall be 93.0 percent of maximum density.

907-401.02.6.5--Acceptance Procedure for Pavement Smoothness. Delete the third sentence of the sixth paragraph of Subsection 401.02.6.5 on page 254, and substitute the following.

The wheel paths shall be designated as being located three feet (3') and nine feet (9') from centerline or longitudinal joint, respectively.

907-401.03.1.2--Tack Coat. Delete the three sentences of Subsection 401.03.1.2 on page 259, and substitute the following:

Tack coat shall be applied to previously placed HMA and between lifts, unless otherwise directed by the Engineer. Tack coat shall be applied with a distributor spray bar. A hand wand will only be allowed for applying tack coat on ramp pads, irregular shoulder areas, median crossovers, turnouts, or other irregular areas. Bituminous materials and application rates for tack coat shall be as specified in Table 410-A on page 293. Construction requirements shall be in accordance with Subsection 407.03 of the Standard Specifications.

907-401.03.1.4--Density. Delete the first sentence of the first paragraph of Subsection 401.03.1.4 on page 259 and substitute the following:

The lot density for all dense graded pavement lifts, except as provided below for preleveling, wedging [less than fifty percent (50%) of width greater than minimum lift thickness], ramp pads, irregular shoulder areas, median crossovers, turnouts, or other areas where the established rolling pattern cannot be performed, shall not be less than the specified percent (92.0% or 93.0%) of the maximum density based on AASHTO Designation: T 209 for the day's production. For all leveling lifts, when full lane width and with a thickness as specified in the table in Subsection 401.02.4, the required lot density shall be 92.0 percent of maximum density.

907-401.03.9--Material Transfer Equipment. Delete the paragraph in Subsection 401.03.9 on page 264 and substitute the following:

Excluding the areas mentioned below, the material transferred from the hauling unit when placing the top lift, or the top two (2) lifts of a multi-lift HMA pavement with density requirements, shall be remixed prior to being placed in the paver hopper or insert by using an approved Materials Transfer Device. Information on approved devices can be obtained from the State Construction Engineer. Areas excluded from this requirement include: leveling courses, temporary work of short duration, detours, bridge replacement projects having less than 1,000 feet of pavement on each side of the structure, acceleration and deceleration lanes less than 1,000 feet in length, tapered sections, transition sections for width, shoulders less than 10 feet in width, crossovers, ramps, side street returns and other areas designated by the Engineer.

907-401.03.12--Joints. Delete the third paragraph of Subsection 401.03.12 on page 265 and substitute the following:

The contact surface of transverse joints and longitudinal joints in the surface lift, except hot joints, shall be sealed by spraying a thin, uniform coat of Pavon™, Crafco™ Pavement Joint Adhesive No. 34524, Dura-Fill Cold Joint Adhesive, or approved equal, prior to placement of additional HMA against the previously placed material. Manufacture's recommendations shall be followed if the material needs to be re-heated, and when placing the thin, uniform coat.

Prior to application of the sealant, the face of the joint shall be thoroughly dry and free from dust or any other material that would prevent proper sealing. All joints shall be swept or blown free of loose material, dirt, vegetation, and other debris by means of compressed air or a power sweeper.

Truck and vehicle traffic shall not drive across a sealed joint until it has dried sufficient to prevent damage from tracking.

The Contractor shall furnish the Engineer three copies of the manufacturer's certification stating that the material used meets the requirement of the specifications.

After Subsection 401.03.13 on page 266, add the following:

907-401.03.14--Shoulder Wedge. The Contractor shall attach a device to the screed of the paver that confines the material at the end gate and extrudes the asphalt material in such a way that results in a compacted wedge shape pavement edge of approximately 30 degrees, but not steeper than 35 degrees. The device shall maintain contact between itself and the road shoulder surface and allow for automatic transition to cross roads, driveways, and obstructions. The device shall be used to constrain the asphalt head reducing the area by 10% to 15% increasing the density of the extruded profile. Conventional single plate strike off shall not be used.

The device shall be TransTech Shoulder Wedge Maker, the Advant-Edge, or a similar approved equal device that produces the same wedge consolidation results. Contact information for these wedge shape compaction devices is the following:

1. TransTech Systems, Inc.
   1594 State Street
   Schenectady, NY 12304
   800-724-6306
   www.transtechsys.com

2. Advant-Edge Paving Equipment, LLC
   P.O. Box 9163
   Niskayuna, NY 12309-0163
   518-280-6090
   Contact; Gary D. Antonelli
   Cell: 518-368-5699
   email: garya@nycap.rr.com
   Website: www.advantedgepaving.com

Before using a similar device, the Contractor shall provide proof that the device has been used on previous projects with acceptable results, or construct a test section prior to the beginning of work and demonstrate wedge compaction to the satisfaction of the Engineer. Short sections of handwork will be allowed when necessary for transitions and turnouts, or otherwise authorized by the Engineer.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-401-2 **CODE: (IS)**

DATE: 11/04/2005

SUBJECT: Hot Mix Asphalt (HMA)

Section 401, Hot Mix Asphalt (HMA) - General, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in toto Subsection 401.02.6.2 on pages 248 and 249, and substitute:

907-401.02.6.2--Assurance Program for Mixture Quality. The Engineer will conduct a quality assurance program. The quality assurance program will be accomplished as follows:

1) Conducting verification tests.
2) Validate Contractor test results.
3) Periodically observing Contractor quality control sampling and testing.
4) Monitoring required quality control charts and test results.
5) Sampling and testing materials at any time and at any point in the production or laydown process.

The rounding of all test results will be in accordance with Subsection 700.04.

The Engineer will conduct verification tests on samples taken by the Contractor under the direct supervision of the Engineer at a time specified by the Engineer. The frequency will be equal to or greater than ten percent (10%) of the tests required for Contractor quality control and the data will be provided to the Contractor within two asphalt mixture production days after the sample has been obtained by the Engineer. At least one sample shall be tested from the first two days of production. All testing and data analysis shall be performed by a Certified Asphalt Technician-I (CAT-I) or by an assistant under the direct supervision of the CAT-I. Certification shall be in accordance with the *MDOT HMA Technician Certification Program* chapter in the Materials Division Inspection, Testing, and Certification Manual. The Department shall post a chart giving the names and telephone numbers for the personnel responsible for the assurance program.

The Engineer shall be allowed to inspect Contractor testing equipment and equipment calibration records to confirm both calibration and condition. The Contractor shall calibrate and correlate all testing equipment in accordance with the latest versions of the Department's Test Methods and AASHTO Designation: R 18.

Random differences between the Engineer's verification tests and the current running average of four quality control tests at the time of obtaining the verification sample will be considered acceptable if within the following limits:

Item	Allowable Differences
Sieve - % Passing	
3/8-inch and above	6.0
No. 4	5.0
No. 8	4.0
No. 16, for 4.75 mm mixtures ONLY	3.5
No. 30	3.5
No. 200	2.0
AC Content	0.4
Specimen Bulk SG, Gmb @ N_{Design}	0.030
Maximum SG, Gmm	0.020

If four quality control tests have not been tested prior to the time of the first verification test, the verification test results will be compared to the average of the preceding quality control tests. If the verification test is the first material tested on the project or if a significant process adjustment was made just prior to the verification test, the verification test results will be compared to the average of four subsequent quality control test results. For all other cases after a significant process adjustment, the verification test results will be compared to the average of the preceding quality control tests (taken after the adjustment) as in the case of a new project start-up when four quality control tests are not available.

In the event that; 1) the comparison of the Contractor's running average quality control data and Engineer's quality assurance verification test results are outside the allowable differences in the above table, or 2) if a bias exists between the results, such that one of the results is predominately higher or lower than the other, and the Engineer's results fail to meet the JMF control limits, the Engineer will investigate the reason immediately. As soon as the need for an investigation becomes known, the Engineer will increase the quality assurance sampling rate to the same frequency required for Contractor testing. The additional samples obtained by the Engineer may be used as part of the investigation process or for routine quality assurance verification tests. The Engineer's investigation may include testing of the remaining quality control split samples, review and observation of the Contractor's testing procedures and equipment, and a comparison of split sample test results by the Contractor quality control laboratory, Department quality assurance laboratory and the Materials Division laboratory. The procedures outlined in the latest edition of MDOT's Field Manual for HMA may be used as a guide for the investigation. In the event that the Contractor's results are determined to be incorrect, the Engineer's results will be used for the quality control data and the appropriate payment for the mixture will be based on the procedures specified in Subsection 401.02.5.8(j).

The Engineer will periodically witness the sampling and testing being performed by the Contractor. The Engineer, both verbally and in writing, will promptly notify the Contractor of any observed deficiencies. When differences exist between the Contractor and the Engineer which cannot be resolved, a decision will be made by the State Materials Engineer, acting as the referee. The Contractor will be promptly notified in writing of the decision. If the deficiencies are not corrected, the Engineer will stop production until corrective action is taken.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-401-5 **CODE: (SP)**

DATE: 09/07/2012

SUBJECT: Stone Matrix Asphalt (SMA)

Section 401, Plant Mix Pavements-General, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as amended by this special provision is applicable to Stone Matrix Asphalt (SMA) Only.

SECTION 907-401 – STONE MATRIX ASPHALT (SMA)

907-401.01--Description. These specifications include general requirements that are applicable to Stone Matrix Asphalt (SMA).

This work consists of constructing one or more lifts of SMA pavement on a prepared surface in accordance with the requirements of Section 401 for Hot Mix Asphalt (HMA), with the exceptions set forth in this special provision. The SMA shall meet the specific requirements for the mixture to be produced and placed in reasonably close conformity with the lines, grades, thicknesses and typical sections shown on the plans or established by the Engineer.

907-401.02--Materials.

907-401.02.1--Component Materials.

907-401.02.1.2--Aggregates. The source of aggregates shall meet the applicable requirements of Section 703.

907-401.02.1.2.1--Coarse Aggregate Blend. Mechanically fractured faces by weight of the combined mineral aggregate coarser than the No. 4 sieve shall be 95 percent two or more fractured faces for all SMA mixtures.

The maximum percentage by weight of flat and elongated particles, maximum to minimum dimension greater than 3, shall not exceed 20% for SMA mixtures. This shall be determined in accordance with ASTM D 4791, Section 8.4, on the combined mineral aggregate retained on the 3/8" sieve.

907-401.02.1.2.2--Fine Aggregate Blend. All SMA mixture fine aggregate blends shall have a minimum fine aggregate angularity index of 44.0 (ASTM C1252, Method A). The minus No. 40 fraction of the combined aggregate shall be non-plastic when tested according to AASHTO T 90. The clay content for the combined aggregate used in underlying layers shall not exceed 1.0 percent, and when used in top layers shall not exceed 0.5 percent by weight of the total mineral aggregate when tested according to AASHTO T 88.

907-401.02.1.2.3--Combined Aggregate Blend. All gradations will be based on percent passing by volume and not mass. Refer to Mississippi Test Method MT-80 Stone Matrix Asphalt (SMA) Volumetric Mix Design, Section 11 for the procedure to calculate gradations based on volumes. The gradation requirements, by volume for SMA mixtures, are provided in the following table.

Sieve Size	Nominal Maximum Aggregate Size					
	19.0-mm		12.5-mm		9.5-mm	
	Lower Control	Upper Control	Lower Control	Upper Control	Lower Control	Upper Control
1-inch	100	100				
3/4-inch	90	100	100	100		
1/2-inch	50	74	90	100	100	100
3/8-inch	25	60	26	78	90	100
No. 4	20	28	20	28	26	60
No. 8	16	24	16	24	20	28
No. 16	13	21	13	21	13	21
No. 30	12	18	12	18	12	18
No. 50	12	15	12	15	12	15
No. 200	8.0	10.0	8.0	10.0	8.0	10.0

907-401.02.1.3--Bituminous Materials. Bituminous materials shall meet the applicable requirements of Section 702 for the grade specified. A PG 76-22 asphalt binder shall be used for all SMA mixtures. The asphalt content (by weight of total mix) shall be based on the bulk specific gravity of the combined aggregate blend (G_{sb}) to ensure a constant asphalt binder volume in the mix for durability purposes. The relationship between G_{sb} and the minimum asphalt binder content by weight of total mix is provided in the following table.

Based on Minimum Asphalt Content by Volume of 6.0 Percent		
Combined Aggregate Bulk Specific Gravity, G_{sb}	Minimum Asphalt Content (%)	Rounded Minimum Asphalt Content (%)
2.40	6.58	6.6
2.45	6.46	6.5
2.50	6.34	6.3
2.55	6.22	6.2
2.60	6.11	6.1
2.65	6.00	6.0
2.70	5.90	5.9
2.75	5.79	5.8
2.80	5.70	5.7
2.85	5.60	5.6
2.90	5.51	5.5
2.95	5.42	5.4
3.00	5.34	5.3
Minimum AC, % (mass) = $0.724*(G_{sb})^2 - 5.98*G_{sb} + 16.76$		

Tack coat shall be the same neat grade asphalt cement used in the mixture being placed or those materials specified for tack coat in Table 410-A on the last page of Section 410. Emulsified asphalt shall not be diluted without approval of the Engineer.

907-401.02.1.4--Mineral Filler. Mineral filler shall meet the requirements of Subsection 703.16.

907-401.02.1.8--Stabilizing Fiber. Stabilizing fiber shall meet the requirements of Subsection 714.07.

907-401.02.3--Composition of Mixtures.

907-401.02.3.1--General. Unless otherwise specified or permitted, the SMA shall consist of a uniform mixture of asphalt, aggregate, mineral filler, stabilizing fibers, hydrated lime and, when required or necessary to obtain desired properties, antistripping agent and/or other materials.

The total amount of crushed limestone aggregate, in the top lift, shall not exceed 50 percent of the total combined aggregate by weight.

Hydrated lime shall be used in all SMA at the rate of one percent (1%) by weight of the total dry aggregate. The aggregate, prior to the addition of the hydrated lime, shall contain sufficient surface moisture. If necessary, the Contractor shall add moisture to the aggregate according to the procedures set out in Subsection 401.03.2.1.2.

The Contractor shall obtain a shipping ticket for each shipment of hydrated lime. The Contractor shall provide the District Materials Engineer with a copy of each shipping ticket from the supplier, including the date, time and weight of hydrated lime shipped.

Mixtures will require the addition of an antistripping agent when the Tensile Strength Ratio (MT-63) and/or the Boiling Water Test (MT-59) fail to meet the following criteria.

Tensile Strength Ratio (TSR - MT-63)	
Wet Strength / Dry Strength	85 percent minimum
Interior Face Coating	95 percent minimum
Boiling Water Test (MT-59)	
Particle Coating	95 percent minimum

Reclaimed asphalt pavement (RAP) or crushed reclaimed concrete may not be used as an aggregate component in the production of SMA.

907-401.02.3.1.1--Mixture Properties. The mortar is defined as the combination of the percent passing the 0.075 mm sieve, liquid asphalt binder, and the stabilizing fiber. Mix design and approval shall include mortar preparation and testing conducted in accordance with Mississippi Test Method MT-81. The mortar shall have a minimum unaged dynamic shear rheometer (DSR) $G^*/\sin\delta$ of 5.00 kPa, a minimum rolling thin film oven (RTFO) DSR $G^*/\sin\delta$ of 11.00 kPa, and a

maximum pressure aging vessel (PAV) bending beam rheometer (BBR) stiffness (S) of 1500 MPa.

All mixes shall be designed according to Mississippi Test Method MT-80. SMA mixes shall be designed with the Superpave gyratory compactor utilizing an N_{design} of 75 gyrations. The design air voids and voids in the mineral aggregate for all SMA mixes are 4.0 and a minimum of 17.0 percent, respectively. The ratio of the voids in the coarse aggregate in the compacted mix (VCA_{mix}) to the voids in the coarse aggregate as determined with the dry rodded unit weight test (VCA_{dr}) shall be less than 1.0.

The designed mixture shall have a draindown of less than 0.3 percent when tested in accordance with Mississippi Test Method MT-82, Draindown Determination for Stone Matrix Asphalt Mixtures.

907-401.02.3.2--Job Mix Formula. The job mix formula shall be established in accordance with Mississippi Test Method MT-80.

At least 10 working days prior to the proposed use of each mixture, the Contractor shall submit in writing to the Engineer a proposed job-mix formula or request the transfer of a verified job-mix formula as set forth in the latest edition of MDOT's Field Manual for HMA and MT-80. The job-mix formula shall be signed by a Certified Mixture Design Technician (CMDT).

The Department will perform the tests necessary for review of a proposed job-mix formula for each required mixture free of charge one time only. A charge will be made for additional job-mix formulas submitted by the Contractor for review.

Review of the proposed job-mix formula will be based on percent maximum specific gravity at N_{Design}, VMA @ N_{Design}, ratio of voids in the Coarse Aggregate (VCA_{mix}/VCA_{dr}), draindown, mortar properties, resistance to stripping, and other criteria specified for the mixture.

The mixture shall conform thereto within the range of tolerances specified for the particular mixture. No change in properties or proportion of any component of the job-mix formula shall be made without permission of the Engineer. The job-mix formula for each mixture shall be in effect until revised in writing by the Engineer.

A job-mix formula may be transferred to other contracts in accordance with conditions set forth in the Department's Field Manual for HMA.

The Contractor shall not place any SMA prior to receiving "tentative" approval and a MDOT design number from the Central Laboratory.

When a change in source of materials, unsatisfactory mixture production results (such as segregation, bleeding, shoving, rutting over 1/8", raveling & cracking) or changed conditions make it necessary, a new job-mix formula will be required. The conditions set out herein for the original job-mix formula are applicable to the new job-mix formula.

907-401.02.5--Contractor's Quality Management Program.

907-401.02.5.3--Testing Requirements. As a minimum, the Contractor's quality management program shall include the following:

(a) Bituminous Material. Provide Engineer with samples in a sealed one quart metal container at the frequency given in MDOT SOP TMD-20-04-00-000.

(b) Mechanically Fractured Face. Determine mechanically fractured face content of aggregates retained on the No. 4 sieve, at a minimum of one test per day of production.

(c) Mixture Gradation. Conduct extraction tests for gradation determination on the mixture. Sample according to the frequency in paragraph (i) and test according to Mississippi Test Method MT-31.

(d) Total Voids and VMA. Determine total voids and voids in mineral aggregate (VMA), at N_{Design}, from the results of bulk specific gravity tests on laboratory compacted specimens. Sample according to the sampling frequency in paragraph (i) and test according to the latest edition of MDOT's Field Manual for HMA.

(e) Asphalt Content. Sample according to the sampling frequency in paragraph (i), and determine the asphalt content using one of the following procedures.

(1) Nuclear gauge. (Mississippi Test Method MT-6)
(2) Incinerator oven. (AASHTO T 308, Method A)

Draindown tests shall also be conducted according to Mississippi Test Method MT-82, at a minimum of one test per day of production..

(f) Stripping Tests. Conduct a minimum of one stripping test at the beginning of each job-mix production and thereafter, at least once per each two weeks of production according to Mississippi Test Method: MT-63 and one stripping test per day of production according to Mississippi Test Method: MT-59. Should either the TSR (MT-63) or the boiling water (MT-59) stripping tests fail, a new antistrip additive or rate shall be established or other changes made immediately that will result in a mixture which conforms to the specifications; otherwise, production shall be suspended until corrections are made.

(g) Density Tests. Conduct density tests as necessary to control and maintain required compaction according to Mississippi Test Method: MT-16, Method C (nuclear gauge), or AASHTO T 166.

(h) Quality Control Charts. Plot the individual test data, the average of the last four tests and the control limits for the following items as a minimum:

Mixture Gradation (Percent Passing) Sieves:
1/2-in, 3/8-in, No. 4, No. 8, No. 30, and No. 200.
Asphalt Content, Percent

Maximum Specific Gravity
Total Voids @ N_{Design}, Percent
VMA @ N_{Design}, Percent

Keep charts up-to-date and posted in a readily observable location. Charts may be kept on a computer, however, the charts shall be printed out a minimum of once each production day and displayed in the laboratory. Note any process changes or adjustments on the Air Voids chart.

(i) Sampling Frequency. Conduct those tests as required above at the following frequency for each mixture produced based on the estimated plant tonnage at the beginning of the day.

Total Estimated Production, tons	Number of Tests
1-700	1
701-1400	2
1401-2100	3
2101+	4

(j) Sample Requirements. Obtain the asphalt mixture samples from trucks at the plant. Obtain aggregate samples from cold feed bins or aggregate stockpile. Save a split portion of all mixture samples at the laboratory site in a dry and protected location for 14 calendar days. At the completion of the project, the remaining samples may be disposed of with the approval of the Engineer.

The above testing frequencies are for the estimated plant production for the day. If production is discontinued or interrupted, the tests will be conducted at the previously established sample tonnage points for the materials that are actually produced. If the production exceeds the estimated tonnage, sampling and testing will continue at the testing increments previously established for the day. A testing increment is defined as the estimated daily tonnage divided by the required number of tests from the table in the above subparagraph (i).

In addition to the above program, aggregate stockpile gradation tests (AASHTO T-11 and T-27) shall be conducted every other production day. Fine aggregate angularity tests (ASTM C 1252, Method A) shall be conducted on the first day of production and once for every eight production samples thereafter, with a minimum of one test per production week.

907-401.02.5.5--Control Limits. The following control limits for the job mix formula (JMF) and warning limits are based on a running average of the last four data points.

Item	JMF Limits	Warning Limits
Sieve - % Passing		
1/2-in	± 5.5	± 4.0
3/8-in	± 5.5	± 4.0
No. 4	± 4.0	± 3.0

No. 8	± 4.0	± 3.0
No. 30	± 4.0	± 3.0
No. 200	± 2.0	± 1.5
Asphalt Content, %	-0.3 to +0.5	-0.2 to +0.4
Total Voids @ N_{Design}, %	± 1.3	± 1.0
VMA @ N_{Design}, %	– 1.5	– 1.0

907-401.02.5.7--Job Mix Formula Adjustments. A request for a JMF adjustment signed by a CAT-II may be made to the Engineer by the Contractor. Sufficient testing data shall be submitted with the request to justify the change. The requested change will be reviewed by the State Materials Engineer for the Department. If current production values meet the mixture design requirements, a revised JMF will be issued. Adjustments to the JMF shall conform to the latest edition of MDOT's Field Manual for HMA. Adjustments to the JMF to conform to actual production shall not exceed the tolerances specified for the JMF limits. Regardless of such tolerances, any adjusted JMF gradation shall be within the range given in Subsection 907-401.02.1.2.3 for the mixture specified. **The JMF asphalt content may only be reduced if the production VMA meets or exceeds the minimum design VMA requirements for the mixture being produced.**

907-401.02.5.9--Trial Section. At the beginning of placement for each lift, the Contractor shall construct a trial section of a maximum of 400 tons of mix, for the purpose of establishing and evaluating consistent mixture and compaction properties. The Contractor shall use the trial section to adjust production process (if necessary) and to establish coordinated testing efforts between Contractor QC personnel and Department testing personnel. During the construction of the trial section, at least one sample shall be pulled and split between the Contractor and the Department. The Contractor shall determine the production point at which the mix shall be sampled during trial section construction. This sample does not have to be selected by the formal random selection procedures used during actual production, but should be representative of the mix produced.

Density tests shall be performed according to the procedures in Chapter 7 of MDOT's Field Manual for Hot Mix Asphalt (First Day Production). The Department will conduct verification tests for mixture quality within 24 hours of receipt of the split sample. If the Department's tests on the mixture indicate both compliance with specified mix properties listed in Subsection 401.2.6.3 for a pay factor of 1.00 and verification of the Contractor's test results within the allowable differences specified in Subsection 907-401.02.6.2, no further trial sections are necessary. These single test results will not be compared to 1.7 times the warning and JMF limits. If a pay factor of less than 1.00 is determined for mix quality or density, a second trial section consisting of 200 tons shall be constructed. If a pay factor of less than 1.00 is obtained in the second trial section, additional 200 ton trial sections shall be constructed until pay factors are equal to 1.00, at which time full production can begin. The Engineer reserves the right to have any trial section removed and replaced at no additional cost to the State, if the pay factor for any characteristic for a trial section is less than 0.75.

For actual payment purposes, a pay factor of 1.00 will be used for all first and second trial sections allowed to remain in place. Pay factors in accordance with Subsections 907-401.02.6.3 and 907-401.02.6.4.1 will be applied to the third and any subsequent 200 ton trial sections.

907-401.02.6--Standards of Acceptance.

907-401.02.6.4--Acceptance Procedure for Density. Each completed lift will be accepted with respect to compaction on a lot to lot basis from density tests performed by the Department. Material produced and placed during the trial section(s), if placed on the roadway, will be designated as separate lots. For normal production days, divide the production into approximately equal lots as shown in the following table. When cores are being used for the compaction evaluation, randomly obtain one core from each lot. When the nuclear density gauge is being used for compaction evaluation, obtain two random readings from each lot and average the results (see Chapter 7 of the latest edition of MDOT's Field Manual for HMA). Additional tests may be required by the Engineer to determine acceptance of work appearing deficient. The Contractor shall furnish and maintain traffic control for all compaction evaluations, including coring, required in satisfying specified density requirements.

Lot Determination

Daily Production - Tons	Number of Lots
0-300	1
301-600	2
601-1000	3
1001-1500	4
1501-2100	5
2101-2800	6
2801+	7

907-401.02.6.4.1--Roadway Density. The density requirement for each completed lift on a lot to lot basis from density tests performed by the Department shall be 93.0 percent of maximum density. When it is determined that the density for a lot is below 93.0 percent but not lower than 91.0 percent of maximum density, the Contractor will have the right to remove and replace the lot(s) not meeting the specified density requirements in lieu of accepting reduced payment for the lot(s).

When it is determined that the density for a lot is above 96.0 percent, the Engineer shall notify the Contractor who will make plant adjustments to resolve the problem.

When it is determined that the density for a lot is below 91.0 percent, the lot(s), or portions thereof, shall be removed and replaced in accordance with Chapter 7 of the latest edition of MDOT's Field Manual for HMA at no additional cost to the State. A corrected lot will be retested for approval. No resampling will be performed when pavement samples are used for determining density.

At any time the average daily compaction (the total of the percent compaction for the lots produced in one day divided by the total number of lots for the day) does not meet 93.0 percent compaction or more for two consecutive days, the Contractor shall notify the Engineer of proposed changes to the compactive effort. If the average daily compaction does not meet 93.0

percent compaction or more for a third consecutive day, the Contractor shall stop production and construct another trial section to establish proper compaction procedures.

Each lot of work found not to meet the density requirement of 93.0 percent of maximum density may remain in place with a reduction in payment as set out in the following table:

PAYMENT SCHEDULE FOR COMPACTION

Pay Factor	Lot Density ** % of Maximum Density
1.00	93.0 and above
0.90	92.0 - 92.9
0.70	91.0 - 91.9

** Any lot or portion thereof with a density of less than 91.0 percent of maximum density shall be removed and replaced at no additional cost to the State.

The compaction pay factors and mixture quality pay factor will each apply separately (See Subsection 907-401.02.6.3). However, the combined pay factor shall not be less than 0.50 for any mixture allowed to remain in place.

907-401.03--Construction Requirements. Mississippi DOT has adopted the "Hot-Mix Asphalt Paving Handbook" as the guideline for acceptable SMA construction practices.

907-401.03.1--Specific Requirements.

907-401.03.1.1--Weather Limitations. The mixture shall not be placed when weather conditions prevent the proper handling and finishing or the surface on which it is to be placed is wet or frozen. At the time of placement, the air and pavement surface temperature limitations shall be equal to or exceed 55°F.

907-401.03.1.4--Density. The lot density for all SMA pavement lifts, except as provided below for preleveling, wedging [less than fifty percent (50%) of width greater than minimum lift thickness], ramp pads, irregular shoulder areas, median crossovers, turnouts, or other areas where the established rolling pattern cannot be performed, shall not be less than 93.0 percent of the maximum density based on AASHTO Designation: T 209 for the day's production. If a job-mix formula adjustment is made during the day which affects the maximum specific gravity, calculate a new average maximum density for the lot(s) placed after the change.

Pavement core samples obtained for determining density which have a thickness less than two times the maximum size aggregate permitted by the job-mix formula will not be used as a representative sample.

Preleveling, wedging [less than fifty percent (50%) of width greater than minimum lift thickness], ramp pads, irregular shoulder areas, median crossovers, turnouts, and other areas where an established rolling pattern cannot be obtained shall be compacted to refusal densification.

907-401.03.2--Bituminous Mixing Plants.

907-401.03.2.1--Plant Requirements.

907-401.03.2.1.4--Stabilizing Fiber Addition. For batch plants, fibers shall be added (manually or automatic) to either the pugmill or the weigh hopper. At least one aggregate source shall be added prior to the fiber addition, if fibers are added to the weigh hopper. Otherwise, fibers shall be added to the pugmill immediately after the addition of all the aggregate and prior to the addition of the asphalt binder.

907-401.03.2.1.4.1--Manual Method. Provided it is demonstrated to the satisfaction of the Engineer that the proper dosage rate of the stabilizing fibers is uniformly distributed into the mix, manual introduction of the fibers is acceptable when a batch plant is used to make the mix. When the fibers are available in prepackaged (weighed) containers, proper dosage may be pre-determined per batch. A device is required to interrupt mixture production and warn the plant operator if the operator manually feeding the fiber fails to introduce it properly.

Manual introduction of fibers shall not be used in drum plants.

907-401.03.2.1.4.2--Automatic Method. The automatic method requires specialized equipment that can accurately proportion and meter, by weight, the proper amount per batch for batch plants, or continuously and in a steady uniform manner for drum plants. Fiber, pelletized or loose, shall not be fed through the cold feed bins or through the RAP bins.

These proportioning devices shall be interlocked with the plant system and controlled to +/-10 percent of the weight of the fibers required so as to maintain the correct proportions for all production rates and batch sizes. During trial section construction, an equipment calibration check shall be performed to the satisfaction of the Engineer that shows the fiber is being accurately metered and uniformly distributed into the mix. These metering devices shall provide in- process high flow ($\geq$10 percent or more) and low flow (<10 percent or less) plant operator notification and interrupt the mix production where the fiber rate is not properly controlled. The fiber metering system shall also provide a record of feed rate (weight or mass per time) and include a section a minimum of two feet long of translucent pipe for visual confirmation of consistent flow rates. Care shall be taken to insure that the fibers are not entrained in the plant's exhaust system. If there is any evidence of fiber in the bag-house or wet-washer fines, the liquid asphalt binder line and/or the fiber line shall be relocated so that the fiber is captured by liquid asphalt binder spray and incorporated into the mix. If there is any evidence of clumps of fibers or pellets at the discharge chute, the contractor shall increase the mixing time and/or intensity. This may entail extending the liquid asphalt binder and fiber feeding lines further into the drum.

Note: Various stabilizing fiber suppliers have developed methodology and equipment for metering bulk loose and pelletized fiber into asphalt plants. Whenever the fiber supplier's recommendations are more stringent than this specification, the fiber supplier's recommendations shall control.

907-401.03.2.4--Surge or Storage Bins. Normally the surge bins shall be emptied at the end of each day's operation. During breakdowns or adverse weather conditions, the material may be stored for a period not to exceed three (3) hours in a well sealed, well insulated, heated bin.

907-401.03.5--Rollers. All rollers shall be self-propelled units capable of maintaining a smooth and uniform forward and reverse speed as required for proper compaction. Pneumatic-tired rollers shall not be permitted for compacting SMA mixes. Rollers shall be equipped with adjustable scrapers, water tanks, mats and a device for wetting the wheels to prevent the mixture from sticking. Adhesion of the mixture to the rollers will not be permitted. The use of diesel fuel or gasoline for cleaning roller wheels, or to aid in preventing the mixture from sticking to the wheels, is prohibited.

907-401.03.9--Material Transfer Equipment. Except for the areas mentioned below, the material transferred from the hauling unit shall be remixed prior to being placed in the paver hopper or insert by using an approved Materials Transfer Device. Information on approved devices can be obtained from the State Construction Engineer. Areas excluded from this requirement include: temporary work of short duration, detours, bridge replacement projects having less than 1,000 feet of pavement on each side of the structure, acceleration and deceleration lanes less than 1,000 feet in length, tapered sections, transition sections (for width), shoulders less than 10 feet in width, crossovers, ramps, side street returns and other areas designated by the Engineer.

907-401.03.11--Compaction. After the mixture has been spread and surface irregularities corrected, it shall be thoroughly and uniformly compacted to the required line, grade, cross section and density. It is recommended that compaction of SMA mixtures be completed before the mat temperature drops to 250°F.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-401-6 **CODE: (SP)**

DATE: 08/21/2012

SUBJECT: Warm Mix Asphalt (WMA)

Section 401, Hot Mix Asphalt (HMA) - General, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as amended by this special provision is applicable to Warm Mix Asphalt Only.

907-401.01--Description.
These specifications include general requirements that are applicable to Warm Mix Asphalt (WMA).

This work consists of the construction of one or more lifts of WMA in accordance with Section 401 for Hot Mix Asphalt, with the exceptions set forth in this special provision. The WMA shall meet the specific requirements for the mixture to be produced and placed in reasonably close conformity with the lines, grades, thicknesses and typical sections shown on the plans or established by the Engineer.

907-401.02--Materials.

907-401.02.2--WMA Products and Processes. The Department will maintain a list of qualified WMA products and processes. No product or process shall be used unless it appears on this list.

The Contractor may propose other products or processes for approval by the Product Evaluation Committee. Documentation shall be provided to demonstrate laboratory performance, field performance, and construction experience.

907-401.03--Construction Requirements.

907-401.03.1.1--Weather Limitations. The air and pavement temperature at the time of placement shall equal or exceed 40ºF, regardless of compacted lift thickness.

907-401.03.8--Preparation of Mixture. Warm mix asphalt is defined as a plant produced asphalt mixture that can be produced and constructed at lower temperatures than typical hot mix asphalt. Typical temperature ranges of non-polymer modified, WMA produced by foaming the asphalt binder at the plant are typically 270ºF to 295ºF at the point of discharge of the plant. Typical temperature ranges of polymer modified, WMA produced by foaming the asphalt binder at the plant are typically 280ºF to 305ºF at the point of discharge of the plant. WMA produced by addition of a terminal blended additive may allow the producer to reduce the temperatures below 270ºF as long as all mixture quality and field density requirements are met. Production temperatures at the plant may need to be increased or decreased due to factors such as material

characteristics, environmental conditions, and haul time to achieve mixture temperatures at the time of compaction in which uniform mat density can be achieved.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-402-4

DATE: 10/04/2012

SUBJECT: Open Graded Friction Course (OGFC)

Delete Subsection 907-402.02.7 on pages 12 and 13, and substitute the following.

907-402.02.7--Acceptance Procedure for OGFC Pavement Smoothness. The OGFC will not be considered a surface lift in the completed pavement structure. There shall be no smoothness, bump and/or dip requirements for OGFC pavements.

Delete Subsection 907-402.03.1.2 on page 13, and substitute the following.

907-402.03.1.2--Tack Coat. Tack coat for OGFC shall be hot applied, asphalt cement of performance grade PG 76-22 or Non-Tracking, Hot-Applied, Polymer Modified Tack Coat (NTHAP). PG 76-22 Binder shall meet the requirements of Section 702 of the Standard Specifications. NTHAP shall meet the following material requirements.

Specifications for Non-Tracking, Hot-Applied, Polymer Modified Tack (NTHAP)			
Test Requirement	Test Method	Minimum	Maximum
Rotational Viscosity @ 149 °C, cP	T 316	----------	3,000
Penetration @ 25°C (77°F), 100 g, 5 Sec.	T 49	----------	25
Softening Point, °C	T 53	70	----------
Dynamic Shear, G* sin δ	T 315	1.0 kPa @ 82°C	----------

Tack Coat for OGFC shall be applied with a distributor spray bar at a rate of between 0.10 and 0.14 gallons per square yard. The application rate of the tack coat shall result in complete and uniform coverage of the underlying lift in which the OGFC will be placed.

The tack coat for OGFC should be allowed to cool and cure until a point in time that the tack coat does not pick-up or track due to traffic from trucks or the paving equipment. In the case of PG 76-22, this may require that the tack coat cure for several hours prior to commencement of paving operations. The time for curing of the NTHAP Tack material should be substantially less requiring approximately five to ten minutes curing prior to commencement of paving operations. It should be pointed out that cooling and/or curing times of the tack coat may vary based on the environmental conditions at the time of placement.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-402-4 **CODE: (SP)**

DATE: 12/19/2011

SUBJECT: Open Graded Friction Course (OGFC)

Section 907-402, Open Graded Friction Course (OGFC), is hereby added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-402 –- OPEN GRADED FRICTION COURSE (OGFC)

907-402.01--Description. These specifications include general requirements that are applicable to Open Graded Friction Course (OGFC).

This work consists of the construction of one lift of OGFC in accordance with these specifications and the specific requirements for the mixture to be produced and placed in reasonably close conformity with the lines, grades, thicknesses and typical sections shown on the plans or established by the Engineer.

907-402.01.1--Definitions.

Maximum Sieve Size - Maximum sieve size is the smallest sieve size at which 100 percent of the aggregate passes.

Nominal Maximum Sieve Size - The nominal maximum sieve size is one sieve size larger than the first sieve to retain more than 10 percent of the aggregate.

Mechanically Fractured Face - An angular, rough, or broken surface of an aggregate particle created by crushing as determined by ASTM Designation: D 5821.

Break Point Sieve – The sieve size which separates the coarse and fine aggregate fractions of an OGFC mixture.

907-402.02--Materials.

907-402.02.1--Component Materials.

907-402.02.1.1--General. Component materials will be conditionally accepted at the plant subject to later rejection if incorporated in a mixture or in work that fails to meet contract requirements.

907-402.02.1.2--Aggregates. The source of aggregates shall meet the applicable requirements of Section 703.

907-402.02.1.2.1--Coarse Aggregate Blend. Mechanically fractured faces by weight of the combined aggregate blend retained on the break point sieve shall be 90 percent two or more fractured faces, as determined by ASTM Designation: D 5821.

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The maximum percentage by weight of flat and elongated particles, maximum to minimum dimension greater than three (3), shall not exceed 20% for OGFC mixtures. This shall be determined in accordance with ASTM Designation: D 4791, Section 8.4, on the combined mineral aggregate retained on the break point sieve.

The following table indicates the break point sieves for various nominal maximum size OGFC mixes.

Mixture Size	Break Point Sieve
12.5-mm	No. 4
9.5-mm	No. 8

907-402.02.1.2.2--Combined Aggregate Blend. All gradations will be based on percent passing by weight. The gradation requirements for OGFC mixtures are provided in the following table. Natural sand shall not be used in OGFC mixtures.

Sieve Size	12.5-mm	9.5-mm
12.5-mm	100	100
9.5-mm	80-89	90-100
4.75-mm	15-30	15-30
2.36-mm	10-20	10-20
75-µm	2-5	2-5

907-402.02.1.3--Bituminous Materials. Bituminous materials shall meet the applicable requirements of Section 702 for the grade specified. A PG 76-22 asphalt binder shall be used for all OGFC mixtures. The asphalt content (by weight of total mix) shall be based on the bulk specific gravity of the combined aggregate blend (G_{sb}) to ensure a constant asphalt binder volume in the mix for durability purposes. The relationship between G_{sb} and the minimum asphalt binder content by weight of total mix is provided in the following table.

Combined Aggregate Bulk Specific Gravity, G_{sb}	Minimum Asphalt Content (%)
2.40	6.6
2.45	6.5
2.50	6.3
2.55	6.2
2.60	6.1
2.65	6.0
2.70	5.9
2.75	5.8
2.80	5.7

2.85	5.6
2.90	5.5
2.95	5.4
3.00	5.3

Tack coat shall meet the requirements of Subsection 907-402.03.1.2.

907-402.02.1.4--Hydrated Lime. Hydrated lime shall meet the requirements of Subsection 714.03.2 for lime used in soil stabilization.

907-402.02.1.5--Asphalt Admixtures. Additives for liquid asphalt, when required or permitted, shall meet the requirements of Subsection 702.08.

907-402.02.1.6--Polymers. Polymers for use in OGFC shall meet the requirements of Subsection 702.08.3.

907-402.02.1.7--Stabilizing Fiber. Stabilizing fiber shall meet the requirements of Subsection 907-714.07, with the exception that if mineral fibers are used, the minimum dosage rate shall be 0.40 percent.

907-402.02.2--Blank.

907-402.02.3--Composition of Mixtures.

907-402.02.3.1--General. Unless otherwise specified or permitted, the OGFC shall consist of a uniform mixture of asphalt, aggregate, stabilizing fibers, hydrated lime and, when required or necessary to obtain desired properties, antistripping agent and/or other materials.

The total amount of crushed limestone aggregate shall not exceed 50 percent of the total combined aggregate by weight.

Hydrated lime shall be used in all OGFC at the rate of one percent (1%) by weight of the total dry aggregate. The aggregate, prior to the addition of the hydrated lime, shall contain sufficient surface moisture. If necessary, the Contractor shall add moisture to the aggregate according to the procedures set out in Subsection 401.03.2.1.2.

The Contractor shall obtain a shipping ticket for each shipment of hydrated lime. The Contractor shall provide the District Materials Engineer with a copy of each shipping ticket from the supplier, including the date, time and weight of hydrated lime shipped.

Mixtures will require the addition of an antistripping agent when the Tensile Strength Ratio (MT-63*) and/or the Boiling Water Test (MT-59) fail to meet the following criteria.

Tensile Strength Ratio (TSR - MT-63*)

Wet Strength / Dry Strength	85 percent minimum
Interior Face Coating	95 percent minimum

Boiling Water Test (MT-59)
Particle Coating 95 percent minimum

***Note:** MT-63 shall be performed at design air void content of OGFC mixtures rather than seven percent (7%) air voids. Vacuum saturation shall not be required. All other testing parameters shall apply.

Reclaimed asphalt pavement (RAP) or crushed reclaimed concrete may not be used as an aggregate component in the production of OGFC.

907-402.02.3.1.1--Mixture Properties. All mixes shall be designed according to Mississippi Test Method MT-83. OGFC mixes shall be designed with the Superpave gyratory compactor utilizing an N_{design} of 50 gyrations. The design air voids for all OGFC mixes shall be a minimum of 15.0 percent, as determined by ASTM Designation: D 6752 (vacuum sealing method). The ratio of the voids in the coarse aggregate in the compacted mix (VCA_{mix}) to the voids in the coarse aggregate as determined with the dry rodded unit weight test (VCA_{dr}) shall be less than 1.0.

The designed mixture shall have a draindown of less than 0.3 percent when tested in accordance with Mississippi Test Method MT-82. The minimum permeability of the mixture shall be 30 meters per day as determined by Mississippi Test Method MT-84. The aged abrasion loss of compacted specimens at the optimum asphalt content shall not exceed 40%, and the unaged abrasion loss of compacted specimens at the optimum asphalt content shall not exceed 30%, as determined by Mississippi Test Method MT-85.

907-402.02.3.2--Job Mix Formula. At least 14 working days prior to the proposed use of each mixture, the Contractor shall submit in writing to the Engineer a proposed job-mix formula or request the transfer of a verified job-mix formula as set forth in the latest edition of MDOT's Field Manual for HMA and MT-83. The job-mix formula shall be signed by a Certified Mixture Design Technician (CMDT).

The Department will perform the tests necessary for review of a proposed job-mix formula for each OGFC mixture free of charge one time only. A charge will be made for additional job-mix formulas submitted by the Contractor for review.

Review of the proposed job-mix formula will be based on ratio of Voids in the Coarse Aggregate (VCA_{mix}/VCA_{dr}), draindown, permeability, abrasion loss, resistance to stripping, and other criteria specified for the mixture.

The mixture shall conform thereto within the range of tolerances specified for the particular mixture. No change in properties or proportion of any component of the job-mix formula shall be made without permission of the Engineer. The job-mix formula for each mixture shall be in effect until revised in writing by the Engineer.

A job-mix formula may be transferred to other contracts in accordance with conditions set forth in the Department's Field Manual for HMA.

The Contractor shall not place any OGFC prior to receiving "tentative" approval and a MDOT design number from the Central Laboratory.

When a change in source of materials, unsatisfactory mixture production results (such as segregation, bleeding, shoving, rutting over ⅛ inch, raveling & cracking) or changed conditions make it necessary, a new job-mix formula will be required. The conditions set out herein for the original job-mix formula are applicable to the new job-mix formula.

907-402.02.4--Layer Thickness. The minimum and maximum laying thickness for OGFC mixtures are provided in the following table.

Mixture Nominal Maximum Size	Single Lift Laying Thickness, Inches	
	Minimum	Maximum
12.5-mm	1	1 ¼
9.5-mm	¾	1

907-402.02.5--Contractor's Quality Management Program.

907-402.02.5.1--General. The Contractor shall have full responsibility for quality management and maintain a quality control system that will furnish reasonable assurance that the mixtures and all component materials incorporated in the work conform to contract requirements. The Contractor shall have responsibility for the initial determination and all subsequent adjustments in proportioning materials used to produce the specified mixture. Adjustments to plant operation and spreading and compaction procedures shall be made immediately when results indicate that they are necessary. Mixture produced by the Contractor without the required testing or personnel on the project shall be subject to removal and replacement by the Contractor at no additional cost to the State.

907-402.02.5.2--Personnel Requirements. The Contractor shall provide at least one Certified Asphalt Technician-I (CAT-I) full-time during OGFC production at each plant site used to furnish material to the project. Sampling shall be conducted by a certified technician or by plant personnel under the direct observation of a certified technician. All testing, data analysis and data posting will be performed by the CAT-I or by an assistant under the direct supervision of the CAT-I. The Contractor shall have a Certified Asphalt Technician-II (CAT-II) available to make any necessary process adjustments. Technician certification shall be in accordance with MDOT's *Materials Division Inspection, Testing, and Certification Manual*, Section 1.3.3 - MDOT HMA Technician Certification Program. An organizational chart, including names, telephone numbers and current certification, of all those responsible for the quality control program shall be posted in the contractor's laboratory while the OGFC paving work is in progress.

907-402.02.5.3--Testing Requirements. As a minimum, the Contractor's quality management program shall include the following:

(a) Bituminous Material. Provide the Engineer with samples in a sealed one quart metal container at the frequency given in MDOT SOP TMD-20-04-00-000.

(b) Mechanically Fractured Face. Determine mechanically fractured face content of aggregates retained on the break point sieve, at a minimum of one test per day of production.

(c) Mixture Gradation. Conduct extraction tests for gradation determination on the mixture. Sample according to the frequency in paragraph (h) and test according to Mississippi Test Method MT-31.

(d) Total Voids. Determine total voids at N_{Design} from the results of bulk specific gravity tests on laboratory compacted specimens. Sample according to the sampling frequency in paragraph (h) and test according to ASTM Designation: D 6752.

(e) Asphalt Content. Sample according to the sampling frequency in paragraph (h), and determine the asphalt content using one of the following procedures.

(1) Nuclear gauge. (Mississippi Test Method MT-6)
(2) Incinerator oven. (AASHTO Designation: T 308, Method A)

Draindown tests shall also be conducted according to Mississippi Test Method MT-82, at a minimum of one test per day of production..

(f) Stripping Tests. Conduct a minimum of one stripping test at the beginning of each job-mix production and thereafter, at least once per each two weeks of production according to Mississippi Test Method: MT-63 (as amended) and one stripping test per day of production according to Mississippi Test Method: MT-59. Should either the TSR (MT-63) or the boiling water (MT-59) stripping tests fail, a new antistrip additive or rate shall be established or other changes made immediately that will result in a mixture which conforms to the specifications; otherwise, production shall be suspended until corrections are made.

(g) Quality Control Charts. Plot the individual test data, the average of the last four tests and the control limits for the following items as a minimum:

Mixture Gradation (Percent Passing) Sieves:
1/2-in, 3/8-in, No. 4, No. 8, and No. 200
Asphalt Content, Percent
Maximum Specific Gravity
Total Voids @ N_{Design}, Percent

Keep charts up-to-date and posted in a readily observable location. Charts may be kept on a computer; however, the charts shall be printed out a minimum of once each production day and displayed in the laboratory. Note any process changes or adjustments on the Air Voids chart.

(h) Sampling Frequency. Conduct those tests as required above at the following frequency for each mixture produced based on the estimated plant tonnage at the beginning of the day.

Total Estimated Production, tons	Number of Tests
1-400	1
401-800	2
801-1200	3
1201+	4

(i) Sample Requirements. Obtain the OGFC mixture samples from trucks at the plant. Obtain aggregate samples from cold feed bins or aggregate stockpile. Save a split portion of all mixture samples at the laboratory site in a dry and protected location for 14 calendar days. At the completion of the project, the remaining samples may be disposed of with the approval of the Engineer.

The above testing frequencies are for the estimated plant production for the day. If production is discontinued or interrupted, the tests will be conducted at the previously established sample tonnage points for the materials that are actually produced. If the production exceeds the estimated tonnage, sampling and testing will continue at the testing increments previously established for the day. A testing increment is defined as the estimated daily tonnage divided by the required number of tests from the table in Subsection 907-402.02.5.3 paragraph (h).

In addition to the above program, aggregate stockpile gradation tests (AASHTO Designations: T-11 and T-27) shall be conducted every other production day. Tests to determine VCA_{dr} shall be conducted on the first day of production and once for every eight production samples thereafter, with a minimum of one test per production week.

907-402.02.5.4--Documentation. The Contractor shall document all observations, records of inspection, adjustments to the mixture, and test results on a daily basis. All tests conducted by the Contractor in accordance with Subsection 907-402.02.5.3(g) shall be included in the running average calculations. If single tests are performed as a check on individual OGFC properties, between regular samples, without performing all tests required in Subsection 907-402.02.5.3(g), the results of those individual tests shall not be included in the running average calculations for that particular property. The Contractor shall record the results of observations and records of inspection as they occur in a permanent field record. The Contractor shall record all process adjustments and job mix formula (JMF) changes on the air void charts. The Contractor shall provide copies of all test data sheets and the daily summary reports on the appropriate Mississippi DOT forms to the Engineer on a daily basis. The Contractor shall provide a written description of any process change, including blend proportions, to the Engineer as they occur. Information provided to the Engineer must be received in the Engineer's office by no later than 9:00 AM the day after the OGFC is produced. Fourteen days after the completion of the placement of the OGFC, the Contractor shall provide the Engineer with the original testing records and control charts in a neat and orderly manner.

907-402.02.5.5--Control Limits. The following control limits for the job mix formula (JMF) and warning limits are based on a running average of the last four data points.

Item	JMF Limits	Warning Limits
Sieve - % Passing		
1/2-inch	± 4.0	± 3.0

3/8-inch	± 4.0	± 3.0
No. 4	± 3.0	± 2.0
No. 8	± 3.0	± 2.0
No. 200	± 1.5	± 1.0
Asphalt Content, %	-0.3 to +0.5	-0.2 to +0.4
Total Voids @ N_{Design}, %	-1.3 to +2.5	-1.0 to +2.0

907-402.02.5.6--Warning Bands. Warning bands are defined as the area between the JMF limits and the warning limits.

907-402.02.5.7--Job Mix Formula Adjustments. A request for a JMF adjustment signed by a CAT-II may be made to the Engineer by the Contractor. Sufficient testing data shall be submitted with the request to justify the change. The requested change will be reviewed by the State Materials Engineer for the Department. If current production values meet the mixture design requirements, a revised JMF will be issued. Adjustments to the JMF shall conform to the latest edition of MDOT's Field Manual for HMA. Adjustments to the JMF to conform to actual production shall not exceed the tolerances specified for the JMF limits. Regardless of such tolerances, any adjusted JMF gradation shall be within the range given in Subsection 907-402.02.1.2.3 for the mixture specified. **The JMF asphalt content may only be adjusted after verification for minimum voids, permeability, and abrasion loss.**

907-402.02.5.8--Actions and Adjustments. Based on the process control test results for any property in question, the following actions shall be taken or adjustments made when appropriate:

(a) When the running average trends toward the warning limits, the Contractor shall consider taking corrective action. The corrective action, if any, shall be documented. All tests shall be part of the contract files and shall be included in the running average calculations.
(b) The Contractor shall notify the Engineer whenever the running average exceeds the warning limits.
(c) If two consecutive running averages exceed the warning limit, the Contractor shall stop production and make adjustments. Production shall only be restarted after notifying the Engineer of the adjustments made.
(d) If the adjustment made under (c) improves the process such that the running average after four additional tests is within the warning limits, the Contractor may continue production with no reduction in payment.
(e) If the adjustment made under (c) does not improve the process and the running average after four additional tests stays in the warning band, the mixture will be considered unsatisfactory. Reduced payment for unsatisfactory mixtures will be applied starting from the stop point to the point when the running average is back within the warning limits in accordance with Subsection 907-402.02.6.3.
(f) Failure to stop production and make adjustments when required shall subject all mixture produced from the stop point to the point when the running average is back within the warning limits to be considered unsatisfactory. Reduced payment for unsatisfactory mixtures will be applied in accordance with Subsection 907-402.02.6.3.
(g) If the running average exceeds the JMF limits, the Contractor shall stop production and make adjustments. Production shall only be restarted after notifying the Engineer of the adjustments made.

(h) All materials for which the running average exceeds the JMF limits will be considered unacceptable and shall be removed and replaced by the Contractor at no additional cost to the State. The Engineer will determine the quantity of material to be replaced based on a review of the individual testing data which make up the running average in question and an inspection of the completed pavement. If the Engineer decides to leave the mixture in place because of special circumstances, the quantity of mixture, as defined above, will be paid for in accordance with Subsection 907-402.02.6.3.

(i) Single test results shall be compared to 1.7 times the warning and JMF limits. If the QC test results, as verified by the Engineer's tests (within allowable differences in Subsection 907-402.02.6.2), exceed these limits, the pay factor provided in Subsection 907-402.02.6.3 will apply for the quantity of material represented by the test(s). Single test limits will be used for the acceptance of projects when insufficient tonnage is produced to require four (4) Contractor's tests.

(j) The above corrective action will also apply for a mixture when the Contractor's testing data has been proven incorrect. The Contractor's data will be considered incorrect when; 1) the Contractor's QC tests and the Engineer's verification tests do not agree within the allowable differences given in Subsection 907-402.02.6.2 and the difference can not be resolved, or 2) the Engineer's verification tests indicates that production is outside the JMF limits and the results have been substantiated by the Materials Division's test results. The Engineer's data will be used in place of the Contractor's data to determine the appropriate pay factor.

907-402.02.5.9--Trial Section. At the beginning of placement for the lift, the Contractor shall construct a trial section of a maximum of 500 linear feet of lane with the OGFC mix, for the purpose of establishing and evaluating consistent mixture and compaction properties. The Contractor shall use the trial section to adjust production process, if necessary, and to establish coordinated testing efforts between Contractor QC personnel and Department testing personnel. The Department shall determine the production point at which the mix shall be sampled and split with the Contractor during any trial section construction.

The Department will conduct verification tests for mixture quality within 24 hours of receipt of the sample. If the Department's tests on the mixture indicate both compliance with specified mix properties for a pay factor of 1.00 and verification of the Contractor's test results within the allowable differences specified in Subsection 907-402.02.6.2, no further trial sections are necessary. If a pay factor of less than 1.00 is determined for mix quality, a second trial section consisting of no more than 500 linear feet shall be constructed. If a pay factor of less than 1.00 is obtained in the second trial section, the Contractor will be required to repeat the above procedure at an offsite location until all pay factors are equal to 1.00. Full production may begin upon completion of a successful trial section. The Engineer reserves the right to have any trial section removed and replaced at no additional cost to the State, if the pay factor for any characteristic for a trial section is less than 0.75.

For actual payment purposes, a pay factor of 1.00 will be used for the first and second trial sections allowed to remain in place. Any required offsite trial sections will be constructed at no additional cost to the State.

907-402.02.6--Standards of Acceptance.

907-402.02.6.1--General. Acceptance for mixture quality (Total voids @ N_{Design}, gradation, and asphalt content) will be based on random samples tested in accordance with the latest edition of MDOT's Field Manual for HMA.

907-402.02.6.2--Assurance Program for Mixture Quality.

The Engineer will conduct a quality assurance program. The quality assurance program will be accomplished as follows:

1) Conducting verification tests.
2) Validate Contractor test results.
3) Periodically observing Contractor quality control sampling and testing.
4) Monitoring required quality control charts and test results.
5) Sampling and testing materials at any time and at any point in the production or laydown process.

The rounding of all test results will be in accordance with Subsection 700.04.

The Engineer will conduct verification tests on samples taken by the Contractor under the direct supervision of the Engineer at a time specified by the Engineer. The frequency will be equal to or greater than ten percent (10%) of the tests required for Contractor quality control and the data will be provided to the Contractor within two asphalt mixture production days after the sample has been obtained by the Engineer. At least one sample shall be tested from the first two days of production. All testing and data analysis shall be performed by a Certified Asphalt Technician-I (CAT-I) or by an assistant under the direct supervision of the CAT-I. Certification shall be in accordance with the *MDOT HMA Technician Certification Program* chapter in the Materials Division Inspection, Testing, and Certification Manual. The Department shall post a chart giving the names and telephone numbers for the personnel responsible for the assurance program.

The Engineer shall be allowed to inspect Contractor testing equipment and equipment calibration records to confirm both calibration and condition. The Contractor shall calibrate and correlate all testing equipment in accordance with the latest versions of the Department's Test Methods and AASHTO Designation: R 18.

Random differences between the Engineer's verification tests and the current running average of four quality control tests at the time of obtaining the verification sample will be considered acceptable if within the following limits:

Item	Allowable Differences
Sieve - % Passing	
3/8-inch and above	6.0
No. 4	5.0
No. 8	4.0
No. 200	2.0
AC Content	0.4
Specimen Bulk SG, Gmb @ N_{Design}	0.030
Maximum SG,Gmm	0.020

If four quality control tests have not been tested prior to the time of the first verification test, the verification test results will be compared to the average of the preceding quality control tests. If the verification test is the first material tested on the project or if a significant process adjustment was made just prior to the verification test, the verification test results will be compared to the average of four subsequent quality control test results. For all other cases after a significant process adjustment, the verification test results will be compared to the average of the preceding quality control tests, taken after the adjustment, as in the case of a new project start-up when four quality control tests are not available.

In the event that; 1) the comparison of the Contractor's running average quality control data and Engineer's quality assurance verification test results are outside the allowable differences in the above table, or 2) if a bias exists between the results, such that one of the results is predominately higher or lower than the other, and the Engineer's results fail to meet the JMF control limits, the Engineer will investigate the reason immediately. As soon as the need for an investigation becomes known, the Engineer will increase the quality assurance sampling rate to the same frequency required for Contractor testing. The additional samples obtained by the Engineer may be used as part of the investigation process or for routine quality assurance verification tests. The Engineer's investigation may include testing of the remaining quality control split samples, review and observation of the Contractor's testing procedures and equipment, and a comparison of split sample test results by the Contractor quality control laboratory, Department quality assurance laboratory and the Materials Division laboratory. The procedures outlined in the latest edition of MDOT's Field Manual for HMA may be used as a guide for the investigation. In the event that the Contractor's results are determined to be incorrect, the Engineer's results will be used for the quality control data and the appropriate payment for the mixture will be based on the procedures specified in Subsection 907- 402.02.5.8(j).

The Engineer will periodically witness the sampling and testing being performed by the Contractor. The Engineer, both verbally and in writing, will promptly notify the Contractor of any observed deficiencies. When differences exist between the Contractor and the Engineer which cannot be resolved, a decision will be made by the State Materials Engineer, acting as the referee. The Contractor will be promptly notified in writing of the decision. If the deficiencies are not corrected, the Engineer will stop production until corrective action is taken.

907-402.02.6.3--Acceptance Procedure for Mixture Quality. All obviously defective material or mixture will be subject to rejection by the Engineer. Such defective material or mixture shall not be incorporated into the finished work. If the defective material has already been placed in the work, the material shall be removed and replaced at no additional cost to the State.

The Engineer will base final acceptance of the asphalt mixture production on the results of the Contractor's testing for total voids, gradation, and asphalt content as verified by the Engineer in the manner hereinbefore described and the uniformity and condition of the completed pavement. Areas of pavement that exhibit nonuniformity or failures (materials or construction related) such as but not limited to segregation, bleeding, shoving, rutting over 1/8 inch, raveling, slippage, or cracking will not be accepted. Such areas will be removed and replaced at no additional cost to the State.

Bituminous mixture placed prior to correction for deficiencies in total voids @ N_{Design}, gradation, or asphalt content, as required in Subsection 907-402.02.5.8 and determined by the Engineer

satisfactory to remain in place will be paid for in accordance with the following pay factors times the contract unit price per ton.

Pay Factor for Mixture Quality *

Item	Produced in Warning Bands	Produced Outside JMF Limits (Allowed to Remain in Place)
Gradation	0.90	0.50
Asphalt Content	0.85	0.50
Total Voids @ N_{Design}	0.70	0.50

* The minimum single payment will apply.

907-402.02.7--Acceptance Procedure for OGFC Pavement Smoothness. The OGFC will not be considered to be a surface lift in the completed pavement structure. The smoothness of finished OGFC pavement surfaces shall meet the requirements established in Subsection 907-402.02.7.2.

The profilograph shall meet the requirements established in Section 401.

907-402.02.7.1--Surface Correction. Diamond grinding shall not be allowed on completed OGFC pavements. If the Profile Index exceeds the requirement specified in Subsection 907-402.02.7.2, the Contractor shall replace the segments at no charge to the State.

907-402.02.7.2--OGFC Pavement Smoothness Requirements. The requirements for OGFC pavement shall be as follows:

The profile index for any segment shall not exceed the required profile index of the underlying lift.

When the profile index for any segment exceeds the required profile index of the underlying lift, a reduction in payment, or removal of pavement, will be in accordance with the following table.

Profile Index Greater Than Required Underlying Lift inches / mile / segment	Contract Price Adjustment percent of unit bid price
0.1 to 5.0	75
5.1 to 10.0	50
over 10.0	Removal and Replacement

When removal and replacement is required, the Contractor shall remove the OGFC pavement using a micro-milling machine resulting in a surface that is smooth and drainable. After the segment(s) has been removed and replaced, the Contractor shall test the segment(s) to assure that it meets the above profile index requirement.

There shall be no bump and/or dip requirement for OGFC pavements.

907-402.03--Construction Requirements. Mississippi DOT has adopted the "Hot-Mix Asphalt Paving Handbook" as the guideline for acceptable asphalt construction practices.

907-402.03.1--Specific Requirements.

907-402.03.1.1--Weather Limitations. The mixture shall not be placed when weather conditions prevent the proper handling and finishing or the surface on which it is to be placed is wet or frozen. At the time of placement, the air and pavement surface temperature limitations shall be equal to or exceed 55°F.

When paving operations are discontinued because of rain, the mixture in transit shall be protected until the rain ceases. The surface on which the mixture is to be placed shall be swept to remove as much moisture as possible and the mixture may then be placed subject to removal and replacement at no additional cost to the State if contract requirements are not met.

907-402.03.1.2--Tack Coat. Tack coat for OGFC shall be hot applied, asphalt cement of performance grade PG 76-22 meeting the requirements of Section 702 of the Standard Specifications.

Tack Coat for OGFC shall be applied with a distributor spray bar at a rate of between 0.10 and 0.14 gallons per square yard. The application rate of the tack coat shall result in complete and uniform coverage of the underlying lift on which the OGFC will be placed. A hand wand will only be allowed for applying tack coat on irregular areas (e.g. ramp pads, irregular shoulder areas, median crossovers, turnouts).

Tack coat shall not be applied during wet or cold weather, or to a wet surface. The tack coat for OGFC should be allowed to cool and cure until a point in time that the tack coat does not pick-up or track due to traffic from trucks or the paving equipment.

907-402.03.1.3--Blank.

907-402.03.2--Bituminous Mixing Plants.

907-402.03.2.1--Plant Requirements.

907-402.03.2.1.1--Cold Aggregate Storage. The cold storage for hydrated lime shall be a separate bulk storage bin with a vane feeder or other approved feeder system which can readily be calibrated. The system shall provide a means for easy sampling of the hydrated lime additive and verifying the quantity of lime dispensed. The feeder system shall require a totalizer.

The hydrated lime additive equipment shall be interlocked and synchronized with the cold feed controls to operate concurrently with the cold feed operation which will automatically adjust the hydrated lime feed to variations in the cold aggregate feed. A positive signal system shall be installed which will automatically shut the plant down when malfunctions cause an improper supply of hydrated lime or water.

The plant shall not operate unless the entire hydrated lime system is functioning properly.

907-402.03.2.1.2--Cold Aggregate Feed. The hydrated lime shall be dispensed dry or as a slurry (1 part hydrated lime to 3 parts water) directly onto the composite aggregate between the cold feed and the dryer.

When hydrated lime is introduced dry, a spray bar or other approved system capable of spraying all aggregate with water shall be installed in order to maintain all aggregate at the moisture condition set out in Subsection 907-402.02.3.1 prior to addition of the hydrated lime. An alternate system for spraying the coarse aggregate stockpiles may be allowed when approved by the Engineer. The approved equipment and methods shall consistently maintain the aggregate in a uniform, surface wet condition. The moisture content of the aggregate-hydrated lime mixture, following spraying and mixing, shall be introduced into the automatic moisture controls of the plant.

The aggregate-hydrated lime mixture shall be uniformly blended by some mechanical means such as a motorized "on the belt" mixer or pug mill located between the cold feed and the dryer. Other mixing devices may be used subject to approval by the Engineer.

A maximum of forty five (45) percent of the total aggregate blend may be fed through any single cold feed bin. If the JMF calls for more than forty five (45) percent of a specific aggregate, that aggregate must be fed through two (2) or more separate cold feed bins.

907-402.03.2.1.3--Dryer. The efficiency of drying aggregates shall be such that the moisture content of an OGFC mixture shall not exceed 0.50 percent by weight of the total mixture, and the moisture content of any underlying lifts shall not exceed 0.75 percent by weight of the total mixture being produced.

907-402.03.2.1.4--Stabilizing Fiber Addition. For **batch plants**, fibers shall be added (manually or automatic) to either the pugmill or the weigh hopper. At least one aggregate source shall be added prior to the fiber addition, if fibers are added to the weigh hopper. Otherwise, fibers shall be added to the pugmill immediately after the addition of all the aggregate and prior to the addition of the asphalt binder.

907-402.03.2.1.4.1--Manual Method. Provided it is demonstrated to the satisfaction of the Engineer that the proper dosage rate of the stabilizing fibers is uniformly distributed into the mix, manual introduction of the fibers is acceptable when a **batch plant** is used to make the mix. When the fibers are available in prepackaged (weighed) containers, proper dosage may be pre-determined per batch. A device is required to interrupt mixture production and warn the plant operator if the operator manually feeding the fiber fails to introduce it properly.

Manual introduction of fibers shall not be used in drum plants.

907-402.03.2.1.4.2--Automatic Method. The automatic method requires specialized equipment that can accurately proportion and meter, by weight, the proper amount per batch for batch plants, or continuously and in a steady uniform manner for drum plants. Fiber, pelletized or loose, shall not be fed through the cold feed bins or through the RAP bins.

These proportioning devices shall be interlocked with the plant system and controlled to ±10 percent of the weight of the fibers required so as to maintain the correct proportions for all production rates and batch sizes. During trial section construction, an equipment calibration check shall be performed to the satisfaction of the Engineer that shows the fiber is being accurately metered and uniformly distributed into the mix. These metering devices shall provide in- process high flow (≥10 percent or more) and low flow (<10 percent or less) plant operator notification and interrupt the mix production where the fiber rate is not properly controlled. The fiber metering system shall also provide a record of feed rate (weight per time) and include a minimum two-foot long section of translucent pipe for visual confirmation of consistent flow rates. Care shall be taken to insure that the fibers are not entrained in the plant's exhaust system. If there is any evidence of fiber in the bag-house or wet-washer fines, the liquid asphalt binder line and/or the fiber line shall be relocated so that the fiber is captured by liquid asphalt binder spray and incorporated into the mix. If there is any evidence of clumps of fibers or pellets at the discharge chute, the contractor shall increase the mixing time and/or intensity. This may entail extending the liquid asphalt binder and fiber feeding lines further into the drum.

Note: Various stabilizing fiber suppliers have developed methodology and equipment for metering bulk loose and pelletized fiber into asphalt plants. Whenever the fiber supplier's recommendations are more stringent than this specification, the fiber supplier's recommendations shall control.

907-402.03.2.1.5--Control of Bituminous Material and Antistripping Agent. Specified bituminous materials from different manufacturers or from different refineries of a single manufacturer shall not be mixed in the plant's asphalt cement supply system storage tank and used in the work without prior written approval of the Engineer. Approval is contingent upon the Engineer's receipt of three copies of the manufacturer's certified test report(s) from the Contractor showing that the bituminous material blend conforms to the specifications.

A satisfactory method of weighing or metering shall be provided to ensure the specified quantity of bituminous material. Provisions shall be provided for checking the quantity or rate of flow. Weighing or metering devices shall be accurate within plus or minus one-half percent.

The antistripping agent shall be injected into the bituminous material immediately prior to the mixing operation with an approved in-line injector system capable of being calibrated so as to ensure the prescribed dosage.

An in-line spigot for sampling of asphalt shall be located between the asphalt storage tank and the antistripping agent in-line injector.

907-402.03.2.1.6--Thermometric Equipment. An armored thermometer of adequate range and calibrated in 5°F increments shall be fixed at a suitable location in the bituminous line near the charging valve of the mixer unit.

The plant shall be equipped with an approved dial-scale, mercury-actuated thermometer, pyrometer or other approved thermometric instrument placed at the discharge chute of the dryer to measure the temperature of the material.

When the temperature control is unsatisfactory, the Engineer may require an approved temperature-recording apparatus for better regulation of the temperature.

907-402.03.2.1.7--Screens. A 1-inch scalping screen shall be used.

907-402.03.2.1.8--Dust Collector. The plant shall be equipped with a dust collector constructed to waste or return collected material. When collected material is returned, it shall be returned through a controlling device which will provide a uniform flow of material into the aggregate mixture.

907-402.03.2.1.9--Safety Requirements. A platform or other suitable device shall be provided so the Engineer will have access to the truck bodies for sampling and mixture temperature data.

907-402.03.2.1.10--Blank.

907-402.03.2.1.11--Truck Scales. The specifications, tolerances and regulations for commercial weighing and measuring devices as recommended by the National Bureau of Standards [National Institute of Standards and Technology (NIST) Handbook 44] shall govern truck scales used in the State of Mississippi, except weighing devices with a capacity of ten thousand (10,000) pounds or more used to weigh road construction materials (i.e. sand, gravel, asphalt, fill dirt, topsoil and concrete) shall have a tolerance of one-half of one percent (1/2 of 1%) in lieu of the requirements of Handbook 44 and shall be regulated by the Mississippi Department of Transportation.

Scales shall be checked and certified by a scale company certified in heavy truck weights by the Mississippi Department of Agriculture and Commerce. In the case of scales used for measurement of materials on Department of Transportation projects, certification shall be performed in the presence of an authorized representative of the Department or a copy of the certification may be furnished for scales that have been checked and certified within the last six months for use on other Department of Transportation projects and are still in the position where previously tested. Scales that have not been checked and certified under NIST Handbook 44 guidelines, except for the herein modified tolerances allowed, shall be so checked and certified prior to use for measurement of materials on Department of Transportation projects. Tests shall be continued on six month intervals with the test conducted in the presence of an authorized representative of the Department.

Truck scales shall be accurate to one-half of one percent of the applied load, shall be sensitive to 20 pounds, and shall have a graduation of not more than 20 pounds.

The Contractor may use an electronic weighing system approved by the Engineer in lieu of truck scales. The system shall be equipped with an automatic print out system which will print a ticket for each load with the following information:

MDOT, Contractor's name, project number, county, ticket number, load number, pay item number, item description of the material delivered, date, time of day, haul vehicle number, gross weight, tare weight, net weight and total daily net weight.

When approved by the Engineer and materials are measured directly from a storage bin equipped with load cells, exceptions may be made to the gross and tare weight requirements.

The ticket shall also have a place for recording the temperature of OGFC mixtures, if applicable, and the signatures of MDOT's plant and roadway inspectors. The load numbers for each project shall begin with load number one (1) for the first load of the day and shall be numbered consecutively without a break until the last load of the day. The Contractor shall provide MDOT with an original and one copy of each ticket. When the ticket information provided by the Contractor proves to be unsatisfactory, MDOT will use imprinter(s) and imprinter tickets to record load information. All recorded weights shall be in pounds and shall be accurate to within one-half of one percent of the true weight, and the system shall be sensitive to 20 pounds. The Engineer will require random loads to be checked on certified platform scales at no cost to the Department.

When an electronic weighing system utilizes the plant scales of a batch plant, the system may be used only in conjunction with a fully automatic batching and control system.

907-402.03.2.2--Additional Requirements for Batching Plants.

907-402.03.2.2.1--Plant Scales. The plant batch scale weight shall not exceed the platform scale weight by more than one percent (1%).

907-402.03.2.3--Additional Requirements for Drum Mixing Plants.

907-402.03.2.3.1--Plant Controls. The plant shall be operated with all the automatic controls as designed and provided by the plant manufacturer. If the automatic controls malfunction, brief periods of manual operations to complete the day's work or to protect the work already placed may be conducted with the approval of the Engineer. During manual operation, the Contractor must continue to produce a uniform mixture meeting all contract requirements.

907-402.03.2.3.2--Aggregate Handling and Proportioning. A screening unit shall be placed between the bins and the mixer to remove oversized aggregate, roots, clayballs, etc.

907-402.03.2.4--Surge or Storage Bins. Normally the surge bins shall be emptied at the end of each day's operation. During breakdowns or adverse weather conditions, the material may be stored for a period not to exceed three hours in a well sealed, well insulated, heated bin.

907-402.03.3--Hauling Equipment. The inside surfaces of each vehicle bed shall be coated with a light application of water and thin oil, soap solution, lime water solution or other approved material to prevent the mixture from sticking. Diesel fuel or gasoline shall not be used to lubricate vehicle beds. Truck beds shall be raised to drain excessive lubricants before placing mixture in the bed. An excess of lubricant will not be permitted.

907-402.03.4--Bituminous Pavers. The screed or strikeoff assembly shall be capable of vibrating and heating the full width of the mixture being placed and shall lay the lift with an automatic control device to the specified slope and grade without tearing, pulling or gouging the mixture surface.

907-402.03.5--Rollers. All rollers shall be self-propelled units capable of maintaining a smooth and uniform forward and reverse speed as required for proper compaction. Pneumatic-tired rollers shall not be permitted for compacting OGFC mixes. Rollers shall be equipped with adjustable scrapers, water tanks, mats and a device for wetting the wheels to prevent the mixture from sticking. Adhesion of the mixture to the rollers will not be permitted. The use of diesel fuel or gasoline for cleaning roller wheels, or to aid in preventing the mixture from sticking to the wheels, is prohibited.

All rollers shall be in good mechanical condition, free from leaking fuels and lubricants, loose link motion, faulty steering mechanism, worn king bolts and bearings. They shall be operational at slow speeds to avoid displacement of the mixture and capable of reversing direction smoothly and without backlash.

907-402.03.6--Preparation of Grade. The foundation upon which OGFC pavement is to be placed shall be prepared in accordance with the applicable Section of the Standard Specifications.

Unless otherwise directed, tack coat shall be applied to the underlying surface on which the mixture is to be placed. Emulsions, if used, must be allowed to "break" prior to placement of the bituminous mixture.

Bituminous mixture shall not be placed against the edge of pavements, curbs, gutters, manholes and other structures until sprayed with a thin uniform tack coating. The tack coat shall be protected until the mixture has been placed.

Existing pavements that require preliminary leveling or patching in advance of placing the OGFC mixture shall be sprayed with a tack coat material and then brought as nearly as practicable to uniform grade and cross section. The material shall be placed by hand or machine in one or more compacted layers approximately two (2) inches or less in compacted thickness.

907-402.03.7--Blank.

907-402.03.8--Preparation of Mixture. The temperature of the mixture, when discharged from the mixer, shall not exceed 340°F.

907-402.03.9--Material Transfer Equipment. Except for the areas mentioned below, the material transferred from the hauling unit shall be remixed prior to being placed in the paver hopper or insert by using an approved Materials Transfer Device. Information on approved devices can be obtained from the State Construction Engineer. Areas excluded from this requirement include: temporary work of short duration, detours, bridge replacement projects having less than 1,000 feet of pavement on each side of the structure, acceleration and deceleration lanes less than 1,000 feet in length, tapered sections, transition sections (for width), shoulders less than 10 feet in width, crossovers, ramps, side street returns and other areas designated by the Engineer.

907-402.03.10--Spreading and Finishing. The mixture shall be spread to the depth and width that will provide the specified compacted thickness, line, grade and cross section. Placing of the

mixture shall be as continuous as possible. On areas where mechanical spreading and finishing is impracticable, the mixture may be spread, raked and luted by hand tools.

Immediately after screeding and prior to compaction, the surface shall be checked by the Contractor and irregularities adjusted. When the edge is feathered as in a wedge lift, it may be sealed by rolling. Irregularities in alignment and grade along the edges shall be corrected before the edges are rolled.

Hauling, spreading and finishing equipment shall be furnished that is capable of and operated in such a manner that the rolling operation will satisfactorily correct any surface blemishes.

The longitudinal joint in the subsequent lift shall offset that in the underlying lift by approximately six (6) inches. However, the joint in the top lift shall be at the centerline or lane line.

907-402.03.11--Roadway Compaction. Compaction shall be achieved by two to three passes of a 10 to 12-ton steel wheel roller operating in static mode. Finish rolling to remove any roller marks shall be performed after the mat temperature decreases to 250°F.

907-402.03.12--Joints. Joints between previously placed pavement and pavement being placed shall be so formed as to insure thorough and continuous bond.

Transverse construction joints shall be formed by cutting the previously placed mixture to expose the full depth of the lift.

Longitudinal joints shall be formed by overlapping the screed on the previously placed material for a width of at least one (1) inch and depositing the quantity of mixture to form a smooth, tight joint.

The contact surface of transverse joints and longitudinal joints, except hot joints, shall be sprayed with a thin uniform tack coating before additional mixture is placed against the previously placed material.

The contact surface of transverse joints and longitudinal joints in the asphalt lift immediately below the OGFC, except hot joints, shall be sealed by spraying a thin, uniform coat of Pavon™, Crafco™ Pavement Joint Adhesive No. 34524, or approved equal, prior to placement of additional asphalt against the previously placed material. Manufacture's recommendations shall be followed if the material needs to be re-heated, and when placing the thin, uniform coat.

Prior to application of the sealant, the face of the joint shall be thoroughly dry and free from dust or any other material that would prevent proper sealing. All joints shall be swept or blown free of loose material, dirt, vegetation, and other debris by means of compressed air or a power sweeper.

Truck and vehicle traffic shall not drive across a sealed joint until it has dried sufficient to prevent damage from tracking.

The Contractor shall furnish the Engineer three copies of the manufacturer's certification stating that the material used meets the requirement of the specifications.

907-402.04--Method of Measurement. Open Graded Friction Course, complete in place and accepted, will be measured by the ton. The weight of the composite mixture shall be determined in accordance with the provisions of Subsection 907-402.03.2.1.11.

Bituminous Tack Coat for Open Graded Friction Course shall be measured by the gallon as in accordance with the provisions of Subsections 109.01 and 410.04.

907-402-05--Basis of Payment. Subject to the adjustments set forth in Subsection 907-402.02.6.3, Open Graded Friction Course, complete-in-place, accepted, and measured as prescribed above, will be paid for at the contract unit price per ton and shall be full compensation for completing the work.

Bituminous Tack Coat for Open Graded Friction Course will be paid for at the contract unit price per gallon, which price shall be full compensation for completing the work.

Payment will be made under the following items:

907-402-A: Open Graded Friction Course, $\frac{*}{\text{Mixture}}$ - per ton

907-402-B: Bituminous Tack Coat - per gallon

* 9.5-mm mixture or 12.5-mm mixture

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-403-4

DATE: **01/08/2013**

SUBJECT: **Hot Mix Asphalt (HMA)**

Before Subsection 907-403-05.2 on page 1, add the following:

907-403.03--Construction Requirements.

907-403.03.2--Smoothness Tolerances. Delete the fourth paragraph of Subsection 403.03.2 on page 267 and substitute the following.

Where only a surface lift is required, the finished surface lift shall have a profile index of not more than 60.0 inches per mile.

Delete the last paragraph of Subsection 403.03.2 at the bottom of page 268, and the table at the top of page 269 and substitute the following:

Except for a single lift overlay, when the Profile Index for the final surface lift is less than or equal to eighteen inches per mile (18.0 inches / mile) per segment, a unit price increase will be added. The following schedule lists the Profile Index range and the corresponding contract price adjustment:

Profile Index inches / mile / segment	Contract Price Adjustment percent of unit bid price
less than 6.0	108
6.0 to 10.0	106
10.1 to 14.0	104
14.1 to 18.0	102
18.1 to Required P.I.	100
over Required P.I.	100 (with correction to Required P.I.)

For a single lift overlay, when the Profile Index for the final surface lift is less than or equal to eighteen inches per mile (18.0 inches / mile) per segment, a unit price increase will be added. The following schedule lists the Profile Index range and the corresponding contract price adjustment:

Profile Index inches / mile / segment	Contract Price Adjustment percent of unit bid price
less than or equal to 18.0	103
18.1 to Required P.I.	100
over Required P.I.	100 (with correction to Required P.I.)

Delete the first full paragraph of Subsection 403.03.2 on page 269 and substitute the following:

Contract price adjustments for rideability shall only be applicable to the surface lift and furthermore to only the segment(s) or portions of the segments(s) of the surface lift that require smoothness be determined by using a profilograph.

Delete the third full paragraph of Subsection 403.03.2 on page 269 and substitute the following:

Any contract price adjustment for rideability will be applied on a segment to segment basis on the theoretical tonnage based on 12-foot lanes, determined in accordance with Subsections 401.02.6.5 and 403.04, for the segment(s) or portions thereof for which an adjustment is warranted.

Delete Subsection 403.03.5.5 on page 273 and substitute the following:

907-403.03.5.5--Preliminary Leveling. All irregularities of the existing pavement, such as ruts, cross-slope deficiencies, etc., shall be corrected by spot leveling, skin patching, feather edging or a wedge lift in advance of placing the first overall lift.

907-403.04--Method of Measurement. After the first paragraph of Subsection 403.04 on page 274, add the following.

The pay quantities for each individual job mix formula (JMF) will be calculated using the approved JMF maximum specific gravity (Gmm) and the following formulas.

When the composite mixture has a maximum specific gravity of 2.540 or less,

$$Tp = Tw$$

When the composite mixture has a maximum specific gravity greater than 2.540,

$$Tp = Tw((100-(((Gmm*A*B)-C)/(Gmm*A*B))*100))/100$$

Where:

Tp = Total tonnage for payment

Tw = Total tonnage weighed, used and accepted
Gmm = Maximum Specific Gravity of the approved composite asphalt mixture
A = 46.725 lbs/yd^2/in
B = 0.93 = 93% density
C = 110.374 lbs/yd^2/in = Theoretical density at 2.540 Gmm

After the second paragraph of Subsection 403.04 on page 274, add the following:

Joint sealant will be measured by the linear foot for each joint sealed.

907-403.05--Basis of Payment. After the first paragraph of Subsection 403.05 on page 275, add the following:

Joint sealant will be paid for at the contract unit price per linear foot for each joint which shall be full compensation for furnishing the joint sealant material, cleaning the joint, applying the sealant, and for all equipment, tools, labor, and incidentals necessary to complete the work.

After the last pay item listed on page 276, add the following:

907-403-S: Joint Sealant - per linear foot or mile

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-403-4 **CODE: (IS)**

DATE: 11/04/2005

SUBJECT: Hot Mix Asphalt (HMA)

Section 403, Hot Bituminous Pavement, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-403.05.2--Pay Items. Add the "907" prefix to the pay items listed on page 275 & 276.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-403-11 **CODE: (SP)**

DATE: 08/21/2012

SUBJECT: Stone Matrix Asphalt (SMA)

Section 403, Hot Bituminous Pavement, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as amended by this special provision is applicable to Stone Matrix Asphalt (SMA) Only.

SECTION 907-403 - STONE MATRIX ASPHALT PAVEMENT

907-403.0l--Description. This work consists of constructing one or more lifts of SMA pavement on a prepared surface in accordance with the requirements of Section 403 for Hot Mix Asphalt (HMA), with the exceptions set forth in this special provision. The SMA shall meet the requirements of this section and in reasonably close conformity with the lines, grades, thicknesses, and typical cross sections shown on the plans or established by the Engineer. This work shall also include applicable in-grade preparation of the underlying course in accordance with Section 321.

907-403.04--Method of Measurement. Stone matrix asphalt will be measured by the ton.

907-403.05--Basis of Payment. Subject to the adjustments set out in Subsections 401.02.6.3, 401.02.6.4, 401.02.6.5, 401.02.6.6 & 907-403.03.2, stone matrix asphalt, measured as prescribed above, will be paid for at the contract unit price per ton for each lift of pavement specified in the bid schedule and shall be full compensation for completing the work.

907-403.05.2--Pay Items.

Payment will be made under:

907-403-AA: Stone Matrix Asphalt, (1) Mixture - per ton

(1) 9.5 mm mixture, 12.5 mm mixture, or 19 mm mixture

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-403-12 **CODE: (SP)**

DATE: 08/21/2012

SUBJECT: Warm Mix Asphalt (WMA)

Section 403, Hot Bituminous Pavement, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as amended by this special provision is applicable to Warm Mix Asphalt Only.

907-403.01--Description. This work consists of constructing one or more lifts of Warm Mix Asphalt (WMA) pavement in accordance with the requirements of Section 403 for Hot Mix Asphalt, with the exceptions set forth in this special provision. The WMA shall meet the requirements of this section and placed in reasonably close conformity with the lines, grade, thicknesses, and typical cross sections shown on the plans or established by the Engineer.

907-403.04--Method of Measurement. Warm mix asphalt will be measured by the ton. The weight of the composite mixture shall be determined in accordance with the provisions of Subsection 401.03.2.1.11.

907-403.05--Basis of Payment. Subject to the adjustments set out in Subsections 401.02.6.3, 401.02.6.4, 401.02.6.5, 401.02.6.6 & 403.03.2, warm mix asphalt, measured as prescribed above, will be paid for at the contract unit price per ton for each lift of pavement specified in the bid schedule and shall be full compensation for completing the work.

907-403.05.2--Pay Items. After the last pay item listed on page 276, add the following:

907-403-M: Warm Mix Asphalt, (1) Type, (2) Mixture - per ton

907-403-N: Warm Mix Asphalt, (1) Type, (3) Mixture, Leveling - per ton

907-403-O: Warm Mix Asphalt, (1) Type, (4) Mixture, Trench Widening - per ton

907-403-P: Warm Mix Asphalt, HT, (3) Mixture, Polymer Modified - per ton

907-403-Q: Warm Mix Asphalt, HT, (3) Mixture, Polymer Modified, Leveling - per ton

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-407-1 **CODE: (SP)**

DATE: 02/26/2008

SUBJECT: Tack Coat

Section 407, Tack Coat, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-407.02.1--Bituminous Material. Delete the second sentence of the first paragraph of Subsection 407.02.1 on page 281, and substitute the following:

When not specified, the materials shall be as specified in Table 410-A on page 293.

907-407.03.3--Application of Bituminous Material. Delete the first paragraph of Subsection 407.03.3 on page 281, and substitute the following.

Tack coat shall be applied with a distributor spray bar. A hand wand will only be allowed for applying tack coat on ramp pads, irregular shoulder areas, median crossovers, turnouts, or other irregular areas. Bituminous materials and application rates for tack coat shall be as specified in Table 410-A on page 293. Tack coat shall not be applied during wet or cold weather, after sunset, or to a wet surface. Emulsions shall be allowed to "break" prior to superimposed construction.

907-407.05--Basis of Payment. Delete the pay item at the end of Subsection 407.05 on page 282, and substitute the following:

907-407-A: Asphalt for Tack Coat * - per gallon

* Grade may be specified

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-601-1 **CODE: (IS)**

DATE: 08/29/2007

SUBJECT: Structural Concrete

Division 600, Incidental Construction, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

After the heading **DIVISION 600 - INCIDENTAL CONSTRUCTION**, add the following:

Unless otherwise specified, all testing of Portland cement concrete in Division 600 shall be in accordance with the requirements of Subsection 907-601.02.1.

907-601.02--Materials.

907-601.02.1--General. Delete the second and third sentence of the first paragraph of Subsection 601.02.1 on page 348, and substitute the following:

Sampling and testing will be in accordance with TMD-20-04-00-000 or TMD-20-05-00-000, as applicable.

907-601.03.6.3--Removal of Falsework, Forms, and Housing. Delete the first paragraph, the table and second paragraph of Subsection 601.03.6.3 on pages 349 and 350, and substitute the following:

The removal of falsework, forms, and the discontinuance of heating, shall be in accordance with the provisions and requirements of Subsection 907-804.03.15, except that the concrete shall conform to the following compressive strength requirements:

Wingwall and Wall Forms not Under Stress	1000 psi
Wall Forms under Stress	2200 psi
Backfill and Cover clear	2400 psi

In lieu of using concrete strength cylinders to determine when falsework, forms, and housings can be removed, an approved maturity meter may be used to determine concrete strengths by inserting probes into concrete placed in a structure. The minimum number of maturity meter probes required for each structural component shall be in accordance with Subsection 907-804.03.15. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of Subsection 907-804.03.15. Technicians using the maturity meter or calculating strength/maturity graphs shall meet the requirements of Subsection 907-804.03.15.

907-601.05--Basis of Payment. Add the "907" prefix to the pay items listed on page 352.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-603-8 **CODE: (IS)**

DATE: 05/12/2008

SUBJECT: Culverts and Storm Drains

Section 603, Culverts and Storm Drains, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-603.03--Construction Requirements.

907-603.03.2--Bedding. After the first paragraph of the Subsection 603.03.2 on page 356, add the following:

Non-rigid pipe used in cross drains and storm drains shall have a Class B bedding. Non-rigid pipe used in side drains shall have a Class C bedding. No separate measurement will be made for pipe bedding. Costs associated with pipe bedding shall be included in the cost of the pipe.

907-603.03.4--Joining Conduit.

907-603.03.4.1--Storm Drainage. Delete the first sentence of the seventh paragraph of Subsection 603.03.4.1 on page 358, and substitute the following:

Flexible steel conduits shall be firmly joined by coupling bands.

907-603.03.7--Backfilling. After the first paragraph of the Subsection 603.03.7 on page 360, add the following:

Backfill of non-rigid corrugated polyethylene and poly (vinyl chloride) (PVC) pipe used in cross drains and storm drains shall be performed using one of the following methods:

1. Flowable fill meeting the requirements of Section 631 of the Standard Specifications. If flowable fill is used, care shall be taken to prevent the pipe from "floating".
2. Crushed stone aggregate meeting the requirements of Subsection 703.04.3 of the Standard Specification.

No separate measurement will be made for backfilling pipe. Costs associated with backfilling pipe will be included in the cost of the pipe.

907-603.05--Basis of Payment. Add the "907" prefix to pay item nos. 603-ALT, 603-MA thru 603-MH, 603-NA thru 603-NL, 603-PE, and 603-PVC on pages 364 thru 366.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-603-16 **CODE: (SP)**

DATE: 02/15/2013

SUBJECT: Directional Drilling

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Section 603, Culverts and Storm Drains, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as modified by this special provision is applicable to Directional Drilling Only.

907-603.01--Description. This work consists of furnishing all labor, materials and equipment required to bore and jack casings, install casings by horizontal directional boring or horizontal directional drilling and to properly complete pipeline construction as shown on the Plans and described herein.

This work shall include all services, equipment, materials, and labor for the complete and proper installation, testing, restoration of underground utilities and environmental protection and restoration. For the supply of domestic water during construction, the Contractor shall utilize an Owner supplied meter assembly (meter & backflow device) and pay for all water consumed except in the case where the new water main is connected directly into the active water system for line filling and flushing operation. Un-accountable domestic water quantities shall be minimized, where possible.

907-603.01.1--Quality Assurance. The requirements set forth in this document specify a wide range of procedural precautions necessary to insure that the very basic, essential aspects of a proper horizontal directional drilling installation are adequately controlled. Strict adherence shall be required under specifically covered conditions outlined in this specification or within any associated permit. Adherence to the specifications contained herein, or the Ownwe Representative's approval on any aspect of any directional bore operation covered by this specification, shall in no way relieve the Contractor of their ultimate responsibility for the satisfactory completion of the work authorized under the Contract. The horizontal directional drilling (HDD) Contractor shall be responsible for the repair of all damage to private and/or public property at no expense to the State. Repair work shall meet all local and state rules and requirements.

907-603.01.2--Project Schedule and Cooperation. The project schedule shall be established on the basis of working a normal work schedule including five days per week, single shift, and eight hours per day or four days per week, single shift, ten hours per day. Unless approved otherwise, normal or general items of work such as bacteriological testing, leakage and pressure testing, density testing and final inspections, shall be scheduled during the normal work schedule. Due to operational and manpower limitations on the Owner's systems, the Owner will require the Contractor to perform work outside of the normal work schedule. These operational and

manpower limitations, including but not limited to, line filling and flushing operation, tie-in work, (cut-in work or other work) and other phases of the work which may impact the continued (non-interruptible) service to existing Owner customers. The Contractor shall plan and anticipate the cost impact of these systems limitations and provide such work or services at no additional cost to Owner.

In addition to the schedule requirements, the following tasks shall be included in the Contractor's detailed schedule: utility locate requests, utility locate verification, rig mobilization, pilot bore drilling, pre-reaming and reaming, layout and fusion of pipe, final reaming, pipe pullback, pressure testing, pig testing of installed pipeline, and restoration.

907-603.01.3--Warranty. The Contractor shall supply to the Owner a 2-year unconditional warranty. The warranty shall include materials and installation and shall constitute complete replacement and delivery to the site of materials and installation of same to replace defective materials or defective workmanship with new materials/workmanship conforming to the specifications.

907-603.01.4--Referenced Standards. The work shall conform to applicable provisions of the Owner Water and Sewer Standards, and the following standards, latest editions, except as modified herein.

American Water Works Association (AWWA) Standards:

AWWA C906	Polyethylene (PE) Pressure Pipe and Fittings, 4 inch through 63 inch, for Water Distribution

American Society for Testing and Materials (ASTM) Standards:

ASTM D618	Standard Methods of Conditioning Plastics and Electrical Insulating Materials for Testing.
ASTM D638	Standard Test Method for Tensile Properties of Plastics.
ASTM D1238	Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
ASTM D1248	Standard Specifications for Polyethylene Plastics Molding and Extrusion Materials.
ASTM D1505	Standard Test Method for Density of Plastics by the Density-Gradient Technique.
ASTM D1598	Standard Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure.
ASTM D1599	Standard Test Method for Short-Time Hydraulic Failure Pressure of Plastic Pipe, Tubing, and Fittings.
ASTM D1603	Standard Test Method for Carbon Black in Olefin Plastics.
ASTM D2122	Standard Method of Determining Dimensions of Thermoplastics Pipe and Fittings.
ASTM D2290	Standard Test Method for Apparent Tensile Strength or Tubular Plastics and Reinforced Plastics by Split Disk Method.
ASTM D2683	Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing.

ASTM D2837	Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.
ASTM D2839	Standard Practice for Use of a Melt-Index Strand for Determining Density of Polyethylene
ASTM D3035	Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter.
ASTM E3261	Standard Specification for Butt Heat Fusion Polyethylene Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
ASTM D3350	Standard Specification for Polyethylene Plastic Pipe and Fittings Materials.
ASTM D4218	Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique.
ASTM F412	Standard Terminology Relating to Plastic Piping Systems.

907-603.01.5--Permits. Permits for all work within the MDOT, local municipality, and Submerged Land of the State rights-of-way shall be obtained by the Contractor. The Contractor shall verify the existence of all permits before commencing any work on the project.

907-603.01.6--Submittals.

Bid Submittal. The Contractor shall submit with their bid the following required information for all individual HDD segments greater than 600 linear feet. All calculations and responses shall be based on the geotechnical data and other information provided in the bid documents, generic assumptions will be acceptable only when site specific data is not available.

Contractor shall provide an example of similar successful project experience. The minimum requirements are 8-inch outside diameter, HDPE pipe, and 600 linear feet single pull. The Contractor shall provide project contact name, title, telephone number, mailing address, email address, etc. for whom the successful project was performed.

Contractor shall provide calculations (in accordance with ASTM F 1962 or equal) for pull back force required and the resulting rig size proposed for this project.

Contractor shall provide calculations (in accordance with industry standards) predicting the expected annular pressure and identify areas subject to hydrofracture.

Contractor shall provide an example of a similar project where the specified guidance system was successfully used.

Contractor shall provide calculations demonstrating that the pipe will not be overstressed.

Contractor shall verify that the information and calculations presented herein will be fully incorporated into the work plan.

Contractor shall identify which, if any, items of the basis of design that the Contractor proposes to change (entry/exit angles, depth, radius, etc.). These changes shall be reflected in the calculations and information required in these evaluation criteria.

Work Plan. Prior to beginning work, the Contractor shall submit to the Engineer a work plan detailing the procedure and schedule to be used to execute the project. The work plan should include a description of all equipment to be used, down-hole tools, a list of personnel and their qualifications and experience (including back-up personnel in the event that an individual is unavailable), list of Subcontractors, a schedule of work activity, a safety plan (including MSDS of any potentially hazardous substances to be used), traffic control plan (if applicable), an environmental protection plan and a contingency plan. The work plan should be comprehensive, realistic and based on actual working conditions for this particular project. Plan should document the thoughtful planning required to successfully complete the project. The HDD Contractor shall submit and obtain Owner's approval of a pre-construction bore-log depicting a plan and profile (horizontal and vertical alignment) of the proposed bore path. The bore-log shall show all utility crossings and existing structures. All deviations from the drawings included in the contract documents shall be clearly identified. The work plan shall specifically address the following potential problems:

1. A Frac-Out and Surface Spill Contingency Plan
2. Loss of returns
3. Obstructions along borepath during reaming or pullback
4. Drill pipe or product pipe cannot be advanced
5. Deviations from design line and grade exceed allowable tolerances
6. Drill pipe or product pipe broken off in borehole
7. Collapse or product pipe or excessive deformation
8. Damage to a utility
9. Excessive subsidence or heave

Calculations. The following calculations shall be submitted prior to beginning any HDD work:

1. Pullback load calculation
2. Pipe stress calculation
3. Maximum allowable drilling fluid pressure calculation
4. Contractor shall confirm that the design parameters do not result in installation stresses that exceed allowable pipe stresses.

Existing Utilities. A plan shall be provided to locate and protect all adjacent utilities and infrastructure

Record Drawing. The record drawings shall be submitted in duplicate for the Owner's approval within ten days after completing the pull back for review and approval. The drawings (24" x 36" min.) and Auto CAD disk of the drawing, 20 horizontal max scale with 2-foot vertical max scale shall include a plan, profile (data every 25 linear feet of main, at a minimum), and all information recorded during the progress of the work. The entry and exit points shall be located with GPS coordinates based on a locally available reference system (lat/long, state plane coordinates, etc.). The HDD Contractor shall certify the accuracy of all record drawings.

907-603.01.7--Notification. MDOT/Owner must be notified 48 hours (minimum) in advance of

starting the drilling work. The HDD work shall not begin until the proper preparations (see work plan) for the operation have been completed and approved.

907-603.01.8--Site Preparation. Prior to any alterations to work-site, Contractor shall photograph or video tape entire work area. One copy of which shall be given to the Engineer and one copy to remain with Contractor for a period of two (2) years following the completion of the project.

Protection of Existing Utilities - Contractor shall abide by the Common Ground Alliance, Best Practices Version 1.0 or latest, unless exceptions are specifically agreed to by Engineer. Also, the Contractor shall coordinate utilities locates with the MS 811. Once the locate service has field marked all utilities, the Contractor shall verify each utility (including any service laterals, i.e. water, sewer, cable, gas, electric, phone, etc.) and those within each paved area. Verification may be performed utilizing Ground Penetrating Radar, hand dig, or vacuum excavation. Prior to initiating drilling, the Contractor shall record on the drawings both the horizontal and vertical location of the utilities off of a predetermined baseline. The Contractor shall manage and control drilling practices to prevent damage to existing utilities. The Contractor shall be responsible for all losses and repairs as a result of damage to underground utilities resulting from drilling operations. The Contractor shall make a reasonable effort to locate evidence of any other potential subsurface obstructions such as piles or piers.

Work site shall be graded and filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas.

Following drilling operations, the Contractor will de-mobilize equipment and restore the work-site to original condition. All excavations will be backfilled and compacted to 90% of original density (at a minimum), or as otherwise specified.

907-603.01.9--Environmental Protection. Contractor shall place silt fence between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, state, federal and local regulations. Contractor shall place hay bales, or approved protection, to limit intrusion upon project area. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations stated in local, state and federal permits.

907-603.01.10--Safety. Contractor shall adhere to all applicable state, federal and local safety regulations and all operations shall be conducted in a safe manner.

907-603.01.11--Personnel Qualifications Certification.

Directional Drilling. All personnel shall be fully trained in their respective duties as part of the directional drilling crew and in safety. Each person must have been fully trained for over 1,000 hours on all facets of directional drilling, including, but not limited to machine operations, mud mixing, locating, and material fusion. A responsible representative who is thoroughly familiar

with the equipment and type of work to be performed, must be in direct charge and control of the operation at all times. In all cases the supervisor must be continually present at the job site during the actual HDD operation. The Contractor shall have a sufficient number of competent workers on the job at all times to insure the HDD work is made in a timely and satisfactory manner.

Pipe and Fitting Jointing. Joints between plain end pipes and pipe fittings shall be made by butt fusion when possible. The on-site welder making the joints shall have received specific training from the manufacturer of the fittings and/or pipe being welded and shall have written proof of proper training/certification from the associated manufacturers. Only certified welders who have written training certifications from the fitting and/or pipe manufacturer will be allowed to perform this work. That is, to weld a fitting in place, the on-site welder (employee) must be trained and certified by the fitting manufacturer. To butt weld pipe, the on-site welder (employee) must be trained and certified by the pipe manufacturer. The fusion work shall be accomplished (welding and cool-down/closing times) in accordance with the fitting and pipe manufacturers' recommendations, at a minimum. External and internal beads shall not be removed unless approved by Owner.

907-603.02--Materials.

907-603.02.1--High Density Polyethylene (HDPE, PE) Pipe and Fittings. Materials used for the manufacturer of polyethylene pipe and fittings shall be PE3408 high density polyethylene meeting cell classification 345464C per ASTM D3350; and meeting Type III, Class B or Class C, Category 5, Grade P34 per ASTM D1248; and shall be listed in the name of the pipe and fitting Manufacturer in PPI TR-4, Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds, with a standard grade rating of 1600 psi at 73°F per ASTM D-2837. The Manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements.

HDPE Pipe, 4-inch and larger, shall conform to AWWA C906, DR-11, Ductile Iron Pipe (DIP) size and NSF 61 Standard. HDPE pipe for water or reclaimed water piping (not approved for sewer force mains) with pipe size 4-inch through 12-inch may be DR-17 conforming to AWWA C906 and NSF 61. For pipe sizes 24-inch and larger, the HDPE may be IPS size, DR 11. Polyethylene pipe shall be manufactured in accordance with ASTM F714, Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter and shall be so marked. Each production lot of pipe shall be tested for (from material or pipe) melt index, density, % carbon, dimensions and either quick burst or ring tensile strength (equipment permitting).

Nominal pipe sizes only are indicated on the plans and bid form. Outside diameter of pipe is generally 1 to 2-inches greater than the nominal pipe diameter.

Permanent identification of piping service shall be provided by co-extruding multiple equally spaced color stripes into the pipe outside surface or by solid colored pipe shell. The striping material shall be the same material as the pipe material except for color. The following colors shall be used to identify piping service (pressure service):

Blue – potable water
Green – wastewater or force main
Purple – reclaimed water
Black – raw water

Polyethylene fittings and custom fabrications shall be molded or fabricated by the pipe manufacturer or trained personnel. Butt fusion outlets shall be made to the same outside diameter, wall thickness, and tolerances as the mating pipe. All fittings and custom fabrications shall be fully rated for the same internal pressure as the mating pipe. Fabricated fittings must have the same working pressure as the mating pipe.

Molded fittings shall be manufactured in accordance with ASTM D3261, Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing, and shall be so marked. Each production lot of molded fittings shall be subjected to the test required under ASTM D3261.

Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings. Fabricated fittings shall be rated for internal pressure service equivalent to the full service pressure rating of the mating pipe. Directional fittings 16" and larger such as elbows, tees, crosses, etc., shall have a plain end inlet for butt fusion and flanged directional outlets.

Polyethylene flange adapter shall be made with sufficient throughbore length to be clamped in a butt fusion joining machine without the use of a stubend holder. The sealing surface of the flange adapter shall be machined with a series of small v-shaped grooved to provide gasketless sealing, or to restrain the gasket against blow-out. Below ground flange adapters may only be utilized when specified and when MJ adapters are not commercially available in the required size. Adapters for 30 inch and smaller pipe shall utilize an MJ adapter (see below).

Flange adapters shall be fitted with lap joint flanges pressure rated equal to or greater than the mating pipe. Convoluted style backup rings preferred over the flat stock rings. The lap joint flange bore shall be chamfered to provide clearance to the flange adapter radius. Flange bolts and nuts shall be Grade 2 or higher.

The pipe and fitting manufacturer shall have an established quality control program responsible for inspecting incoming and outgoing materials. Incoming polyethylene materials shall be inspected for density, melt flow rated, and contamination. The cell classification properties of the material shall be certified by the supplier, and verified by Manufacturer's Quality Control.

Mechanical connections of HDPE pipe (4-inch and larger) to Ductile Iron or PVC piping, mechanical joint fittings, or valves shall be through a self-restraining, fusible mechanical joint adapter with or without an integral, internal stainless steel insert. Mechanical joint adapter shall be of the same SDR rating as the pipe. A separate, loose stainless steel type insert will only be allowed for pipe sizes 4 inch through 8-inch. The Contractor shall provide the mechanical joint adapter, including but not limited to longer tee bolts or all thread rods with nuts at the mechanical joint bell. Note that PE flanged adapters may only be utilized for pipe sizes where

MJ adapters are not commercially available.

HDPE to MJ cast transition coupling may only be utilized for 8-inch and smaller pipe size. A stainless steel stiffener is required sized at proper ID of HDPE pipe. The transition coupling must be epoxy lined (3 mils minimum for water use and 12 mils minimum for sewer use). Acceptable is a Power Seal model 3520 or approved equal.

Electro fusion joining procedures shall not be used in any location or application on this project.

Polyethylene service line tubing shall conform to AWWA C901-latest.

Drilling Fluids shall be a bentonite slurry.

907-603.02.2--Delivery, Storage, and Handling of Materials. Materials delivered to the site shall be inspected for damage. All materials found during inspection or during the progress of work to have cracks, flaws, cracked linings, or other defects shall be rejected and removed from the job site without delay.

Materials shall be unloaded and stored opposite or near the place where the work will proceed with minimum handling. Material shall be store under cover out of direct sun light. Do not store directly on the ground. Keep all materials free of dirt and debris.

The Contractor is responsible for obtaining, transporting and sorting any fluids, including water, to the work site.

Disposal of fluids shall be the responsibility of the Contractor. Disposal of fluids shall be done in a manner that is in compliance with all permits and applicable federal, state, or local environmental regulations. The bentonite drilling slurry may be recycled for reuse in the hole opening operation, or shall be hauled by the Contractor to an approved location or landfill for proper disposal. Contractor shall thoroughly clean entire area of any fluid residue upon completion of installation, and replace any and all plants and sod damaged, discolored or stained by drilling fluids.

Locate wire shall be as specified in Subsection 907-603.03.6.

907-603.03--Construction Requirements.

907-603.03.1—Equipment Requirements. The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the pilot hole, reaming, and pullback the pipe; a drilling fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the drill; a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be re-used; a guidance system to accurately guide boring operations; a vacuum truck of sufficient capacity to handle the drilling fluid volume; and trained, competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

907-603.03.1.1--Drilling System.

Drilling Rig. The directional drilling machine shall consist of a power system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The power system shall be self-contained with sufficient pressure and volume to power drilling operations. The hydraulic system shall be free of leaks. The rig shall have a system to monitor maximum pull-back force during pull-back operations. The rig shall be grounded during drilling and pull-back operations. There shall be a system to detect electrical current from the drilling string and an audible alarm which automatically sounds when an electrical current is detected.

Drill Head. The drill head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets.

Mud Motors (if required). Mud motors shall be of adequate power to turn the required drilling tools.

Drill Pipe. Shall be constructed of high quality heat-treated, forged alloy steel.

907-603.03.1.2--Guidance System. The position of the drill head shall be continuously tracked and recorded by a downhole wireline tracking locator system and shall be supplemented by a "TruTracker" or equivalent tracking system installed between the entry point and the exit point. The coordinates of the surface wire grid system shall be surveyed and recorded. The guidance system shall be capable of tracking at all depths up to eighty feet and in any soil condition, including hard rock. It shall enable the driller to guide the drill head by providing immediate information on the tool face, azimuth (horizontal direction), and inclination (vertical direction) The guidance system shall be accurate to ±2% of the vertical depth of the borehole at sensing position at depths up to one hundred feet and accurate within 4½ feet horizontally.

The Guidance System shall be of a proven type and shall be operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies on the surface of the drill path and shall consider such influences in the operation of the guidance system if using a magnetic system.

Bore Tracking and Monitoring. At all times during the pilot bore the Contractor shall provide and maintain a bore tracking system that is capable of accurately locating the position of the drill head in the x, y, and z axes. The Contractor shall record these data at least once per drill pipe length or every twenty-five (25) feet, whichever is most frequent.

Downhole and Surface Grid Tracking System. Contractor shall monitor and record x, y, and z coordinates relative to an established surface survey bench mark. The data shall be continuously monitored and recorded at least once per drill pipe-length or at twenty-five (25) feet, whichever is more frequent.

Deviations between the recorded and design bore path shall be calculated and reported on the

daily log. If the deviations exceed plus or minus five feet (horizontal or vertical deviation) from the design path, such occurrences shall be reported immediately to Owner. The Contractor shall undertake all reasonable and necessary measures to correct deviations and return to design line and grade.

907-603.03.1.3--Drilling Fluid (MUD) System and Pressure Monitoring System. The MUD shall meet the following.

1. Mixing System: A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid. Mixing system shall continually agitate the drilling fluid during operations.

2. Drilling Fluid Pressures and Flow Rates: Drilling fluid pressures and flow rates shall be continuously monitored and recorded by the Contractor. The pressures shall be monitored at the pump. These measurements shall be made during pilot bore drilling, reaming, and pullback operations.

3. Downhole Annular Pressure Monitoring System: The Contractor shall use a downhole annular pressure monitoring system that will provide instantaneous and continuous operating pressures. This system shall incorporate a data recorder that will store the downhole annular pressure data for the entire drilling operation. This data shall be maintained and provided to the Engineer upon request or at the completion of the project. The data (x,y,z) shall be presented in a format easily referenced to the contract drawings. Pressure shall be indicated in psi at a specified datum.

4. Drilling Fluids: Drilling fluid shall be composed of clean water, appropriate additives and clay. Water shall be from an authorized source with a minimum pH of 6.0. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No potentially hazardous material maybe used in drilling fluid.

5. Delivery System: The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and conveyed to the drilling fluid recycling system. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess drilling fluid from containment areas to storage and recycling facilities.

6. Drilling Fluid Recycling System: Control of Drilling Fluids: The drilling fluid recycling system shall separate sand, dirt and other solids from the drilling fluid to render the drilling fluid re-usable. Spoils separated from the drilling fluid will be stockpiled for later use or disposal. The Contractor shall follow all requirements of the Frac-Out and Surface Spill Contingency Plan as submitted and approved and shall control operational pressures, drilling fluid weights, drilling speeds, and any other operational factors required to avoid hydrofracture fluid losses to formations, and control drilling fluid spills. This includes any spillages or returns at entry and exit locations or at any intermediate point. All inadvertent

returns or spills shall be promptly contained and cleaned up. The Contractor shall maintain on-site mobile spoil removal equipment during all drilling, pre-reaming, reaming and pullback operations and shall be capable of quickly removing spoils. The Contractor shall immediately notify Owner of any inadvertent returns or spills and immediately contain and clean up the return or spill.

907-603.03.1.4--Other Equipment. Hydraulic or pneumatic pipe rammers may only be used if necessary and with the authorization of the Engineer.

Other devices or utility placement systems for providing horizontal thrust other than those defined above in the preceding sections shall not be used unless approved by the Engineer prior to commencement of the work. Consideration for approval will be made on an individual basis for each specified location. The proposed device or system will be evaluated prior to approval or rejection on its potential ability to complete the utility placement satisfactorily without undue stoppage and to maintain line and grade within the tolerances prescribed by the particular conditions of the projects.

907-603.03.2--Drilling Procedures. Prior to drilling, the Contractor shall utilize all verified locate information to determine drill pathway. Marked up drawings (see Site Preparation) shall be on site at all times, and referred to during the drill operation.

Contractor shall provide and maintain a downhole wireline system to accurately locate the pilot hole (both horizontal and vertical position). A Tru-Tracker energized surface grid, or equivalent, shall be installed and used to supplement the wireline system. The Engineer shall have access to instrumentation and readings at all times during operation.

Drilling fluid pressures and flow rates shall be continuously monitored and recorded.

Subsidence or heave of utilities, roads, or other features above the HDD centerlines and within the zone influenced by the HDD construction shall be limited to values that avoid damage. These values shall be determined by the utility or right-of-way owner. The Contractor shall repair any damage resulting from settlement or heave caused by HDD activities at no additional cost to State. The Contractor shall grout any voids caused by or encountered during drilling.

The pilot hole shall be drilled along the path shown on the plans and profile drawings or as directed by the Owner Representative in the field. Unless approved otherwise by Engineer, the pilot-hole tolerances shall be as follows:

1. Elevation: As shown on the plans.

2. Alignment: ±5 feet and within three (3) feet of right-of-way or easement boundary.

3. Curve Radius: The pilot hole radius shall be no less than 150% of the minimum bending radius as recommended by the pipe manufacturer of the pipe being installed.

4. Entry Point Location: The exact pilot hole entry point shall be within ±5 feet of the

location shown on the drawing or as directed by the Engineer in the field.

5. Exit Point Location: The exit point location shall be within ±5 feet of the location shown on the drawing or as directed by the Owner Representative in the field.

6. Water Main and Non-Water Main Separation Requirements: The minimum separation requirements between HDPE water main and a non-water main shall be as defined in 62-555, F.A.C.

After successfully reaming bore hole to the required diameter, the Contractor will pull the pipe through the bore hole. A swivel and reamer shall be in front of the pipe to compact bore hole walls. Once pull-back operations have commenced, operations shall continue without interruption until pipe is completely pulled into bore hole. During pull-back operations, Contractor shall not apply more than the maximum safe pipe pull pressure at any time. Maximum allowable tensile force imposed on the pull section shall be equal to 80% of the pipe manufacturer's safe pull (or tensile) strength.

Torsional stress shall be minimized by using a swivel to connect a pull section to the reaming assembly.

The pullback section of the pipeline shall be supported during pullback operations so that it moves freely and the pipe is not damaged.

External pressure shall be minimized during installation of the pullback section in the reamed hole. Damaged pipe resulting from external pressure shall be replaced at no cost to the Owner.

Locate wire shall be attached to the leading end of the pipe pulling head and shall extend the full length of the installed pipe.

Buoyancy modification shall be at the discretion of the Contractor and shall be approved by the Owner's Representative. The Contractor shall be responsible for any damage to the pull section resulting from such modifications.

In the event that pipe becomes stuck, Contractor will implement the submitted and approved contingency plan. If pipe remains stuck, Contractor will notify Owner Representative. The Owner's Representative and Contractor will discuss options and then work will proceed accordingly.

The Contractor shall cease operations if the pipe is damaged and shall remove the pipe from the bore hole and repair the pipe using the manufacturer's recommended procedure or replace the damaged pipe before resuming installation.

907-603.03.3--Pipe Assembly. Pipe shall be welded/fused together in one length, if space permits. Pipe may be placed on pipe rollers before pulling into bore hole to minimize damage to the pipe. For pipe sizes larger than 12-inch, mechanical scrapers (per the fitting manufacturer's recommendation) shall be utilized during the fusion work. All original oxidized pipe surface

shall be removed in order for fusion to take place. The scraping process requires that approximately 10 inches of the outer "skin" be removed in order to penetrate the oxidation and contamination barrier.

Cuts or gouges that reduce the wall thickness by more than 10% will not be acceptable and shall be cut out and discarded.

When requested by the Engineer, fusion testing shall be performed. The test fusion shall be allowed to cool completely, and then fusion test straps shall be cut out. The test strap shall be 12 inches (minimum) or 30 times the wall thickness in length with the fusion in the center and one inch (1") (min) or 1.5 times the wall thickness in width. The test strap shall be bent until the ends of the strap touch. If the fusion fails at the joint, a new test fusion shall be made, cooled completely and tested. No more than one passing test will be required per pull section.

Polyethylene pipe and fittings may be joined together or to the materials by means of flanged connections (flange adapters and back-up rings) or mechanical couplings designed for joining polyethylene pipe or for joining polyethylene pipe to another material. Mechanical couplings shall be fully pressure rated and fully thrust restrained such that when installed in accordance with manufacturer's recommendations, a longitudinal load applied to the mechanical coupling will cause the pipe to yield before the mechanical coupling disjoins. External joint restraints shall not be used in lieu of fully restrained mechanical couplings.

Mechanical joints and flange connections shall be installed in accordance with the Manufacturer's recommended procedure. Flange faces shall be centered and aligned to each other before assembling and tightening bolts. In no case shall the flange bolts be used to draw the flanges into alignment. Bolt threads shall be lubricated, and flat washers shall be fitted under the flange nuts. Bolts shall be evenly tightened according to the tightening pattern and torque step recommendations of the Manufacturer. At least one (1) hour after initial assembly, flange connections shall be re-tightened following the tightening pattern and torque step recommendations of the Manufacturer. The final tightening torque shall be as recommended by the Manufacturer.

907-603.03.4--Testing. All potable water pipe and fittings shall be thoroughly disinfected prior to being placed in service. Disinfection shall follow the applicable provisions of the procedure established for the disinfection of water mains as set forth in AWWA - Standard C651 entitled "AWWA Standard for Disinfecting Water Mains". Bacteriological testing of the water main shall be scheduled and completed by the Owner. Owner will collect the water samples and be responsible for completing the water analysis (lab testing).

Temporary blow-offs shall be installed for the purpose of cleaning the water main. Blow-offs installed on water mains up to and including 12-inch shall be the same diameter as the water main. Blow-offs installed on 16-inch water mains and larger may be the next smaller size, in diameter, than the water main being tested. Temporary blow-offs shall be removed and plugged after the main is cleared. The Owner shall be present prior to and during the operation of blow-offs. The main shall be flushed prior to disinfection.

The new water main shall be connected to the existing water main at one point only for flushing purposes (no looping). The new main MUST have a blow off on the end as required previously. After the new main is thoroughly flushed, the open end shall be sealed and restrained and the main shall be thoroughly disinfected. Anytime the new line is reopened (to repair defective joints or pipe, defective fitting or valve) the complete disinfection process shall be repeated. Once bacteriological clearance has been received from the regulatory authority, the new main may be pressure tested.

907-603.03.5--Pressure and Leakage Tests. Contractor shall test pipelines installed under this Contract in accordance with these specifications prior to acceptance of the pipeline by the MDOT/Owner. All field tests shall be made in the presence of the Owner. Except as otherwise directed, all pipelines shall be tested. Unless approved otherwise by the Engineer, all fusible or butt weld joints shall be tested, including MJ adapter fittings associated with the new construction. All piping to operate under liquid pressure shall be tested in sections of approved length. The pressure testing of an HDPE line section shall be tested separately from the PVC and DIP line sections. Where impractical, the HDPE test section shall include only a minimum amount of PVC and ductile iron pipe within the test section. If at all possible, the PVC and D.I.P. test sections shall be left exposed during the pressure test for visual leakage observation. For these tests, the Contractor shall furnish clean water, suitable temporary testing plugs or caps, and other necessary equipment, and all labor required. If the Contractor chooses to pressure test against an existing Owner water main/valve, the new water main must be disinfected prior to connection to the Owner's line. The Owner will not be responsible for failure of the pressure test due to the existing valve leaking. The Owner may elect to furnish suitable pressure gauges for these tests. If not, the Contractor will furnish suitable pressure gauges, calibrated by an approved testing laboratory, with increments no greater than 2 psi. Gauges used shall be of such size that pressures tested will not register less than 10% or more than 90% of the gauge capacity. All valved sections shall be hydrostatic tested to insure sealing (leak allowance) of all line valves.

Unless it has already been done, the section to pipe to be tested shall be filled with potable water and air shall be expelled from the pipe. Reclaimed water may be utilized for filling new reclaimed water or sewer force main installations. If blow offs or other outlets are not available at high points for releasing air, the Contractor shall provide 1-inch (minimum taps and blow-off valves (at the 12:00 position), as necessary. The cost of constructing blow-off valves and plugging them, after a successful pressure test, shall be included in the unit price bid amount for the HDPE pipe.

For mains larger than 20-inch diameter, it is highly recommended that the Contractor profile (line and grade) the main after installation and prior to pressure and leakage test to accurately locate all high points. Field survey instrument (Level equipment) shall be utilized for this task. Blow off valves shall be installed (at a minimum) at all high points which offset vertically more than two pipe diameters in length (at a minimum). The Contractor shall consult the design engineer on any technical questions or concerns.

Hydrostatic testing shall consist of a 150 psig test pressures, based on the elevation of the highest point of the line or section under tests. Pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. The pump, pipe connection and all

necessary apparatus shall be furnished by the Contractor and shall be subject to the approval of the Engineer.

Maximum duration for pressure test, including initial and final phase of the test, shall not exceed eight (8) hours. If the test is not completed due to leakage, equipment failure, etc., depressurize the test section, and then allow it to "relax" for at least eight (8) hours before bringing the test section up to test pressure again.

Initial Phase of Pressure Testing. First, all air shall be removed from the test section. The pressure test shall be completed after the line is backfilled. If possible, all flanged or mechanical joint valves and fittings shall be left exposed for visual leak inspection. If possible all PVC and D.I.P. test sections shall be left exposed for visual leak inspection. Initially, the pressure within the test section should be raised to approximately 160 psi and then allowed to be idle (no additional make-up water/pressure to be injected), for approximately three (3) hours. During this three (3) hour period, the test section shall be allowed to stabilize and come to an equilibrium stage. No additional make-up water/pressure shall be applied to the test section during this three (3) hour stabilization period unless the line pressure drops below 140 psi. In this case, make-up water/pressure shall only be applied to the test section to maintain a minimum of 140 psi (during the 3 hour stabilization period).

Final Phase of Pressure Testing. The final phase of the pressure test shall involve applying make-up water/pressure to achieve an "initial test pressure" of 150 psi (minimum)/155 psi (maximum). The test section is then allowed to be idle (no make-up water/pressure is added) for a period of two (2) hours. After this 2-hour period, make-up water/pressure is applied and measured to re-establish the "initial test pressure". The quantity of water utilized to re-pump the line shall be measured and compared to the allowable quantities as determined by the table below. If the actual make-up water quantity is equal or less than the allowable amount, the pressure test passes. If the actual make-up water quantities are greater than the allowable amount, the pressure test shall be considered a failure.

Table 1: Allowable Make Up Amount

Nominal Pipe Size inches	Make-up Water Allowance 2-hour test gallons/linear feet of Pipe
6	0.003
8	0.005
10	0.0065
12	0.0115
14	0.014
16	0.0165
18	0.0215
20	0.0275
22	0.035
24	0.044
26	0.05
28	0.0555

30	0.0635
32	0.0715
34	0.081
36	0.09
42	0.1155
48	0.1350
54	0.1570

In the event a section fails to pass the tests, the Contractor shall do everything necessary to locate, uncover (even to the extent of uncovering the entire section), and replace the defective pipe, valve, fitting or joint. Visible leaks shall be corrected regardless of total leakage. Lines which fail to meet these tests shall be retested as necessary until test requirements are complied with. All testing shall be performed at the Contractor's expense.

If, in the judgment of Engineer, it is impracticable to follow the foregoing procedures exactly for any reason, modifications in the procedure shall be made with approval; but, in any event, the Contractor shall be responsible for the ultimate tightness of the piping within the above requirement. Re-disinfection shall be required if the line is de-pressurized for repairs.

907-603.03.6--Locate Wire. Locate wire shall be provided on all installations. Locate wire shall be 12 AWG copper-clad carbon steel with 30 mils (min) insulation. Locate wire shall be brought to grade within a valve box or locate station box at all "entry point locations" and all "exit point locations". There is no maximum length or interval between locate wire stations.

907-603.04--Method of Measurement. Directional drilling of the size and type specified will be measured by the linear foot of actual installation, measured in place along the surface of the ground. No additions or deductions will be made, for sweeps in either the vertical or horizontal direction to complete the installation. No payment shall be made on abandoned bore.

907-603.05--Basis of Payment. Directional drilling, measured as prescribed above, will be paid for at the contract unit price per linear foot, which price shall include all cost of labor, materials, testing, and incidentals necessary to complete the work.

Payment will be made under:

907-603-DD: Directional Bore, ___" HDPE * - per linear foot

* Additional description may be added

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-604-8 **CODE: (SP)**

DATE: 02/13/2013

SUBJECT: Manholes, Inlets And Catch Basins

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Section 604, Manholes, Inlets, and Catch Basins, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-604.02--Materials. After the last paragraph of Subsection 604.02 on page 367, add the following.

Precast sanitary sewer manholes shall conform to the requirements of ASTM C478 and shall be cast with Kor-N-Seal I boot as manufactured by Fernco or an approved equal for connecting sanitary sewer pipes to manholes. After installation of the pipe, the pipe shall be grouted in place with a non-shrink grout by filling the inside of the boot with grout from inside the manhole.

Prior to installation, two coats of coal tar epoxy shall be applied to the inside of all precast sanitary sewer manhole sections, unless a 100% solids polymer system is otherwise required. After installation coal tar epoxy shall be reapplied to areas where it has been chipped, marred, etc.

Sanitary sewer manholes shall be furnished with "Ram-Nek" or approved equal gaskets. All joints in the manholes shall be wrapped tightly with Infi-Shield External Gator Wrap or approved equal. The wrap shall be overlapped a minimum of six inches (6”).

Each section shall have not more than two holes for the purpose of handling. These holes shall be plugged with a non-shrink grout immediately after installation and covered with a minimum 9” x 9” patch of “Gator Wrap” or approved equal.

All sanitary sewer manholes that have a sanitary sewer force main entering it, or other manholes as directed by the Engineer, shall be lined with a 100% solids polymer lining after installation. The lining shall be reapplied to areas where it has been chipped, marred, etc. prior to final acceptance.

All of the cold joints on boxes, inlets, etc. that are poured in lifts shall be wrapped tightly with a three foot (3') band of geotextile filter fabric. Filter fabric shall be over-lapped three feet (3’). The Contractor shall secure the filter fabric to the box, inlet, etc. to hold it in place throughout the backfilling operation.

Geotextile fabric shall be non-woven, needle punched, and weigh a minimum of eight ounces (8 oz.) per square yard, as manufactured by Terratex Construction Fabrics, "NO8", or approved equal.

All inlets and boxes deeper than three feet (3') will require reinforced copolymer polypropylene plastic steps at 12" O.C. conforming to ASTM C478. Reinforced copolymer polypropylene plastic steps shall be built into the walls of the precast sanitary sewer manhole sections at 12" O.C. conforming to ASTM C478. Steps in all boxes, inlets and manholes shall be installed in a straight alignment so as to form a continuous ladder. Spacing from top of inlet, manhole, or box shall be no more than two feet (2') unless approved otherwise by Engineer.

Pre-cast storm drain structures shall not be used. All storm drain structures (e.g. inlets, catch basins, manholes, junction boxes, etc.) shall be cast-in-place.

"Size II Stabilizer Aggregate" for bedding shall be in accordance with Section 907-304, Granular Courses.

907-604.03--Construction Requirements.

907-604.03.2--Concrete Masonry. After the last paragraph in Subsection 604.03.2 on page 368, add the following.

A precast concrete adjusting ring may be used on precast concrete manholes upon approval of the Engineer. The adjusting ring shall be set on a one-inch (1") mortar bed to connect the ring to the manhole. The connection shall be constructed to be smooth, neat, and watertight on the inside and the outside of the manhole.

907-604.03.5--Inlet and Outlet Pipes. After the last paragraph in Subsection 604.03.5 on page 368, add the following.

Concrete invert channels shall be poured in all manholes, boxes, inlets, etc. in the field by the Contractor and shall be smooth and accurately shaped to a semi-circular bottom conforming to the inside of the adjacent pipe section. Inverts shall extend up at least half of the diameter of the pipe. Changes in direction of flow of entering branches shall have a true curve of as large a radius as the size of the structure will permit. All flow shall be blocked off during the time that the invert is being worked on. No debris shall be allowed to enter the structure.

Inlet and outlet pipes shall be placed in existing structures by cutting through the walls and reshaping the inverts. The Contractor shall use a non-shrink grout to install a Fernco concrete manhole adapter around the pipes so as to prevent leakage and to refinish the part of the structure worked on.

Where in any sanitary sewer manhole the vertical distance from the flow line of the outgoing sewer to the invert of the incoming sewer exceed two feet (2'), drop pipe shall be built for the incoming sewers. Drop sizes will be as directed by the City.

The Contractor shall stub an eighteen inch (18") long piece of six inch (6") diameter perforated SDR-26 pipe through the sidewall of all drainage structures as directed by the City Engineer. The entire length of the perforated pipe stub-out shall be wrapped in eight ounce (8 oz.) geotextile fabric. The perforated pipe shall be installed in such a manner that silt is prevented from entering the open end of the stub-out and the perforations. The holes in the perforated pipe shall be one-half inch (1/2") in diameter.

907-604.03.06--Castings, Gratings, and Fittings. After the last paragraph in Subsection 604.03.6 on page 368, add the following.

All castings shall meet AASHTO M306, latest revision.

907-604.03.07--Precast Manholes. Delete Subsection 604.03.7 in its entirety.

907-604.03.8--Excavation and Backfill. Delete the last sentence of Subsection 604.03.8 on page 369, and substitute the following.

All backfill placed around manholes, inlets, catch basins, junction boxes, conflict boxes, and any other structure shall be placed in 6 to 8-inch lifts and compacted to 95% density in accordance with ASTM D 1557. The Contractor shall take density tests around all four (4) sides of all structures to assure proper compaction.

After Subsection 604.03.9 on page 369, add the following.

907-604.03.10--100% Solids Polymer Liner. 100% Solids Polymer Liner system shall be applied to manholes as indicated on the drawings or in accordance with this specification and in accordance with the manufacturer's written instructions. Materials shall be in accordance with the CCI Spectrum SpectraShield Liner System, or approved equal. Application contractor shall be approved and certified by the lining manufacturer. Installed lining shall be warranted by the contractor and manufacturer for a period of not less than ten (10) years. Total final dry film thickness shall be 500 mils.

907-604.04--Method of Measurement. Delete the second, sixth, and seventh paragraphs of Subsection 604.04 on page 369 & 370, and substitute the following.

Castings, gratings and ductile iron fittings, measured as prescribed above, will be computed in pounds from the dimensions and weights shown on the plans and submittals.

"Size II Stabilizer Aggregate" for bedding, measured as prescribed above, shall be measured and paid in accordance with Section 907-304-1, "Granular Courses".

Backfill, filter fabric, "Gator Wrap", steps, concrete for drop manholes, grout, inverts, and coal tar epoxy liner, will not be measured for separate payment. The cost thereof shall be absorbed in the unit prices bid for other items.

The perforated pipe stubbed out of all drainage structures, including geotextile fabric, will not be measured for separate payment. The cost thereof shall be absorbed in the unit price bid for other items.

SDR-26 sewer pipe and fittings, measured as prescribed above, shall be paid in accordance with section 907-610-1, "Sanitary Sewer Lines and Appurtenances."

Sanitary sewer manholes, measured as prescribed above, will be measured by the number of units as specified for depth intervals of zero to six foot (0-6'), six to eight foot (6-8'), eight to ten foot (8-10'), and progressing on two-foot intervals. The invert of the lowest inlet pipe to the finished grade at the top of the casting will determine the overall depth of the manhole. This measurement must exceed the higher end of the depth interval by seven inches (7") in order for the manhole to be counted in the next incremental depth category.

100% Solids Polymer Liner System shall be measured by square feet for which the system is applied. The cost shall include any corrections or additions.

Fittings will not be measured for separate payment, unless stated otherwise herein. Their cost shall be absorbed in the unit price bid for other items.

907-604.05--Basis of Payment. After the second paragraph of Subsection 604.05 on page 370, add the following.

Sanitary sewer manholes will be paid for at the contract unit price per each, complete in place. These prices shall be full compensation for completing the work specified.

100% Solids Polymer Liner System will be paid for at the contract unit price of square feet complete in place. These prices shall be full compensation for completing the work specified.

Ductile iron fittings will be paid for at the contract unit price per pound, which shall be full compensation for completing the work. Standard or full size ductile iron fitting weights (in accordance with AWWA C110) were used to calculate the quantity listed in the bid proposal.

SDR-26 sewer pipe and fittings shall be paid in accordance with 907-610, Sanitary Sewer Lines and Appurtenances.

Add the following to the list of pay items on page 370.

907-604-A: Castings	- per pound
907-604-B: Gratings	- per pound
907-604-C: ___' Dia. Precast Concrete Manhole (Depth)	-per each
907-604-D: Ductile Iron Fittings	- per pound
907-604-E: 100% Solids Polymer Liner	-per square foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-617-2 **CODE: (IS)**

DATE: 08/12/2005

SUBJECT: Right-Of-Way Markers

Section 617, Right-Of-Way Markers, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is deleted in toto and replaced as follows:

SECTION 907-617 - RIGHT-OF-WAY MARKERS

907-617.01--Description. This work consists of furnishing and placing right-of-way markers in accordance with the plans and these specifications and at points designated on the plans, or as directed. The work also shall include the removal of right-of-way markers from their original locations and resetting at new locations as specified or established.

Generally, Type "A" markers shall be placed in the ground and Type "B" markers shall be placed in concrete areas. The estimated quantity of markers will be shown on the plans, and it is the Contractor's responsibility to verify the type and number of markers required.

907-617.02--Materials. The right-of-way marker shall be constructed using a reinforcement bar of the size indicated and a brass or bronze cap as indicated on the plan sheet. The cap shall be Mark-It® model C/M-HS-3-1/4B, Berntsen® 6000 Series, or approved equal. The cap shall be stamped with information indicated on the plans. The rebar shall meet the requirement of Section 711 of the Standard specifications.

Right-of-way markers for placement in concrete shall be Mark-It® model C/M-SS-3-1/4B, Berntsen® C Series, or approved equal brass or bronze stem designed marker. The cap shall be stamped with information indicated on the plans.

The witness post shall be made of fiberglass or Poly Vinyl Chloride (PVC) and shall not rust, rot or corrode within the service temperature range of -40°F to 140°F. It shall be of the color and size indicated in the plans or contract documents. The color shall not be painted on the marker but shall be pigmented into the material composition of the post. The post shall feature ultra violet (U.V.) inhibitors to eliminate cracking, pealing and deterioration of the post.

907-617.03--Construction Requirements.

907-617.03.1--General. Markers shall be manufactured in accordance with the details shown on the plans and the requirements of this section.

Prior to installation, the rebar shall be checked to assure there are no large burrs or mushrooming on the end that will receive the brass cap. Any burrs shall be filed or ground off before installation. The Contractor shall use rebar drivers to eliminate mushrooming of the rebar during

the driving operations.

Type "B" markers may be installed in freshly placed concrete or placed in cured concrete by drilling and anchoring. The marker shall be anchored using a bonding material recommended by the manufacturer of the marker.

The Contractor shall use specially designed post drivers or other means necessary to eliminate damage to the witness posts during installation. The Contractor will not be required to place witness posts in concrete.

All letters, symbols, and other markings shall be as shown on the plans and shall be neatly imprinted in the caps.

The markers shall be set at the locations designated on the plans, or as directed by the Engineer with assistance as needed by the District Surveyor. The markers shall be set to within 1/4 inch of the lines indicated or established and a minimum of two inches below to a maximum of six inches below the natural ground elevation.

The layout and placement of right-of-way markers shall be performed by, or under the supervision of, or directed by, a Licensed Professional Surveyor who is duly licensed and entitled to practice as a Professional Surveyor in the State of Mississippi and shall have responsible charge for these duties. The duties performed by said Professional shall conform to the definitions under the practice of "land surveying" in Mississippi Law. The location of the markers shall be as shown in the plans. Accuracy standards for placement of markers shall be 0.05 feet relative to the project control established by MDOT using either state plane coordinate monuments or centerline control monuments used for construction; or those accuracies as listed in the Mississippi State Board of Licensure for Professional Engineers and Surveyors publication entitled "Standards of Practice for Surveying in the State of Mississippi". The more stringent of these two accuracy standards will apply and shall be used. The Contractor shall not engage the services of any person in the employ of the Department for the performance of any of the work covered by this Section or any person who has been employed by the Department within the past six months, except those who have legitimately retired from service with the Department during this period.

The Department will establish, one time only, State Plane Coordinate System horizontal control monuments. It shall be the responsibility of the Contractor to establish additional control as may be required to facilitate the staking of the right-of-way. Control monuments set by the Contractor shall meet the minimum standards of surveying as required by the Mississippi State Board of Licensure for Professional Engineers and Surveyors. The accuracy of the control established by the Contractor shall be not less than 1:20,000 relative to the control provided by the Department. The Contractor shall reference, guard and protect control points from damage and obliteration. The Contractor shall verify the accuracy of the control points before proceeding with the installation.

907-617.03.2--Removal of Existing Markers. Existing right-of-way markers which are specified to be removed shall be removed in accordance with the plans or as directed by the

Engineer without additional compensation.

907-617.03.3--Certification. After all the markers are installed, the Licensed Professional Surveyor tasked with responsible charge for this installation shall submit a written certification to the Engineer certifying that all right of way markers were set at the locations designated on the plans, or otherwise directed by MDOT, and to the specified tolerances. The certification shall also include a copy of the right-of-way plan sheets with the right-of-way marker table completed for all locations in which the Licensed Professional Surveyor installed right-of-way markers. The table shall be completed showing the as-built (in-place) northing and easting location based on the State Plane Coordinate System. Each right-of-way plan sheet shall be signed and stamped by the Licensed Professional Surveyor.

The Licensed Professional Surveyor tasked with responsible charge will furnish a signed and stamped Final Right-of-Way Plat meeting the minimum standards of surveying for a Class A, B, or C survey as required by the Mississippi State Board of Licensure for Professional Engineers and Surveyors. In no incidence shall the standards for surveying be less accurate than a Class C survey.

The Final Right-of-Way Plat shall show all horizontal control points, whether provided by the Department or by the Contractor. In addition, the as-built project alignment shall be shown with stationing, curve data, and State Plane Coordinates for the BOP, PC's, PT's, and EOP.

907-617.04--Method of Measurement. Right-of-way markers will be measured by the unit. Such measurements shall include all the components and imprinting necessary for the right-of-way marker, the witness post and surveying decals, all labor, materials and incidentals necessary to furnish a complete in-place right-of-way marker.

907-617.05--Basis of Payment. Right-of-way markers will be paid for at the contract unit price per each, which shall be full compensation for completing the work.

Payment will be made under:

907-617-A: Right-of-Way Marker - per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-619-4 **CODE: (SP)**

DATE: 12/4/2007

SUBJECT: Construction Safety Fence

Section 619, Traffic Control for Construction Zones, of the 2004 Edition of Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-619.02--Materials. After Subsection 619.02.13 on page 424, add the following:

907-619.02.14--Construction Safety Fence. Construction safety fence shall be 4-foot orange safety fence manufactured by Tenex, Nilex, Roadtech , or approved equal.

Steel tee post shall meet the requirements of Subsection 712.05.2.2.

Tie wire shall meet the requirements of Subsection 712.13.

907-619.03--Construction Requirements. After Subsection 619.03.9 on page 427, add the following:

907-619.03.10--Construction Safety Fence. In order to route the public, workers, and equipment around the work area or certain parts of the work areas, the Contractor shall install the fence at the location(s) shown on the plans, or directed by the Engineer. The fence shall be supported by at least 6-foot tee post spaced on 10-foot centers. The fence shall be secured to the post by aluminum fence tie wire.

907-619.05--Basis of Payment. After the last pay item listed in Subsection 619.05 on page 430, add the following.

907-619-L: Construction Safety Fence - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-619-5 **CODE: (SP)**

DATE: 03/09/2009

SUBJECT: Changeable Message Signs

Section 619, Traffic Control for Construction Zones, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-619.02--Material Requirements. After Subsection 619.02.13 on page 424, add the following.

907-619.02.14--Changeable Message Sign. This work shall consist of furnishing, testing, and maintaining a trailer-mounted electronic Portable Changeable Message Sign (PCMS) assembly. The sign display shall be a LED, full matrix sign. If more than one portable changeable message sign is required for this project, they shall all be of the same model and from the same manufacturer. All parts and materials used to construct the portable changeable message signs shall be interchangeable.

The PCMS shall be a trailer-mounted, solar powered, portable changeable message sign.

Each PCMS shall include the following main components:

a) Sign Housing
b) LED Modules
c) LED Drivers
d) Battery Bank
e) Sign Controller
f) Trailer
g) AC Charger
h) Solar Panel
i) Solar Panel Charger

The LED display shall be full matrix sign with a minimum of 28-pixel rows x 50-pixel columns. The pixel spacing shall be such that three (3) lines of text (5 columns x 7 rows, 8 characters) shall each have a nominal height of 18 inches.

The PCMS shall include a remote communications interface as specified herein. The PCMS shall be provided with a local serial and USB connection within the sign control cabinet so that a laptop computer using the remote software can communicate directly with the sign CPU.

This Special Provision incorporates normative references to other standards as outlined in Section 1 of the NEMA TS-4 standard and as listed below.

NEMA TS4-2004, Hardware Standards for Dynamic Message Signs (DMS) with NTCIP Requirements. All NEMA TS-4 requirements that are applicable to portable signs shall be used.

NTCIP Standards.

If a conflict between the standards referenced and this Special Provision, this Special Provision shall govern.

The definitions of the terms used within this Special Provision are as defined in Section 1 of the NEMA TS-4 standard.

If required in the contract, the PCMS shall include a speed radar unit as specified herein.

907-619.02.14.1--Mechanical Construction. Each PCMS shall meet the following minimum requirements.

Weather-Tight Enclosure. The entire sign and trailer assembly, including each component / equipment exposed to weather, shall be fully protected. It shall withstand the effects of sand, dirt, dust, moisture, hose-directed water, ice, snow and UV radiation (UVA and UVB). It shall withstand the effects of high wind loading and blowing rain as specified herein with all outriggers and/or leveling jacks in place. The sign and all components shall be watertight. Space shall be provided for manuals to be stored in a weatherproof environment.

Wind Loading. Wind loading requirements for the portable sign housing and trailer assembly shall be as specified in Section 3.3.2.1.2 of the NEMA TS-4 standard.

Welding. All welding on all major structural components (aluminum or steel) shall be performed by certified welders and in accordance to SAE/AWS D8.8 American Welding Society.

Protective Coatings. Protective coatings or processes, such as anodizing, e-coating, powder coat painting, plating, etc., shall be incorporated to protect all sign, cabinet, and trailer metal surfaces from corrosion. Any non-protected metallic fasteners shall be made of stainless steel or aluminum. All components shall be similar material, or be isolated to reduce galvanic reactions.

Temperature and Humidity. Each PCMS shall be designed to operate continuously in extreme ambient temperature ranges and at high humidity levels.

Operating ambient temperature range of the portable sign and trailer assembly shall be -29^{o}F to +165^{o}F. Storage temperature range shall be from -40^{o}F to +185^{o}F. The portable sign shall be capable of continued operation within the operating temperature ranges specified without the need for active systems (i.e., fans). Operating relative humidity level of the portable sign shall be up to 95% non-condensing.

Sign Face. Sign face material shall be protected by a non-glaring polycarbonate material of at least ¼-inch thickness. It shall be replaceable and manufactured of material rated for outside use and resistant to UV degradation (exposure to the sun).

All electronics and pixels shall be protected from damage due to moisture.

Sign Housing Construction. The portable sign housing, including its front face panels, shall be designed to conform to the requirements of minimum NEMA Type 3R, as described in the latest edition of NEMA 250.

It shall be comply with latest structural AASHTO requirements.

It shall be constructed of aluminum sheeting which shall not be less than 1/8-inch thick with all seams continuously welded by the inert gas process.

The front of the sign housing shall have a flat black matte finish.

Weep holes shall be provided in the housing to allow moisture from condensation to escape.

The sign housing and cabinets shall be designed to keep insects out.

The sign housing shall be constructed in such a manner as to prohibit stray light from reducing legibility.

All sides of the sign housing shall have a maintenance-free finish.

Alignment of the sign housing shall be capable of being horizontally adjusted to position the sign a full 360 degrees. It shall be capable of rotating and locking at any selected horizontal angle up to 360 degrees. A sight alignment tube/device shall be mounted to horizontally position the sign display. A positive brake assembly with lockable control arm shall be provided to position the sign display in the desired position.

It shall allow easy access to all components contained within the display housing without the removal of any external parts. Door locks shall be rigidly mounted. Gasketing shall be provided on all door openings and shall be dust-tight, permanently bonded to the door metal, and shall not stick to the mating metal surface. A gasket channel shall be provided to support the gasket on the door.

Trailer. Each PCMS trailer shall meet all requirements for trailers as outlined in Section 3.3.3 of the latest NEMA TS-4 standard as well as the following minimum requirements.

All trailers shall meet the requirements of FMVSS, Part 571 and SAE J684 for transport safety including, but not limited to the use of brakes, safety chains, coupling device, and lights. PCMS manufacturer shall provide instructions stating procedures necessary to insure safe transport.

The structural frame shall be capable of supporting the gross vehicle weight (GVW) load of the trailer corresponding to the axle and tire ratings that shall be in accordance with FMVSS, Part 571.

The tires shall be radial ST "Special Trailer" rated. The wheels shall be 15-inch steel wheels with five lug bolts per wheel. Each trailer wheel shall be equipped with one locking lug nut. A minimum of four keys for the locking lug nuts shall be supplied for each trailer.

The trailer shall be provided with a minimum of four outriggers or leveling jacks. One outrigger or leveling jack shall be mounted near each corner of the trailer. The length of the leveling jacks shall be such that when the trailer is level, all four jacks and the tongue jack can be lowered into the vertical position. The jacks shall be screw type jacks with a minimum 25-inch lift. Each jack shall include a swivel mechanism that allows the jacks to be swing up to a horizontal position for towing. The swivel mechanism shall secure the jack in both vertical and horizontal positions through a lock pin.

The trailer shall also be provided with a trailer stand mounted on the tongue of the trailer. The stand shall be corrosion resistant. It shall include a 6-inch wheel that allows horizontal positioning of the trailer. The stand shall be welded, not bolted, to the tongue of the trailer.

The trailer shall be provided with legal tail/brake lights, signals, and license plate mounting bracket. The trailer shall be supplied with an electrical harness assembly for connection to the tow vehicle and shall be terminated in a connector type to be specified by the Engineer.

The trailer shall be provided with a 2-inch "hammer blow coupler" style hitch in accordance with SAE J684 and interchangeable with a 2½-inch Pintle coupler / ring meeting SAE J847.

The trailer spring leafs shall be rated at a minimum of 3500 pounds.

The trailer shall be equipped with a sign display lift and control console. The lift shall be electric, hydraulic lift, or combination of both with manual backup lift. The lift shall be capable of lifting the display a minimum of seven feet (7') above the roadway surface. A mast safety pin shall be provided to prevent the sign display from falling in the event of an electric or hydraulic system failure.

The trailer shall have a minimum of 6,000-pound capacity hydraulic surge brake system along with a breakaway latch.

Illumination shall be provided as an integral part of the sign or trailer assembly to change the sign controller data in darkness.

The trailer shall contain batteries and photovoltaic (solar) panels as specified herein.

Photovoltaic (Solar) Panel System. Each PCMS shall include solar panels. A solar bank shall be assembled using multiple solar panels. All photovoltaic panels shall be listed in accordance with UL 1703, or equivalent. The solar cell bank shall have a minimum capacity of 240 watts. The

solar cell bank shall be mounted on a frame capable of being tilted at a minimum of one direction up to 61 degrees with zero degrees being horizontal. Solar cells shall be laminated between ethylene vinyl acetate and tempered glass. The solar panel shall incorporate an extruded aluminum frame. The solar battery charge controller shall include the following three state charger modes.

- Bulk
- Absorption
- Float

Battery Requirements. Each PCMS shall include batteries for primary energy storage on trailers. The battery bank capacity shall be a minimum of 900 amp/hours at 12VDC at 20-hour rate of discharge. The batteries shall be heavy duty deep cycle type rated for 80% discharge. A battery power disconnect shall be provided.

Battery enclosures shall be vented to prevent the accumulation of explosive gases. The battery cabinets must be lockable with a standard padlock.

AC Charging System. Each PCMS shall have an AC battery charging sub-system. The system shall be UL listed and operate from a standard 120VAC generator meeting all NEC requirements for portable equipment.

The solar battery charger shall include the following three state charger modes.

- Bulk
- Absorption
- Float

The AC battery charger shall have sufficient capacity to charge the battery bank from 80% discharged to fully charge in 24-hours, and operate the sign simultaneously. The AC battery charger shall be equipped with a male plug-in and a 50-foot long extension cord constructed of a minimum 12-guage wire for this purpose.

907-619.02.14.2--Controller to Sign Interface. Each PCMS shall meet all applicable controller to sign interface requirements as outline in Section 4 of the NEMA TS-4 standard.

907-619.02.14.3--Display Properties. Each PCMS shall have a cone of vision (viewing angle) from the center (reference axis) shall be a minimum 15 degrees with the half-power viewing angle defined such that at a given distance from the LED, luminous intensity measured at any point at an angle of 7.5 degrees from the LED's center axis is no less than half the luminous intensity measured directly on the LED's center axis.

The minimum word legibility requirements shall be 1232 feet or greater under daytime light conditions and within the cone of visions as specified. Legibility is defined as the ability to discern the content of a display using a "word message". The minimum word legibility

requirement shall be documented either by a MDOT approved independent testing laboratory or by participation in the NTPEP test program.

The minimum visibility requirements shall be 3000 feet or greater under daytime light conditions and within the cone of vision as specified. Visibility is defined as the ability to recognize that a display exists. The minimum visibility requirement shall be documented either by a MDOT approved independent testing laboratory or by participation in the NTPEP test program.

The PCMS shall be capable of displaying standard fonts and font alphabets as specified in Sections 5.6.1 and 5.6.2.3 of the NEMA TS-4 standard and adhere to NTCIP 1203. The PCMS shall also support moving arrows.

Any NTPEP test results shall be for the PCMS model being used and shall be within the last three completed test cycles.

907-619.02.14.4--Optical Components. The pixels for the PCMS shall be manufactured using Light Emitting Diodes (LED). Changes to displays shall be performed by turning the LEDs in a pixel either on or off. The discrete, LED shall be an untinted, non-diffused, solid-state lamp that uses Aluminum Indium Gallium Phosphide (AlInGap) technology manufactured by Avago Technologies (formerly Agilent Technologies), Toshiba Corporation, Nichia Corporation, or functional equivalent. Horizontal and vertical spacing between modules shall be such that the horizontal and vertical pitch between all pixels is equal. A failure of one pixel shall not effect the operation of any other pixel.

All LEDs used to create a display in a single portable sign shall have a nominally rated LED life of 100,000 hours of operation under field conditions. This shall include a operating temperatures between -29^{o}F to +165^{o}F. LED life shall be defined as the time it takes for the LED light output to degrade to half of the LED's initial light output. Current through an LED shall be limited to the manufacturer's recommendation under any conditions. Each LED character module shall be rated for use over the environmental range specified herein, including heat absorption due to sunlight. The LEDs shall be protected from the outside environmental conditions, including moisture, snow, ice, wind, dust, dirt, and UV rays (UVA and UVB). All LEDs shall be mounted so that they present a uniform and legible display.

Pixels shall be replaceable in modular groupings (modules). All modules within a sign shall be the same size and interchangeable. The replacement of any module shall be possible with no more that simple non-vendor-specific hand tools, such as screw drivers or wrenches, without any physical modification to the module.

907-619.02.14.5--PCMS Controller and Storage Cabinets. All PCMS controller and storage cabinets shall be minimum NEMA 3R rated and be completely encased and lockable with a standard padlock as specified herein. A separate lockable storage cabinet shall be provided to house various accessories. The controller cabinet shall be manufactured to withstand all types of adverse weather conditions and shall be designed and installed to keep insects out. All components inside the controller cabinet shall be accessible without disconnecting any

unassociated wires or components. The controller cabinet shall be illumination. The keyboard terminal and control panel shall be housed. Lighted keys and terminal displays are acceptable.

All controls in the controller cabinet shall be labeled. The cabinet shall have a voltmeter gauge to indicate the current battery charge status. It shall have an amp gauge to indicate the current/charging status. It will be acceptable to have a display via digital readout on a control console or panel.

907-619.02.14.6--Electronics and Electrical. Each PCMS shall meet all applicable electronics and electrical requirements as outline in Section 8 of the NEMA TS-4 standard.

Sign Controller. The PCMS shall include a local sign controller with firmware. The local control interface shall have a keyboard capable of allowing full programming and control of the PCMS locally. It shall have a separate serial RS-232 or USB connection to allow a laptop computer using the remote control software to communicate directly with the sign controller.

Local and remote interfaces shall be password protected to safeguard against unauthorized use.

It shall perform and report the following minimum sign diagnostics both through the local interface and Remote Control Subsystem.

- LED brightness controls
- Sign status
- Communications status
- Battery voltage
- Photocell ambient light level.

It shall automatically report a low battery alarm to a remote user through the Remote Control Subsystem. It shall have an alarm for the controller door open and over temperature.

It shall store and display both textual and graphical symbols. It shall store a minimum of 20 pre-programmed messages and graphics. It shall display preprogrammed (by manufacturer) Manual on Uniform Traffic Control Devices (MUTCD) symbolic messages and standard arrows. It shall schedule predetermined sequences of messages based on a programmed time and date. Each sequence shall display up to four (4) programmed messages (text and/or graphics). It shall display conventional one, two, or three-line messages for display with a choice of a minimum of three font sizes. Character width shall be proportional to the letter type. The one line message font size shall be capable of displaying messages in full size to utilize the maximum area of display.

It shall allow for automatic and manual controls to adjust the brightness of the LEDs. Automatic control shall be capable of varying the LED brightness by sensing the ambient light level using photocells. Manual brightness control shall be password protected to safeguard against unauthorized use.

It shall display a preprogrammed default message or no message at all, after a power recovery from a power failure. The sign shall shut down its LED display if internal cabinet temperatures reach a level that is determined unsafe by the manufacturer.

All communications and power cabling shall be either shielded or routed within conduit to minimize potential EMI/RFI effects.

Remote Control Subsystem. The PCMS shall be supplied with all the hardware and software necessary to control the PCMS from a remote central station.

It shall have a cellular phone and/or modem capable of communication using a MDOT provided cellular service provider. The Contractor shall coordinate with MDOT for cellular service provider. The Contractor shall be responsible for establishing cellular service and providing activated phone number(s) as directed and approved by the MDOT. The Contractor shall pay for cellular service for this project until the Final Maintenance Release as documented by the State Construction Engineer at which time it will be turned over to MDOT.

The cellular service type shall be CDMA/1xRTT or GSM/GPRS, as directed by MDOT.

It shall be capable of supporting connection and remote control, programming and diagnostics via the Internet.

The subsystem shall have all necessary hardware such as external antenna, communications cables, and controller interface and NTCIP Sign controller software. The central station software meeting the following minimum requirements:

- Windows XP compatible
- Capable of running on any desktop or laptop.
- Capable of controlling all PCMS functions through windows and GUIs (Graphical User Interface)
- NTCIP compatible as specified herein.

Communications. In addition to any protocols that may be available from the PCMS Manufacturer, each sign controller shall support NTCIP as follows.

- NTCIP Protocol and Command Sets**.** This specification references several standards through their NTCIP designated names and numbers. Each NTCIP Component covered by these project specifications shall implement the most recent version of the standard that is available as of project advertisement date, including any and all prepared Amendments to these standards as of the same date.

  Profile Implementation Conformance Specifications (PICS) for each NTCIP standard required shall be submitted for review and approval to the Department.

- RS-232 Interface. Communication interfaces using RS-232 shall conform, with the following minimum requirements.

1101 – NTCIP Simple Transportation Management Framework (STMF)
1203 - NTCIP Object Definition for Portable Dynamic Message Signs
2301 - NTCIP AP-STMF
2201 - NTCIP TP-Transportation Transport Profile
2103 – NTCIP SPPPP/RS232
2104 - NTCIP SP-PMPP/RS232

- Subnet Level**.** For each communication interface, the NTCIP Components may support additional Subnet Profiles at the manufacturer's option. At any time, only one Subnet Profile shall be active on a given communication interface. The NTCIP Component shall be configurable to allow the field technician to activate the desired Subnet Profile.

- Transport Level. For each communication interface, the communication interface may support additional Transport Profiles at the manufacturer's option. Response data-grams shall use the same Transport Profile used in the request. Each communication interface shall support the receipt of data-grams conforming to any of the identified Transport Profiles at any time.

- Application Level. For each communication interface, all interfaces shall comply with NTCIP 1101 and shall meet the requirements for Conformance Level 1 (NOTE -See Amendment to standard). Optionally, the NTCIP Component may support SNMP traps. A communication interface may support additional Application Profiles at the manufacturer's option. Responses shall use the same Application Profile used by the request. Each communication interface shall support the receipt of Application data packets at any time allowed by the subject standards.

  Information Level. For all communication interfaces, the information level protocol shall provide Full, Standardized Object Range Support of all objects required by these procurement specifications unless otherwise indicated below. The maximum Response Time for any object or group of objects shall be 200 milliseconds. All communication interfaces shall implement all mandatory objects of all mandatory Conformance Groups as defined in NTCIP 1203 and their respective Amendments. Table 1 indicates the modified object requirements for these mandatory objects. Table 2 shows the required minimum support of messages that are to be stored in permanent memory. The sign shall blank if a command to display a message contains an invalid Message CRC value for the desired message. Table 3 specifies the support of the required MULTI tags and their ranges.

  It shall also implement all mandatory objects of the following optional conformance groups of NTCIP 1201.

  - Time Management Conformal Group
  - Report Conformal Group. Table 4 indicates the modified object requirements.
  - Implement all objects of the Font Configuration Conformance Group, as defined in NTCIP 1203. Table 5 indicates the modified object requirements for this conformance group.

- Implement all objects of the PCMS Configuration Conformance Group, as defined in NTCIP 1203.
- Implement all objects of the Multi Configuration Conformance Group, as defined in NTCIP 1203. Table 6 indicates the modified object requirements for this conformance group.
- Implement all objects of the Multi Error Configuration, as defined in NTCIP 1203.
- Implement all objects of the Illumination/Brightness.
- Sign Status, as defined in NTCIP 1203.
- Status Error, as defined in NTCIP 1203.
- Pixel Error Status, as defined in NTCIP 1203.
- The sign display shall be capable of displaying preprogrammed Manual on Uniform Traffic Control Devices (MUTCD) symbolic messages and standard arrows Since the display of graphics is currently not defined within the NTCIP Standards or their amendments, the vendor shall propose, and provide detailed documentation (i.e., interface protocol description level), how the specified graphical shapes can be displayed.
- Implement the optional objects listed in Table 7.

Table 1
Modified Object Ranges for Mandatory Objects

Object	Reference	Project Requirement
ModuleTableEntry	NTCIP 1201 Clause 2.2.3	Shall contain at least one row with moduleType equal to 3 (software). The moduleMake shall specify the name of the manufacturer, the moduleModel shall specify the manufacturer's name of the component and the modelVersion shall indicate the model version number of the component.
MaxGroupAddresses	NTCIP 1201 Clause 2.7.1	Shall be at least 1
CommunityNamesMax	NTCIP 1201 Clause 2.8.2	Shall be at least 3
PCMSNumPermanentMsg	NTCIP 1203 Clause 2.6.1.1.1.1	Shall be at least 20*
PCMSMaxChangeableMsg	NTCIP 1203 Clause 2.6.1.1.1.3	Shall be at least 50. Each message shall support at least 4 pages per message.
PCMSFreeChangeableMemory	NTCIP 1203 Clause 2.6.1.1.1.4	Shall be at least 70 when no messages are stored.
PCMSMessageMultiString	NTCIP 1203 Clause 2.6.1.1.1.8.3	The PCMS shall support any valid MULTI string containing any subset of those MULTI tags listed in Table 4.
PCMSControlMode	NTCIP 1203 Clause 2.7.1.1.1.1	Shall support at least the following modes: ▪ local ▪ external ▪ central ▪ centralOverride

Table 2
Content of Permanent Messages

Perm. Msg. Num.	Section 12 Description
1	Permanent Message #1 shall blank the display (i.e., command the sign to use PCMSMessageType 7). It shall have a run-time priority of 50.

Table 3
Required MULTI Tags

Code	Feature
f1	Field 1 - time (12hr)
f2	Field 2 - time (24hr)
f8	Field 8 - day of month
f9	Field 9 – month
f10	Field 10 - 2 digit year
f11	Field 11 - 4 digit year
Fl (and /fl)	flashing text on a line by line basis with flash rates controllable in 0.5 second increments.
Fo	Font
J12	justification - line – left
J13	justification - line – center
J14	justification - line – right
J15	justification - line – full
Jp2	justification - page – top
Jp3	justification - page - middle
Jp4	justification - page - bottom
Nl	New line
Np	New page, up to 2 instances in a message (i.e., up to 4 pages/frames in a message counting first page)
Pt	page times controllable in 0.5 second increments.

Table 4
Modified Object Ranges for the Report Conformance Group

Object	Reference	Project Requirement
maxEventLogConfigs	NTCIP 1201 Clause 2.5.1	Shall be at least 50
eventConfigurationMode	NTCIP 1201 Clause 2.4.3.1	The NTCIP Component shall support the following Event Configuration Modes: ▪ onChange ▪ greaterThanValue ▪ smallerThanValue
maxEventLogSize	NTCIP 1201 Clause 2.5.3	Shall be at least 200
maxEventClasses	NTCIP 1201 Clause 2.5.5	Shall be at least 16

Table 5
Modified Object Ranges for the Font Configuration Conformance Group

Object	Reference	Project Requirement
numfont	NTCIP 1203 Clause 2.4.1.1.1.1	Shall be at least 3*
maxFontCharacters	NTCIP 1203 Clause 2.4.1.1.1.3	Shall be at least 127**

* Upon delivery, the first font shall be a standard 18-inch font. The second font shall be a double-stroke 18-inch font. The third font shall be a 28-inch font.

** Upon delivery, the first three font sets shall be configured in accordance with the ASCII character set for the following characters:

"A" thru "Z" - All upper case letters.
"a" thru "z" - All lower case letters.
"0" thru "9" - All decimal digits.
Space (i.e., ASCII code 0x20).
Punctuation marks shown in brackets [. , ! ? - ‘ ’ “ ” / ( )]
Special characters shown in brackets [# & * + < >]

Table 6
Modified Object Ranges for the MULTI Configuration Conformance Group

Object	Reference	Project Requirement
defaultBackgroundColor	NTCIP 1203 Clause 2.5.1.1.1.1	The PCMS shall support the following background colors: ▪ black
defaultForegroundColor	NTCIP 1203 Clause 2.5.1.1.1.2	The PCMS shall support the following foreground colors: ▪ amber ▪ orange
defaultJustificationLine	NTCIP 1203 Clause 2.5.1.1.1.6	The PCMS shall support the following line justification: ▪ Left ▪ Center ▪ Right ▪ Full
defaultJustificationPage	NTCIP 1203 Clause 2.5.1.1.1.7	The PCMS shall support the following forms of page justification: ▪ Top ▪ Middle ▪ Bottom
defaultPageOnTime	NTCIP 1203 Clause 2.5.1.1.1.8	The PCMS shall support the full range of these objects with step sizes no larger than 0.5 seconds
defaultPageOffTime	NTCIP 1203 Clause 2.5.1.1.1.9	The PCMS shall support the full range of these objects with step sizes no larger than 0.5 seconds
defaultCharacterSet	NTCIP 1203 Clause 2.5.1.1.1.10	The PCMS shall support the following character sets: ▪ eightBit

Table 7
Optional Object Requirements

Object	Reference	Project Requirement
globalSetIDParameter	NTCIP 1201 Clause 2.2.1	
eventConfigLogOID	NTCIP 1201 Clause 2.5.2.7	
eventConfigAction	NTCIP 1201 Clause 2.5.2.8	
eventClassDescription	NTCIP 1201 Clause 2.5.6.4	
defaultFlashOn	NTCIP 1203 Clause 2.5.1.1.1.3	The PCMS shall support the full range of these objects with step sizes no larger than 0.5 seconds
defaultFlashOff	NTCIP 1203 Clause 2.5.1.1.1.4	The PCMS shall support the full range of these objects with step sizes no larger than 0.5 seconds
PCMSSWReset	NTCIP 1203 Clause 2.7.1.1.1.2	
PCMSMessageTimeRemaining	NTCIP 1203 Clause 2.7.1.1.1.4	
PCMSShortPowerRecoveryMessage	NTCIP 1203 Clause 2.7.1.1.1.8	
PCMSLongPowerRecoveryMessage	NTCIP 1203 Clause 2.7.1.1.1.9	
PCMSShortPowerLossTime	NTCIP 1203 Clause 2.7.1.1.1.10	
PCMSResetMessage	NTCIP 1203 Clause 2.7.1.1.1.11	
PCMSCommunicationsLossMessage	NTCIP 1203 Clause 2.7.1.1.1.12	
PCMSTimeCommLoss	NTCIP 1203 Clause 2.7.1.1.1.13	
PCMSEndDurationMessage	NTCIP 1203 Clause 2.7.1.1.1.15	
PCMSMemoryMgmt	NTCIP 1203 Clause 2.7.1.1.1.16	The PCMS shall support the following Memory

		management Modes: ▪ normal ▪ clearChangeableMessage ▪ clearVolatileMessages
PCMSMultiOtherErrorDescription	NTCIP 1203 Clause 2.7.1.1.1.20	If the vendor implements any vendor-specific MULTI tags, the PCMS shall be provided with documentation that includes meaningful error messages within this object whenever one of these tags generates an error.
PCMSIllumLightOutputStatus	NTCIP 1203 Clause 2.8.1.1.1.9	
watchdogFailureCount	NTCIP 1203 Clause 2.11.1.1.1.5	
PCMSStatDoorOpen	NTCIP 1203 Clause 2.11.1.1.1.6	
fanFailure	NTCIP 1203 Clause 2.11.2.1.1.8	
fanTestActivation	NTCIP 1203 Clause 2.11.2.1.1.9	
tempMinCtrlCabinet	NTCIP 1203 Clause 2.11.4.1.1.1	
tempMaxCtrlCabinet	NTCIP 1203 Clause 2.11.4.1.1.2	
tempMinSignHousing	NTCIP 1203 Clause 2.11.4.1.1.5	
tempMaxSignHousing	NTCIP 1203 Clause 2.11.4.1.1.6	

NTCIP Compliance Documentation. Software shall be supplied with full documentation, including a CD-ROM containing ASCII versions of the following Management Information Base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format.

The relevant version of each official standard MIB Module referenced by the device functionality shall be included. If the device does not support the full range of any given object within a Standard MIB Module, a manufacturer specific version of the official Standard MIB Module with the supported range indicated in ASN.1 format in the SYNTAX and/or DESCRIPTION fields of the associated OBJECT TYPE macro shall be provided. The filename of this file shall be identical to the standard MIB Module, except that it will have the extension ".man".

A MIB Module in ASN.l format containing any and all manufacturer-specific objects supported by the device with accurate and meaningful DESCRIPTION fields and supported ranges indicated in the SYNTAX field of the OBJECT-TYPE macros shall be provided. This includes a MIB containing any other objects supported by the device.

Additionally, the manufacturer shall provide a test procedure that demonstrates how the NTCIP compliance of both, the data dictionaries (NTCIP 1201, 1203, and their amendments) and the communications protocols have been tested. The manufacturer shall allow the use of any and all of this documentation by any party authorized by the Procuring Agency for systems integration purposes at any time initially or in the future, regardless of what parties are involved in the systems integration effort.

907-619.02.14.7–Additional Equipment Requirements. When the contract requires the PCMS to include a speed radar unit, the radar shall operate in the "K" band, in an "approach only" mode. In conjunction with the radar, the sign shall be capable of displaying the vehicle speeds. The unit shall be programmable to allow the interruption of user-defined messages by the vehicle speed display and/or alternate messages whenever a settable speed threshold is exceeded. The radar unit shall be encased in an aluminum enclosure with a polycarbonate lens, and the metal portion shall receive the same protective coating, priming, and painting as the rest of the sign

907-619.02.14.8–System Documentation. For each PCMS, the Contractor shall provide two (2) user manuals. The user manual shall include description and samples for all operational functions, software required to operate the sign on site and remotely, all wiring diagrams, a parts lists, the sign specifications, warranty information, maintenance information and schedule, and a trouble shooting table

Each copy shall be bound and shall contain laminated sheets.

907-619.03--Construction Requirements. After Subsection 619.03.9 on page 427, add the following.

907-619.03.10--Changeable Message Sign. Each changeable message sign shall be installed and continuously operated at the location selected by the Engineer on State right-of-way. The Contractor is advised that selected locations may be outside the planned indicated limits of the project. The Contractor shall perform all work necessary for preparation of the site selected and approved by the Engineer, to insure maximum safety for and sign visibility of the traveling public; and may be required to remove any temporary work at a later date as directed by the Engineer. The Contractor will also place a minimum of two plastic drums in advance of the sign and one beside the sign as long as it is in use. The Contractor shall be required to move the sign to a new location if directed by the Engineer.

The Contractor may be permitted to bring electric power from outside the normal right-of-way for operation of the equipment if the Department determines that the installation operation will not be hazardous to the traveling public. The Contractor will be required to secure a permit from the Department prior to any work by the power company on the right-of-way. The entire cost of

providing electrical service, power to operate the equipment, and removal of the power source from the right-of-way shall be borne by the Contractor.

The changeable message sign(s) will remain the property of the Contractor after the Engineer determines that there is no further need for the sign(s) on the project.

907-619.04--Method of Measurement. After the last paragraph of Subsection 619.04 on page 428, add the following.

Changeable message signs, as described above, will be measured by the unit. When directed, separate measurements will be made for items included in the contract and required for temporary site preparation for the sign as referenced in Subsection 907-619.03.10. Materials for which no pay items are included in the contract will not be measured for separate payment. Separate measurements will not be made for moving the changeable message sign to a new location, but materials used for which pay items are included in the contract and are necessary for repositioning the sign as directed by the Engineer will be measured for separate payment. Removal of materials used for site preparation for changeable message signs will not be measured for separate payment.

907-619.05--Basis of Payment. After the second paragraph of Subsection 619.05 on page 428, add the following.

Payment for items required by the Engineer for temporary location of the changeable message sign, and for which pay items are included in the contract, will be made by the individual pay item. No additional payment will be made for having to work outside the planned indicated project limits.

Payment for removal of materials used for site preparation at changeable message sign locations shall be included in the contract bid price for Maintenance of Traffic.

Between pay item nos. 619-E2 and 619-F1 on page 429, insert the following:

907-619-E3: Changeable Message Sign * - per each

* Indicate when options are required

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-626-25 **CODE: (IS)**

DATE: 11/13/2012

SUBJECT: Thermoplastic Traffic Markings

Section 626, Thermoplastic Traffic Markings, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-626.01--Description. After the last sentence of the first paragraph of Subsection 626.01 on page 443, add the following.

All pavement marking material, excluding edge lines over rumble strips, shall be applied using the extrusion/ribbon method. Edge lines placed over rumble strips shall be applied using the atomization/spray method.

907-626.03.1.1--Equipment. After the second paragraph of Subsection 626.03.1.1 on page 444, add the following.

When edge lines are placed over rumble strips, the equipment must be able to apply the marking material using the atomization/spray method instead of extrusion/ribbon method.

907-626.03.1.2--Construction Details. Delete the second sentence of the first full paragraph of Subsection 626.03.1.2 on page 445, and substitute the following.

Unless otherwise specified in the plans or contract documents, the thickness shall be 90 mils for edge lines, center lines, lane lines, barrier lines and detail stripe including gore markings, and 120 mils for crosswalks, stop lines, and railroad, word and symbol markings.

After the last sentence of the third full paragraph of Subsection 626.03.1.2 on page 445, add the following.

When double drop thermoplastic stripe is called for in the contract, additional beads by the drop-on method shall be applied as follows.

Class A glass beads at a rate of not less than three pounds of beads per 100 feet of six-inch stripe.
Class B glass beads at a rate of not less than three pounds of beads per 100 feet of six-inch stripe.

The Class B glass beads shall be applied to the newly placed stripe first, followed by the application of the Class A glass beads.

907-626.05--Basis of Payment. Delete the pay items listed on page 446 and substitute the following.

907-626-A:	6" Thermoplastic* Traffic Stripe, Skip White	- per linear foot or mile
907-626-B:	6" Thermoplastic* Traffic Stripe, Continuous White	- per linear foot or mile
907-626-C:	6" Thermoplastic* Edge Stripe, Continuous White	- per linear foot or mile
907-626-D:	6" Thermoplastic* Traffic Stripe, Skip Yellow	- per linear foot or mile
907-626-E:	6" Thermoplastic* Traffic Stripe, Continuous Yellow	- per linear foot or mile
907-626-F:	6" Thermoplastic* Edge Stripe, Continuous Yellow	- per linear foot or mile
907-626-G:	Thermoplastic* Detail Stripe, Color	- per linear foot
907-626-H:	Thermoplastic* Legend, White	- per linear foot or square foot

* Indicate Double Drop if applicable

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-627-1 **CODE: (SP)**

DATE: 06/08/2009

SUBJECT: Raised Pavement Markers

Section 627, Raised Pavement Markers, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-627.05--Basis of Payment. After the last pay item listed on page 449, add the following:

907-627-P: Two-Way Blue Reflective High Performance Raised Markers - per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-630-9 **CODE: (IS)**

DATE: 10/05/2010

SUBJECT: Contractor Designed Overhead Sign Supports

Section 630, Traffic Signs and Delineators, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-630.01--Description. Delete the last two paragraphs of Subsection 630.01 on page 454 and substitute the following:

The Contractor shall submit to the Bridge Engineer a design using steel. The design shall be a rectangular box truss connected at both the top and bottom to the vertical support posts. With the exception of cantilever mounts, overhead support structures shall have two vertical support posts at each end of the truss. Design drawings, calculations and other necessary supporting data shall be submitted as soon as possible after the Pre-Construction Conference. The design shall be prepared by a Professional Engineer registered in the State of Mississippi proficient in the design of overhead sign structures.

The Contractor shall obtain a surveyed cross section at the location of each new sign truss. The cross section will show the horizontal dimensions and elevations of ditches, edge of pavements, pavement crown lines, barriers and retaining walls. The cross section information shall be of sufficient accuracy to verify the sign truss dimensions required for each specific location. This information shall be submitted for review with the sign truss shop drawings and calculations.

The Contractor is responsible for designing and constructing modifications to barriers and retaining walls as necessary to carry sign truss loads for sign truss assemblies attached to such structures. Barrier faces must smoothly transition back to the existing barrier section as specified in the plans. All designs and proposed modifications must be stamped by the Contractor's engineer and submitted to the Engineer for review.

Bridge information plans are provided to assist the Contractor's Engineer in designing attachments to bridges. All bridge attachments must be submitted to the Bridge Engineer through the Project Engineer for review. Use of chemical adhesive anchors is prohibited. Mechanical anchors are permissible as approved by the Bridge Engineer. Mounting holes for sign assemblies attached to prestressed concrete girders shall be placed at locations where the prestressing strands are not damaged by drilling. Mounting sign assemblies to steel girders by welding is prohibited. A limited number of mounting holes may be drilled only in the steel girder webs at locations which do not interfere with existing members such as bolts, stiffeners, and splice plates. Attachments which cause concentrated loads on girder webs will be spread out along the web both vertically and horizontally by use of steel plates so as to not cause distortion in the web. Drilling in steel girder bottom flanges is prohibited.

The design wind speed shall be as shown in the design specifications with a minimum of 90 mph. In addition to the loads required in the design specifications, overhead sign supports shall be designed to support a uniform load of 40 pounds per linear foot applied to the vertical truss to which the signs are attached, extending along the truss across the roadway below from points four feet outside each outer edge of pavement, unless otherwise specified. Appropriate damping or energy absorbing devices shall be installed in the event that an overhead structure is erected without installation of the permanent sign panels or if the area of permanent sign panels installed is not sufficient to prevent detrimental wind-induced vibration.

The larger of the following sign configurations shall be used in the design of overhead sign support structures:

1) The sign dimensions and configuration shown in the contract plans
2) Sign Height: 20 feet; Sign Width: Pavement Edge to Pavement Edge plus six (6) feet
3) Sign Height: 20 feet; Sign Width: Post to Post Clear Spacing minus 60 feet

The sign widths in configurations 2) and 3) should be located symmetrically about the center of the truss.

907-630.05--Basis of Payment. Add the "907" prefix to pay item nos. 630-I and 630-J on page 463.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-631-1 **CODE: (SP)**

DATE: 05/04/2010

SUBJECT: Flowable Fill

Section 631, Flowable Fill, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is deleted in toto and replaced as follows:

SECTION 907-631 - FLOWABLE FILL

907-631.01--Description. This work shall consist of furnishing and placing a flowable fill material. Uses include, but are not limited to, placement under existing bridges, around or within box culverts or pipe culverts, or at other locations shown on the plans.

907-631.02--Materials. All materials shall meet the requirements of the following Subsections, or as stated herein:

Fine Aggregate	*
Portland Cement	701.01 and 701.02
Fly Ash	714.05
Air Entraining Admixtures **	713.02
Water	714.01.1 and 714.01.2
Calcium Chloride **	714.02

* The gradation of the fine aggregate shall be fine enough for the fine aggregate to stay in suspension in the mortar to the extent required for proper flow and shall conform to the following grading:

Sieve Size	% Passing
1/2 inch	100
No. 200	< 1

** High air generators shall be used, as required, in order to increase the total air content to 25 – 35%. Only approved high air generators shall be used to obtain the required air content. Either a Type C or E chemical admixture or maximum 1.0% calcium chloride by weight of the total cementitious materials may be added as required by the application and with the approval of the Engineer. Calcium chloride may not be used where the flowable fill comes into contact with metal. Adding the Type C or E chemical admixture or calcium chloride does not require a different or new mixture design from one previously approved.

907-631.02.1--Mixture Design. Flowable fill is a mixture of Portland cement, fine aggregate, water, and, as required to obtain the required total air content, either high air generators or air

entraining admixtures. Fly ash shall be used for Non-Excavatable applications. Flowable fill contains a low cementitious content for reduced strength development.

At least 30 days prior to production of flowable fill, the Contractor shall submit to the Engineer proposed flowable fill mixtures design following the mixture design submittal procedures listed in the Department's *Concrete Field Manual*.

The concrete producer shall assign a permanent unique mixture number to each flowable fill mixture design. All flowable fill mixture designs will be reviewed by the Materials Division prior to use. Flowable fill mixture designs disapproved will be returned to the Contractor with a statement explaining the disapproval.

Once approved, a flowable fill mixture design may be transferred to other projects without additional testing provided the material sources have not changed. Allowable changes in material sources shall meet the requirements of the Department's *Concrete Field Manual*, Section 5.7. For allowable changes in material sources, the mixture design shall be re-verified following the requirements of Subsection 907-631.02.1.2.

907-631.02.1.1--Proportioning of Mixture Design. The mixture design proportions shall be determined based on batches mixed using production equipment.

Table 1, "Flowable Fill Mixture Design Proportioning Guide", is a guide for proportioning flowable fill, except where noted.

Table 1
Flowable Fill Mixture Design Proportioning Guide

	Excavatable	Non-Excavatable
Material	Amount (lbs/yd^3)	
Cement	75 – 150 *	75 – 150 *
Fly Ash	-	150 – 600 *
Fine Aggregate	**	**
Water	***	***

* Guideline for proportioning. The actual amount may vary from the amount listed the Table 1.

** Fine aggregate shall be proportioned to yield one cubic yard of mixture as verified by unit weight.

*** Mixture designs shall produce a consistency that will result in a flowable self-leveling product at time of placement.

Each mixture design shall be verified using production equipment prior to submittal of the mixture design for review. During the verification, the mixture design shall meet the

requirements of the "Performance Requirements Flowable Fill Design" listed in Table 2. The verification performance data and the corresponding batch ticket shall be submitted with the mixture design.

Table 2
Performance Requirements for Verification of Flowable Fill Mixture Designs

Mixture Property	Performance Requirement		Required Test Method
	Excavatable	Non-Excavatable	
Consistency	Approximate 8-inch spread		(see below)
Total Air Content (%)	25 – 35	5 – 15	AASHTO T121
28 Day Compressive Strength (psi)	–	Minimum 125	AASHTO T22 and T23
Unit Weight (lbs/ft^3)	90 – 110	100 – 125	AASHTO T121

The consistency of the fresh mixture shall be that of a thin slurry. The consistency shall be tested by filling to the top a three-inch diameter by six-inch high cylinder which is open on both ends. With the mixture in the cylinder, immediately pull the cylinder straight up. The correct consistency of the mixture will produce a spread meeting the requirements in Table 2 with no segregation.

907-631.02.1.2--Verification of Mixture Design. The verification shall be performed by the Contractor prior to submittal of the mixture design proportions for review. The verification performance data and the corresponding batch ticket shall be submitted with the mixture design. The verification shall be performed using the batching and mixing equipment anticipated to be used during production of the mixture for the project. In addition to the performance requirements listed in Table 2, the verification shall meet the batching tolerance requirements for the material weights listed in the Department's *Concrete Field Manual*.

Adjustments of the proportions of fine aggregate and/or water shall be made to achieve suspension of the fine aggregate.

The requirements in Table 2 for consistency, percent total air content, compressive strength, and unit weight are for verification of the mixture design proportion purposes only and are not intended for jobsite acceptance requirements.

907-631.02.2--Acceptance of Mixture. The acceptance of the mixture at the job site will be based on the performance of the flowable fill mixture placed and will be at the discretion of the Engineer. For acceptance of the mixture at the job site, the mixture shall be self-leveling and shall not settle, segregate, or have excessive bleed water.

907-631.02.3--Manufacturing. Flowable fill will be batched, mixed, and transported in accordance with the requirements of Section 804.

907-631.02.4--Sampling and Testing. The yield shall be determined by testing the first load

placed on each production day in accordance with AASHTO Designation: T121. If adjustments are made to the mixture design proportions to correct for yield, the yield shall be determined on the next load with the adjusted proportions.

907-631.03--Construction Requirements. Prior to placing flowable fill, each end of the structure shall be plugged leaving an opening at each end no larger than necessary to accommodate the filling equipment. Flowable fill shall be discharged from the mixer by any reasonable means into the area to be filled. Unless otherwise approved by the Engineer, filling will begin on the downstream end of the structure and continue until no further material will enter the structure. The flowable fill will then be continued from the upstream end of the structure.

907-631.04--Method of Measurement. Flowable fill will be measured by the cubic yard which will be determined from the yield in accordance with the requirements of Subsection 907-631.02.4. The yield will be calculated by dividing the actual batch weights of each load by the unit weight of the mix, which will be determined by testing the first load placed on each production day.

907-631.05--Basis of Payment. Flowable fill, measured as prescribed above, will be paid for at the contract unit price per cubic yard, which price shall be full compensation for furnishing all labor, equipment, tools and materials to complete the work.

Payment will be made under:

907-631-A: Flowable Fill, Excavatable - per cubic yard

907-631-B: Flowable Fill, Non-Excavatable - per cubic yard

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-639-4 **CODE: (SP)**

DATE: 04/10/2009

SUBJECT: Traffic Signal Equipment Poles

Section 639, Traffic Signal Equipment Poles, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-639.02--Materials.

907-639.02.2--Mast Arms. Delete the sentence in Subsection 639.02.2 on page 481 and substitute the following:

Mast arms and mast arm extensions shall be steel meeting the requirements of Subsection 722.16.

907-639-02.3--Foundations. Delete the first sentence Subsection 639.02.3 on page 481 and substitute the following:

Cast-in-place foundations for concrete, steel, and/or aluminum shafts shall be as specified on plans, and shall be cast of reinforced Class "B" Concrete conforming to the requirements of Sections 601 and 602, unless otherwise indicated on the plans.

907-639-03.1--Foundations. Before the first paragraph of Subsection 639.03.1 on page 481, add the following:

Pole foundations shall be constructed as per the details on the plans, these specifications, and Section 803 of the Standard Specifications. Casings, if required, will be in accordance with Section 803 of the Standard Specifications.

In the first sentence of the first paragraph of Subsection 639.03.1 on page 481, change "Section 206" to "Section 801".

After the first paragraph of Subsection 639.03.1 on page 482, add the following:

Due to the soil conditions in certain areas, the plans may indicate locations where the concrete shall be placed with a tremie. When a tremie is used, it shall perform in accordance with the requirements in Subsection 804.03.9 of the Standard Specifications.

In some instances, it may be necessary to use slip casing to keep the holes open. Casing may be required in portions of the holes that are not stable. Casings authorized by the Engineer shall be of suitable size and strength to accommodate the drilling equipment and to withstand ground-pressures and removal operations without deformation of the poured shaft. When removed, the

casings shall revert to the Contractor for disposal.

907-639.04--Method of Measurement. Delete the first and second paragraphs of Subsection 639.04 on page 482, and substitute the following:

Traffic signal equipment pole of the type specified will be measured as unit quantities per each. Such measurement shall include the pole, mast arms and all other incidentals necessary to complete the equipment pole.

Traffic signal equipment pole shaft extension of the type specified will be measured as a unit quantity per each. Such measurements shall include the pole attachment, shaft, and all other mounting attachments necessary to extend a shaft as required in the plans

Pole foundations of the size specified will be measured by the cubic yard, which measurement shall be the area bounded by the vertical planes of the neat lines of the foundation.

Slip casings of the size specified will be measured by the linear foot from the ground elevation to the bottom of the strata needing to be cased.

Traffic signal equipment pole mast arm extension, as indicated, will be measured as a unit quantity per each. Such measurements shall include the mast arm extension and all other mounting attachments necessary to extend the arm as indicated.

907-639.05--Basis of Payment. Delete the first paragraph of Subsection 639.05 on page 482, and substitute the following:

Traffic signal equipment pole and traffic signal equipment pole extension of the type specified, measured as provided in above, will be paid for at the contract unit price per each, which price shall be full compensation for furnishing all materials, erecting, installing, connecting and testing poles, pole bases, mast arms, caps, covers, ground wire, ground rods, hardware and for all equipment, tools, labor and incidentals necessary to complete the equipment pole.

Pole foundations, measured as prescribed above, will be paid for at the contract unit price per cubic yard, which price shall include full compensation for structure excavation, reinforcing steel, anchor bolts; for placing, curing, and installing concrete; for replacing sod and final clean-up; and for all equipment, labor, tools and incidentals necessary to complete the foundation.

Slip casings, measured as prescribed above, will be paid for at the contract price per linear foot, which price shall be full compensation for all materials, tools, equipment, labor, and incidentals necessary to complete to work.

Traffic signal equipment pole mast arm extension, measured as provided above, will be paid for at the contract unit price per each, which price shall be full compensation for furnishing all materials, for installing the mast arm extension and for all equipment, tools, labor, and incidentals necessary to complete the work.

Delete the list of pay items on page 482, and substitute the following:.

907-639-A: Traffic Signal Equipment Pole, Type ____ - per each

907-639-B: Traffic Signal Equipment Pole Shaft Extension, Description - per each

907-639-C: Pole Foundations, ____ Diameter - per cubic yard

907-639-D: Slip Casing, ____ Diameter - per linear foot

907-639-G: Traffic Signal Equipment Pole Mast Arm Extension * - per each

* Additional information may be indicated

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-649-3 **CODE: (SP)**

DATE: 08/17/2009

SUBJECT: Video Vehicle Detection

Section 649, Video Vehicle Detection, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

Deleted in total Subsection 649 beginning on page , and substitute the follows:

SECTION 907-649 -- VIDEO VEHICLE DETECTION

907-649.01--Description. This special provision specifies the minimum requirements for Video Detection Systems (VDS) furnished and installed in accordance with the design(s) for the location(s) designated on the project plans, in any related notice to bidders, or as directed. The work shall consist of providing all labor, materials, equipment, and incidentals necessary to furnish, install, test, and operate VDS that are integrated with MDOT's Traffic Management/Operations Centers (TMC).

The Type 1 Video Detection System will provide roadway monitoring capabilities via digitized video images transmitted over an Ethernet network and will provide traffic data collection of vehicle parameters including, but not limited to, speed, presence, occupancy, volume, video snapshots and MPEG-4 streaming video of the intersection. All of the real-time data shall be reported locally or remotely and be viewable from a customized secure user-friendly website hosted by the VDS vendor. The Type 1 Video Detection System will be used at all intersections where traffic data collection is required. The work shall consist of providing all labor, materials, equipment, and incidentals necessary to furnish, install, and test Video Detection Systems. This work consists of furnishing and installing video detection system equipment complete and ready for service.

The Type 2 Video Detection System will provide presence or pulse detection for Traffic Signal Controller inputs. The Type 2 Detection Systems will be used at intersections that only require presence detection for traffic signal control. The work shall consist of providing all labor, materials, equipment, and incidentals necessary to furnish, install, and test Video Detection Systems. This work consists of furnishing and installing video detection system equipment complete and ready for service.

907-649.02--Materials.

907-649.02.1--Materials Type 1 Vehicle Detection System.

907-649.02.1.1--General. The video detection system hardware will typically consist of two major components:

1) Video Camera Sensors (color) with zoom lens (one sensor in each direction)
2) Video Detection System Processor (inside the sensor for Type 1 system)

907-649.02.1.2--Functional Requirements for Type 1 Detection System. The VDS shall be capable of monitoring vehicles on a roadway via processing of video images and providing discrete detection of vehicles and functional detection parameters on a per lane basis for each of the following:

1) Presence of moving or stopped vehicles (a vehicle that has not moved for a user-definable length of time)
2) Traffic volume (absolute number of discrete vehicles per time interval per lane)
3) Speed (average lane speed in mph)
4) Occupancy (individual lane occupancy measured in percent of time)
5) Density (average lane density volume/speed)
6) Headway (average time interval between vehicles by lane in seconds)
7) Vehicle classification and volumes per lane by user-selectable vehicle lengths (minimum four (4) bins)
8) Wrong Way vehicle detection
9) Alarms for the following:
   a. wrong-way vehicles
   b. speed threshold
   c. vehicle classifications
10) Loop Emulation based on single or dual loops for a minimum of four (4) lanes.
11) Provide direct real-time iris and shutter speed control and be equipped with an integrated auto zoom/auto focus lens that can be changed using computer software.
12) Shall be fully IP-enabled and addressable from the video detection system processor, with all configuration, detection data, and encoded video stream available on a single Ethernet interface.
13) Shall provide MPEG-4 streaming video output.
14) Shall provide all data and video communications over the power supply conductors as shown on the Plans.

907-649.02.1.3--System Features. As a minimum, the system shall include the following features:

1) Shall be capable of detecting and storing discrete lane data for either approaching or receding vehicles in at least four (4) lanes and two (2) shoulders / emergency lanes.
2) When this function is required in the Plans, shall provide a contact closure interface to a traffic controller or other device, this interface shall accept eight (8) contact closure inputs (usually red and green control signals) and provide sixteen (16) contact closure outputs to a traffic signal controller. For a SDLC interface to a NEMA T52 traffic controller, this interface shall display 32 phase colors and emulate up to four (4) bus interface units (BIU).
3) Shall include software with the capability to define detectors through interactive graphics by placing lines and/or boxes or polygons defined by a minimum of four points.

4) Shall be a tracking based system or a system of detection zones (lines and/or boxes) which may assign logical functions to one detector or a group of detectors to accomplish directionality or classification.
5) Shall be capable of programming the expected flow direction of traffic to facilitate alarm generation for vehicles traveling in the wrong direction.
6) Shall be capable of operating as a stand-alone unit when communication to the central system is lost, calculating traffic parameters in real-time and storing data in its own non-volatile memory.
7) Shall be capable of compensating for camera movement attributable to temperature effects, wind shifts, pole sway, pole expansion, or vibration of the mount when attached to bridges, sign structures or other structures.
8) Shall allow for detection zone calibration for accommodating perspective variations due to varying camera heights and angles.
9) Shall provide for day and night operation.
10) Shall provide for communications interface to the video detection system processor through a cabinet-mounted interface panel that terminates the power/communications conductors to the processor and provides the Ethernet interface to the processor.

907-649.02.1.4--Detection Configurations. The VDS shall be programmable for the following detector configurations; at a minimum they shall perform the following functions:

1) Count Detector
2) Presence Detector
3) Speed Detector
4) Station Detector
5) Speed Alarm
6) Lane Detector
7) Tunnel Detector

The Speed Detector shall report vehicle speed and vehicle classification based on five user-defined length categories, satisfying the four generalized category requirement recommended by FHWA.

907-649.02.1.5--VDS Software Requirements. The VDS sensor shall store cumulative traffic statistics, internally in non-volatile memory, for later retrieval and analysis. The VDS sensor shall have at least 5 Mb of memory for data storage. Data collection shall not require additional modules or extra software.

The real-time traffic data and color video shall be viewable through a standard web browser using a data collection and management service (DCMS). The DCMS license will be for a twenty-four month period and start from the date of acceptance of the Final Inspection. The manufacturer shall display the data and streaming video real-time on a custom web-site which can be linked to MDOT's internal web-sites, MSTraffic.com & GoMDOT.com. The DCMS provider must guarantee 95% uptime. All collected data (except video) shall be archived once a month and two electronic copies sent to MDOT. MDOT requires the ability to create and print custom data reports in Excel or HTML by accessing the manufacturer website and filtering data

using reporting parameters. In addition, MDOT requires the capability of having all "raw" data sent directly to an MDOT owned data collection server.
The VDS shall have the capability of polling any and all video detector sensors through communication interfaces, including but not limited to, fiber, wireless, leased broad-band, and leased point to point T1.

The DCMS Server shall be able to generate the following detail:

1) Microsoft Excel, SQL, XML, Jscript database technology
2) Microsoft .NET Framework, including support for ASP.NET
3) Custom, automated reports, alarms, ftp, and e-mail services.
4) Report Manager Graphic User interface (GUI) to customize data distribution and reporting.

907-649.02.1.6--Detection Requirements. Unless otherwise shown in the Plans, the Video Detection System shall detect vehicle passage and presence when the VDS camera assembly is mounted 40 feet or higher above the roadway, when the camera is located adjacent to or over the desired coverage area, and when the distance to the farthest detection zone locations are not greater than ten (10) times the mounting height of the camera.

Optimum accuracy shall be achieved when the length of the detection area or field of view is not greater than four (4) times the mounting height of the image sensor.

The camera shall not be required to be directly over the roadway to achieve minimum accuracy requirements.

The video detection system shall be able to use a single camera to view either approaching and/or receding traffic in the same field of view.

907-649.02.1.7--Accuracy Requirements and Measurement Methods. The accuracy will be measured under normal weather conditions (i.e., not during rain, snow, fog etc.) when the VDS sensor camera is mounted 40 feet or higher, or as otherwise shown in the Plans, above the travel lanes, when the image sensor is adjacent to desired coverage areas, and when the distance to the farthest detection zone is less than four (4) times the mounting height measured in a straight line along the center axis of the field of view.

The Video Detection System shall provide a level of accuracy of less than 5% error rate based on volume counts for the entire field of view compiled over multiple time intervals that contain a minimum of 300 vehicles.

Volume - The volume (count) of vehicles in each lane collected by the video detection system must be within five percent (±5%) of the manually counted volume for that lane. Provide these levels of accuracy during both day and night conditions. A minimum of three hundred (300) vehicles must be used as a sample size for the entire field of view for volume counting accuracy checking.

Vehicle Classification - The vehicle classification feature must classify at least eighty percent (80%) of the vehicles correctly by classifying vehicles into one of four bins (FHWA categories) by vehicle length. This feature will be tested by manually classifying vehicles into cars, light trucks or tractor trailer or larger trucks using an observer (who does the classification) and video tape using the same samples as collected for the volume test. The manually collected classification data will be compared to the data collected by the system for each lane and the percent error will be calculated for the entire field of view.

Stopped Vehicle Detection - The vehicle detection system shall be capable of detecting 95% of all vehicles stopped on the shoulders or in lanes and triggering an alarm. Because of the possible dangers to motorists and workers during this test, the test will be completed after operation has been enabled. A vehicle will be sent to the location and stopped on a shoulder in an active detection zone. An inspector or TMC operator will observe to verify the detection of the stopped vehicle. This test will be performed on all of the video detection system installations up to five, or on a random sample of five if the total number of video detection system installations is greater than this. If all parameters are met for all locations tested, all that are installed on the project will be considered acceptable. If one or more locations fail, a second set of five locations will be examined. If a failure in the second set is recorded, the Contractor will be required to take remedial action until a pass of five locations is achieved.

Speed - The system shall provide an average vehicle speed measurement within ten percent (± 10%) of actual speeds. Provide these levels of accuracies for traffic traveling between 20 and 75 mph. Provide these levels of accuracy during both day and night conditions. Personnel participating in and observing these tests will use either radar detectors or probe vehicles to conduct this accuracy demonstration. This test will be performed after the system is in operation as described in the stopped vehicle tests. Failure to achieve accuracy will require remedial/corrective action by the Contractor and repeated testing until accuracy is achieved.

Other Parameters (Occupancy. Flow Rate, Headway, Density) - If the measurements of speed and volume as described above fall within acceptable specified limits of accuracy, and the system is demonstrated to be able to provide the calculated values for these parameters, no further testing will be required. The formulas/algorithms used for the calculations by the system will be provided to the MDOT State Traffic Engineer as part of the documentation of the system.

907-649.02.1.8--Video Camera Sensor. The video camera sensor shall be compatible with the Video Detection System processor and as a minimum meet the following requirements:

1) Lens: The video camera sensor will be equipped with a 16X to 22X motor driven variable focal length zoom lens.
2) Image Sensor: Minimum resolution of 470H X 350V TV lines.
3) The Sensor's picture element shall be 768H pixels X 494V pixels or greater.
4) Input power: 115 VAC ± 15%, 60 Hz ± 10% single phase power. Any required power conversion shall be contained within the VDS, the chassis, or facilitated by a power adapter provided.
5) Electromagnetic interference (EMI): The video camera sensor and associated connected equipment will comply with FCC Part 15, Subpart J, Class A device requirements.

6) Video camera sensor enclosure: The video camera sensor shall be installed in an enclosure:
   a. The enclosure shall meet NEMA 250 Type 4 enclosure standards and shall be available un-pressurized or optionally pressurized types.
   b. If the enclosure is pressurized, it shall be pressurized to at least 5 psi ±1 psi and a low pressure sensor with an alarm output to the Video Detection System processor and cabinet assembly will be provided.
   c. Provide a sun shield visor on the front of the enclosure, which is sufficiently adjustable to divert water away from the video camera sensor lens and also to prevent direct sunlight from entering the iris when mounted in its installed position.
   d. Install the sun shield so that it does not impede operation or performance accuracy of the video camera sensor or require removal of the video camera sensor enclosure for adjustment.
   e. Use an enclosure that allows the video camera sensor horizon to be rotated in the field during installation.
7) Weight: The standard video camera sensor will not weigh more than 10 lbs., including the mount, shield and camera. If a pressurized video camera sensor and housing is used, the unit including a standard mount, shield and camera will not weigh more than 13 lbs.
8) Mounting: The video camera sensor assembly mounting and hardware shall be included as part of the system.
   a. The video camera sensor horizon shall be adjustable without removing the camera, mounting bracket and enclosure, or sun shield.
   b. The video camera sensor assembly shall be capable of sustained wind loading of 90 mph with a 30% gust factor.
9) The video camera sensor assembly shall include all cabling, mounts, fasteners, conduit, connectors, etc., to provide power and connectivity to the VDS cabinet equipment for a fully functional system. The connection for the power and video cable shall be the connection type recommended by the manufacturer.

907-649.02.1.9--Video Detection System Processor. The Video Detection System processor shall meet the following requirements:

1) Shall be contained/integrated in the VDS sensor enclosure.
2) Shall process and make available for transmission (upload) to the TMC data stored in operator selectable time periods of 10, 20, or 30 seconds and 1, 5, 10, 15, 30, or 60 minutes (default setup by Contractor shall be 1 minute).
3) Shall be password protected to prohibit unauthorized changes, if enabled by user. A minimum of ten (10) different users may be authorized with different levels of authority.
4) Observation of detection operation only, without ability to edit configurations, may be allowed with no password. The VDS shall record time and date of each password usage.
5) Shall provide the data and MPEG-4 encoded video through a communications interface device via an Ethernet version 2.0 IEEE 802.3 compliant 10/100 Base-T Auto Sensing port in real-time.
6) The processor shall be IP-addressable using the user datagram protocol/IP or UDP/IP message packet and routing standard.
7) A communications address shall be automatically assignable or manually configured to

the unit during setup.

8) Upon receiving a command with the appropriate address from the TMC central computer, the unit shall respond with the accumulated traffic parameter measurements from the period since the last request.
9) Shall operate reliably in a typical roadway aerial mounting and under the following conditions:
   a. Shall have an operating ambient temperature range: -29^0F to 140^0F (-2034~ C to 60^0C)
   b. Shall have an operating humidity tolerance of: 5% — 95% humidity per NEMA TS 1-1989 (R 1994).
   c. Vibration: Provide a video camera sensor and enclosure that maintains its functional capability and physical integrity when subjected to a vibration of 5 to 30 Hz up to 0.5 gravity applied to each of three mutually perpendicular axes (NEMA TS 1-1989 (R 1994)).
   d. Shock: Ensure the video camera sensor and enclosure can withstand a minimum 9G shock. Neither permanent physical deformation nor inoperability of the video camera sensor and enclosure shall be sustained from this shock level.
   e. Acoustic Noise: Provide a video camera sensor and enclosure that can withstand a 150 dB for 30 minutes continuously, with no reduction in function or accuracy.
10) Shall be capable of storing data for an extended period of time.
   a. All traffic parameter data shall be stored in non-volatile memory within the video detection system processor.
   b. All traffic parameter data shall be capable of being retrieved using the central computer and by means of an automatic polling client application.
   c. Upon loss of communications, the system shall automatically store no less than seven (7) days of data in 30 second increments based on the default set-up required. At a minimum, data storage requirements apply to volume, speed and occupancy requirements.
11) Shall be powered by input power: 115 VAC ±15%, 60 Hz ±10% single phase power. Any required power conversion shall be contained within the VDS, the chassis, or facilitated by a power adapter provided Total power for a single video camera sensor and the processor shall not exceed 15 watts with the camera heater in operation.
12) Shall have transient protection that meets the requirements of NEMA TS 1-1989 (R 1994) and NEMA T52-1992 standards.
13) Shall recover from power interruptions. Momentary interruptions in power to the processor shall not result in loss of function upon restoration of power.
14) In the event of an interruption of power, the equipment shall automatically recover when power is restored. All detection zones, stations, and parameters shall be returned to their last configurations.
15) Each VDS location shall be capable of simultaneously processing data and images from four separate video camera sensor installations for detection and analysis.
16) The system shall be capable of detecting objects in EIA- 170 (monochrome) and NTSC (color), or CCIR (monochrome) and PAL (color) video signals.
17) Shall allow still image capture (snapshot) from any of the video detection system processor's active video inputs and provide for downloading the image to the central computer for display or storage as a picture file; capture and transmit the still image to

the central computer in one minute or less.

907-649.02.2--Materials Type 2 Vehicle Detection System.

The Type 2 video detection system shall consist of power supply, video cameras, all necessary video and power cabling with end connectors, mounting brackets, lightning protection as recommended by the manufacturer, video detection processors/extension modules capable of processing the number of camera and phase combination video sources shown on the project plans or in the purchase order. Provide sufficient number of cameras to process vehicle presence, passage and system detection zones as shown on the project plans or listed on the purchase order.

907-649.02.2.1--Functional Requirements for Type 2 Vehicle Detection System. The video detection system configuration shall utilize video processors with one or more video inputs and one video output, responding to specific site applications, camera locations and detection zones shown on the project plans. Video processors or interface modules shall be provided which plug directly into TS-1 and TS-2 detector racks without adapters. Extension modules which allow detection zones from one camera to be routed to other card slots shall also be provided. Remote programming and monitoring capability from a distant Traffic Management Center shall be mandatory. The system shall be Ethernet compatible with an RJ4S port.

907-649.02.2.2--Interface Type 2 Video Detection System. The Contractor shall provide the following:

1) video inputs that accept RS 170 (NTSC) signals from an external video source. A BNC type interface connector shall be provided and located on the front of the video processing unit.
2) a LED indicator to indicate the presence of the video signal. The LED shall illuminate upon valid video synchronization and turn off when the presence of a valid video signal is removed.
3) one video output per processor module. The video output shall be RS 170 compliant and shall pass through the input video signal. The video output shall have the capability to show text and graphical overlays to aid in system setup. The overlays shall display real-time actuation of detection zones upon vehicle detection or presence. Control of the overlays and video switching shall also be provided through the serial communications port. The video output interface connector shall be BNC or RCA type. If RCA connector is used, an RCA to BNC adapter shall be provided.
4) a serial communications port on the front panel. The serial port shall be compliant with RS-232 or RS-422 electrical interfaces and shall use a DB9 or RJ4S type connector. The serial communications interface shall allow the user to remotely configure the system and/or to extract calculated vehicle/roadway information.
5) interface software. The interface protocol shall support multi-drop or point-to-multipoint communications. Each video detection system shall have the capability to be individually IP addressable either built in or with third party video server units.
6) open collector contact closure outputs meeting NEMA T52 requirements. The open collector output will be used for vehicle detection indicators as well as discrete outputs for alarm conditions.

7) LED status indicators on the front panel. The LED's shall illuminate when a contact closure output occurs. Provide one output LED for each contact closure output.
8) a mouse compatible port (PS-2 or USB) on the front panel of the video processing unit. The mouse port shall be used as part of the system setup and configuration. A compatible mouse shall be provided with each video detection system.

907-649.02.2.3--Functionality. Detection zones shall be programmed via an on-board menu displayed on a video monitor and a pointing device connected to the video detection processor. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters. The video detection processor shall detect vehicles in real time as they travel across each detection zone. The video detection processor shall have an RS-232 (DB9 or RJ4S) port for communications with an external computer. The video detection processor port shall be multi-drop capable.

It shall be possible to upload and save all configuration data including loop placement and save the file on a computer. It shall be possible to download a configuration file from a computer to the detection device.

The video detection processor shall accept new detection patterns from an external computer through the RS-232 port when the external computer uses the correct communications protocol for downloading detection patterns.

A WindowsTM based software designed for local and remote connection shall be provided for video capture, real-time detection indication and detection zone modification capability.

The video detection processor shall send its detection patterns to an external computer through the RS-232 port.

The video detection processor shall default to a safe condition, such as minimum recall, fixed recall or a constant call on each active detection channel, in the event of unacceptable interference with the video signal, low visibility conditions, or power failure.

A user-selected output shall be active during the low-visibility condition that can be used to modify the controller operation if connected to the appropriate controller input modifier(s). The system shall automatically revert to normal detection mode when the low-visibility condition no longer exists.

907-649.02.2.4--Vehicle Detection. A minimum of 24 detection zones per camera input shall be possible, and each detection zone shall be capable of being sized to suit the site and the desired vehicle detection area.

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be ANDed together to indicate vehicle presence on a single phase of traffic movement.

Placement of detection zones shall be done by using only a pointing device, and a graphical

interface built into the video detection processor and displayed on a video monitor, to draw the detection zones on the video image from each video camera. Detection zones created in this manner shall be compatible with the PC-based software provided with the system.

The video detection processor s memory shall be non-volatile to prevent data loss during power outages.

When a vehicle is detected crossing a detection zone, the corners or entire zone of the detection zone shall flash/change color on the video overlay display to confirm the detection of the vehicle. It shall be possible to record the operation of the unit in real time with the detection zones operating.

Detection shall be at least 98% accurate in all weather conditions, with slight degradation acceptable under adverse weather conditions (e.g. rain, snow, or fog) which reduce visibility.

The video detection processor shall maintain normal operation of existing detection zones when one zone is being added or modified.

The video detection processor shall output a constant call on any detector channel corresponding to a zone being modified and shall resume normal operation upon completion.

Detection zones shall be directional to reduce false detections from objects traveling in directions other than the desired direction of travel in the detection area.

The video detection processor shall process the video input from each camera using a microprocessor at 30 frames per second at one volt peak to peak 75 ohms or EIA 170 NTSC video standard.

The video detection processor shall output minimum recall, fixed recall or constant call for each enabled detector output channel if a loss of video signal occurs. The recall behavior shall be user selectable for each output. The video detection processor shall output a constant call during the background "learning" period.

Detection zone outputs shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds in increments of 0.1 seconds.

Up to six detection zones per camera view shall have the capability to count the number of vehicles detected, measure classification and speed. The data values shall be internally stored within the processor module for later retrieval through the RS-232 port. The data collection interval shall be user definable in periods of 5, 15, 30, or 60 minutes or by intersection cycle. Real-time data shall be retrieved from the PC-based software provided with the system.

907-649.02.2.5--Camera. Cameras shall be completely compatible with the video detection processor and shall be certified by the manufacturer to ensure proper system operation.

The detection system shall produce accurate detector outputs under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 0.009 to 930 foot-candles (0.1 lux to 10,000 lux).

The camera shall use a color CCD sensing element with resolution of not less than 470 lines horizontal and 400 lines vertical.

The camera shall include mechanisms to compensate for changing of lighting by using an electronic shutter and/or auto-iris lens.

The camera shall include a variable focal length lens with factory preset focus that requires no field adjustment. Zooming of the camera lens to suit the site geometry by means of a portable interface device designed for that purpose. The horizontal field of view shall be adjustable from 8.1 to 44.3 degrees. Camera configuration shall be customized for each approach based on field site conditions and the project plans.

The camera electronics shall include automatic gain control (AGC) to produce a satisfactory image at night.

The camera shall be housed in a weather-tight sealed enclosure. The housing shall be field rotatable to allow proper alignment between the camera and the traveled road surface.

The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view.

The camera enclosure shall include a thermostatically controlled heater to assure proper operation of the lens shutter at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure. The heater shall directly heat the glass lens and require less than S watts over the temperature range.

Power consumption of the camera shall be 15 watts or less under all conditions.

The camera enclosure shall be equipped with separate, weather-tight connections for power and setup video cables at the rear of the enclosure. These connections shall allow diagnostic testing and viewing of video at the camera while the camera is installed on a mast arm or pole using a lens adjustment module furnished under this bid item.

The video signal output by the camera shall in accordance with NTSC standards.

All necessary mounting brackets shall be mounted to pole shafts, mast arms, or other structures to mount cameras as indicated on the project plans. Mounting brackets shall result in a fixed-position mounting. Mounting Brackets shall be included at no additional cost.

907-649.02.2.6--Video Cable. The cable provided shall be as recommended by the manufacturer for optimal video detection performance. The cable shall be either multi-paired

jacketed cable or coaxial cable. Coaxial cable can be used between the camera and the video detection processor in the traffic signal controller cabinet and shall be Belden 8281 or equivalent. The signal attenuation shall not exceed 0.78 dB per 100 feet at 10 MHz. Nominal outside diameter shall be approximately 0.305 inch. Coaxial cable shall be suitable for installation in conduit and in exposed sunlight environment. 75-ohm BNC plug connectors shall be used at both the camera and cabinet ends. The coaxial cable, BNC connector, and crimping tool recommended by the manufacturer of the video detection system shall be used and installed per the manufacturer s recommended instructions to ensure proper connection.

Multi-paired jacketed cable shall include a minimum of four individually paired No. 19 AWG communication cables with an overall shield. Pairs shall not be individually shielded. Paired cable and power cables may be installed under the same outer jacket.

907-649.02.2.7--Power Cable. Power cable for 120VAC cameras shall be rated for 90°C, 300 volt, 16 AWG, stranded, three-conductor cable with a nominal outside diameter of approximately 0.330 inch. Conductor insulation color code shall be black, white and green. Outside jacket shall be black.

Power cable for 24 Volt or other low voltage cameras shall be the cable recommended by the manufacturer.

Camera power cable shall be suitable for installation in conduit and in exposed sunlight environment, and UL listed.

The power and video cable may be installed under the same outer jacket.

907-649.02.2.8--Surge Protection. Surge protection devices shall be provide for all new or added video detection devices as recommended by the manufacturer.

Coaxial cable shall be protected with an inline surge suppressor as recommended by the manufacturer or a panel mounted surge suppressor as recommended by the manufacturer or approved equal, installed and grounded per video detection manufacturer's recommendations.

907-649.02.2.9--Physical and Environmental Specifications.

Video Detection System Processor: The video detection system processor shall operate reliably in a typical roadside traffic cabinet environment. Internal cabinet equipment and a video detection system processor shall be provided that meets the environmental requirements of NEMA T52-2003 Section 2. If the processor is located in the sensor, it shall meet the same requirements.

Video Camera Sensor: The operating ambient temperature range shall be -30°F to 140°F. Additionally, a heater shall be included to prevent the formation of ice and condensation in cold weather. Do not allow the heater to interfere with the operation of the video camera sensor electronics, or cause interference with the video signal.

Vibration: Vibrations shall meet the requirements of TS-2 2003 section 2.1.9.

Shock: Shock shall meet the requirements of TS-2 2003 section 2.1 .10.

Acoustic Noise: A video camera sensor and enclosure shall be provided that can withstand 150 dB for 30 minutes continuously, with no reduction in function or accuracy.

907-649.03--Construction Requirements. The Construction and testing requirements for Type 1 and Type 2 Video Detection Systems are the same.

907-649.03.1--General Requirements. The Contractor shall:

1) Install all video camera sensors, video detection system processors and associated enclosures and equipment at the locations specified in the Plans, in any related notice to bidders, or as directed.
2) Install all cabinet-mounted equipment in the intersection equipment cabinet or as specified in the Plans.
3) Cabling from video camera sensors shall be provided and installed in accordance with the video detection system manufacturer's recommendations.
4) Make all necessary adjustments and modifications to the total VDS prior to requesting inspection for system/device acceptance.
5) Mount the camera approximately two (2) feet below the top of the extension pole or separate pole or as shown in the Plans.
6) The camera shall be mounted so as to view approaching traffic unless otherwise directed.
7) The camera location and zone of detection shall be optimized as directed by the MDOT State Traffic Engineer, or authorized designee.
8) Adjust the video camera sensor zoom lens to match the width of the road/detection area, and minimize lane vehicle occlusion.
9) Fasten all other cabinet components, with hex-head or Phillips-head machine screws insulated with nuts (with locking washer or insert) or into tapped and threaded holes. Do not use self-tapping or self-threading fasteners.
10) Provide electrical cables for video, communications signaling and power supply between the cabinet and the VDS image sensor cameras as recommended by the video detection system manufacturer, and as required for a fully functional VDS.

907-649.03.2--Contractor Training. Installation of the video detection system shall be as recommended by the supplier and performed by a Contractor trained and certified by the supplier. Where time does not reasonably permit training of the installing Contractor, a supplier factory representative shall supervise and assist a Contractor during installation of the video detection system.

907-649.03.3--Test Requirements. The Contractor shall conduct a Project Testing Program as required below. All costs associated with the Project Testing Program shall be included in overall contract prices; no separate payment will be made for any testing.

907-649.03.3.1--General Requirements. The Contractor is responsible for planning,

coordinating, conducting and documenting all aspects of the Project Testing Program. The Project Engineer and/or authorized representatives are only responsible for attending and observing each test, and reviewing and approving the Contractor's test results documentation. The Project Engineer and/or authorized representatives reserve the right to attend and observe all tests.

Each test shall fully demonstrate that the equipment being tested is clearly and definitely in full compliance with all project requirements.

Test procedures shall be submitted and approved for each test as part of the project submittals. Test procedures shall include every action necessary to fully demonstrate that the equipment being tested is clearly and definitively in full compliance with all project requirements. Test procedures shall cross-reference to these Technical Specifications or the Project Plans. Test procedures shall contain documentation regarding the equipment configurations and programming.

No testing shall be scheduled until approval of all project submittals and approval of the test procedures for the given test.

The Contractor shall provide all ancillary equipment and materials as required in the approved test procedures.

The Contractor shall request in writing the Project Engineer's approval for each test occurrence a minimum of 14 days prior to the requested test date. Test requests shall include the test to be performed and the equipment to be tested. The Project Engineer reserves the right to reschedule test request if needed.

All tests shall be documented in writing by the Contractor in accordance with the test procedure and submitted to the Project Engineer within seven (7) days of the test. Any given test session is considered incomplete until the Project Engineer has approved the documentation for that test session.

All tests deemed by the Project Engineer to be unsatisfactorily completed shall be repeated by the Contractor. In the written request for each test occurrence that is a repeat of a previous test, the Contractor shall summarize the diagnosis and correction of each aspect of the previous test, that was deemed unsatisfactory. The test procedures for a repeated test occurrence shall meet all the requirements of the original test procedures, including review and approval by the Project Engineer and ITS Manager.

The satisfactory completion of any test shall not relieve the Contractor of responsibility to provide a completely acceptable and operating system that meets all requirements of this project.

907-649.03.3.2--Factory Acceptance Test (FAT). Factory Acceptance Tests shall be conducted at the Manufacturer or Contractor facility or at a facility acceptable to all parties. All equipment to be utilized for this project shall be subject to tests that demonstrate the suitability of the design and compliance with the contract requirements, unless an exception for an equipment item is

granted by the Project Engineer. The tests shall be performed on production units identified to be delivered under this contract.

The FAT procedure shall demonstrate all requirements defined in these specifications are met, including, but not limited to: functional/system performance requirements, electrical requirements, data transmission/communication requirements, safety/password requirements, environmental requirements, and interface requirements with other components of the project system.

The Project Engineer reserves the right to waive FATs which are deemed to be unnecessary and reserves the right to witness all FATs that are determined to be critical to the project. At a minimum, the Project Engineer and/or authorized representative will be in attendance at the FAT for the first three (3) units tested. The FAT for the first three (3) units shall be conducted during the same period. The Project Engineer shall be notified a minimum of forty-five (45) calendar days in advance of such tests. Salary and travel expenses of the Project Engineer and authorized representatives will be the responsibility of MDOT. In case of equipment or other failures that make a retest necessary, travel expenses of the Project Engineer and authorized representatives shall be the responsibility of the Contractor. These costs shall be deducted from payment due the Contractor.

The vendor must complete the FAT on all remaining units on their own and submit documentation to the Project Engineer that the FATs were completed. The Project Engineer reserves the right to randomly attend those FAT tests.

No equipment for which a FAT is required shall be shipped to the project site without successful completion of factory acceptance testing as approved by the Project Engineer and the Engineer's approval to ship.

907-649.03.3.3--Standalone Acceptance Test (SAT). The Contractor shall perform a complete SAT on all equipment and materials associated with the field device site, including but not limited to electrical service, conduit, pull boxes, communication links (fiber, leased copper, wireless), control cables, poles, etc. A SAT shall be conducted at every field device site. Where applicable, a SAT shall be conducted for a fully installed and completed connection to the designated Traffic Management Center (TMC) or central data/video collection site.

The SAT shall demonstrate that all equipment and materials are in full compliance with all project requirements and fully functional as installed and in final configuration. The SAT shall also demonstrate full compliance with all operational and performance requirements of the project. All SATs will include a visual inspection of the cabinet and all construction elements at the site to ensure they are compliant with the specifications.

All SATs will include videos of the approach with detection zones overlaid showing detector activations.

1) One hour videos shall be made of each approach and compared to actual detection calls.
2) Thirty minute videos shall be made starting 15 minutes prior to sunrise and sunset for each

approach and compared to actual detection calls.
3) All videos shall be date and time stamped.
4) Provide all videos to the Engineer with a summary of the results included total calls, missed calls and false calls.
5) All test results must meet a 98% accuracy requirement.

After a sixty (60) day burn-in period, the Contractor must demonstrate the accuracy requirements specified in Subsection 907-649.02.1.7 at selected intersections. The intersections to be tested will be randomly selected by the Project Engineer.

907-649.03.4--Warranty. The video detection system shall be warranted to be free of manufacturer defects in materials and workmanship for a period of one year from the date of final acceptance. Equipment covered by the manufacturer's warranties shall have the registration of that component placed in MDOT's name prior to final inspection. The Contractor is responsible for ensuring that the vendors and/or manufacturers supplying the components and providing the equipment warranties recognize MDOT as the original purchaser and owner/end user of the components from new. During the warranty period, the supplier shall repair or replace with new or refurbished material, at no additional cost to the State, any product containing a warranty defect, provided the product is returned postage-paid by the Department to the supplier's factory or authorized warranty site. Products repaired or replaced under warranty by the supplier shall be returned prepaid by the supplier.

During the warranty period, technical support shall be available from the supplier via telephone within four hours of the time a call is made by the Department, and this support shall be available from factory certified personnel. During the warranty period, updates and corrections to control unit software shall be made available to the Department by the supplier at no additional cost.

907-649.03.5--MDOT Employee Training. The Contractor shall submit to the Project Engineer for approval a detailed Training Plan including course agendas, detailed description of functions to be demonstrated and a schedule. The Contractor must also submit the Trainer's qualifications to the Project Engineer for approval prior to scheduling any training. The training must include both classroom style training and hands-on training in the field of the maintenance and troubleshooting procedures required for each component. The training should also consist of a hands-on demonstration of all software configuration and functionality where applicable.

The supplier of the video detection system shall, at a minimum, provide a sixteen-hour operations and maintenance training class with suitable documentation for up to eight (8) persons selected by the Department. The operations and maintenance class shall be scheduled at a mutually acceptable time and location.

907-649.03.6--Maintenance and Technical Support. The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the video detection system. Spare parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale of said spare parts.

The suppliers shall maintain an ongoing program of technical support for the video detection system. This technical support shall be available via telephone or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale of said technical support services.

907-649.04--Method of Measurement. Video Detection System, 1 Sensor, of the Type specified, and Video Detection-Data Collection & Management License will be measured as a unit per each.

Video Detection Training will be measured per lump sum after the completion of all training.

907-649.05--Basis of Payment. Video Detection System, 1 Sensor, of the Type specified, and Video Detection-Data Collection & Management License, measured as prescribed above, will be paid for at the contract price per each, which price shall include installation, system integration, documentation, and testing of a complete video detection system site including video camera sensor/processor, the sensor environmental enclosure, five (5) space card rack including installation, minimum 175 Watt power supply card, all cables between cameras and the cabinet, attachment hardware and brackets, completion of all testing requirements and all work, equipment and appurtenances as required to provide and install a complete video detection system. The price bid shall also include all system documentation including: shop drawings, operations and maintenance manuals, wiring diagrams, block diagrams and other materials necessary to document the operation of the video detection system. This price shall be full compensation for all labor, tools, materials, equipment and incidentals necessary to complete the work.

Video Detection Training, measured as prescribed above, will be paid for at the contract lump sum price, which price shall be full compensation for all training costs.

Payment will be made under:

907-649-A: Video Detection System, 1 Sensor, Type __	- per each
907-649-B: Video Detection-Data Collection & Management License	- per each
907-649-C: Video Detection Training	- lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-683-7 **CODE: (SP)**

DATE: 12/16/2008

SUBJECT: Repair of Roadway Lighting System

PROJECT: NHS-0010-01(144) / 105281301 – HARRISON COUNTY

Section 683, Lighting Assemblies, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as amended by this special provision is applicable for Repair of Roadway Lighting Systems Only.

907-683.01--Description.

907-683.01.1--Repair and Restore High Mast Lighting Assembly. In addition to the requirements set forth in Section 681, the existing high mast lighting assemblies shall be repaired and restored to complete and working order. The existing lowering devices and luminaires indicated on the plans shall be removed and replaced with new equipment that meets current MDOT specifications.

The Contractor shall be required to modify the existing poles to accept the new lowering devices. This may include, but will not be limited to, the removal of internal mounting brackets, wire and circuit breakers, modifications to the pole and installation of new components. All plans to be approved by the Engineer prior to the Contractor commencing work. These repairs shall be paid for under Pay Item 907-683-G1.

907-683.01.2--Repair High Mast Lowering Device. Several lowering devices, as indicated on the plans, shall remain in place. These lowering devices and luminaires shall be inspected, cleaned, repaired, adjusted, re-leveled and re-lamped. These repairs shall be paid for under Pay Item 907-683-G2.

907-683.01.3--Repair and Restore Low Mast Lighting Assembly. The existing low mast lighting assemblies shall be repaired and restored to complete and working order. The existing wiring and fuses shall be removed and replaced with new equipment that meets current MDOT specifications. All low mast luminaires shall be cleaned and re-lamped. These repairs shall be paid for under Pay Item 907-683-H1.

907-683.02--Materials.

907-683.02.1--High Mast Poles. All existing high mast poles are to remain. All poles shall be inspected for signs of rust or corrosion. Any defects that are found shall be repaired. As a minimum the areas shall be cleaned and repainted with a zinc rich (cold galvanizing) paint to protect from further corrosion. All of these areas shall also have a final coat of paint colored to match, as close as possible, the rest of the pole surface.

The hand hole gasket shall be replaced with approved gasket material. Minimum size shall be 3/8" wide by 5/16" thick closed cell foam material.

Hand hole doors shall be inspected and repaired or replaced. Doors, hinges and hasps shall be adjusted to fit the hand hole and provide as weather tight a seal as possible. Hasps shall be repaired, cutting or welding to be done by qualified personnel. The hand hole door locks shall be replaced with new locks, keyed same as controller enclosures. The lock shall be keyed to Master Lock #2001.

Each pole shall be marked with a series of numbers indicating its controller, circuit and assembly number (i.e. 1 – 1 – HA1). These numbers shall be a minimum of three inches (3") tall and applied using retroreflective stick-on letters and numbers. The letters shall be Accuform Signs, Type NAC 403, 3-inch Reflective Yellow or approved equal.

Adaptors for the new lowering devices may be required on some poles. The Contractor may need to take field measurements to ensure the new device fits the existing pole. These components shall be submitted for approval along with the lowering device.

907-683.02.2--Low Mast Poles. All existing low mast poles, except where noted, are to remain. All poles shall be inspected for signs of rust or corrosion. Any defects that are found shall be repaired. The areas of corrosion shall be, as a minimum, cleaned and repainted with a zinc rich (cold galvanizing) paint to protect them from further corrosion. These areas shall also have a final coat of paint colored to match the rest of the pole surface.

Damaged hand hole covers shall be repaired and/or replaced.

Missing parts of the breakaway devices shall be replaced.

Each pole shall be marked with a series of numbers indicating its controller, circuit and assembly number (i.e. 1 – 1 – LA1). These numbers shall be a minimum of three inches (3") tall and applied using retroreflective stick-on letters and numbers. The letters shall be Accuform Signs, Type NAC 403, 3-inch Reflective Yellow or approved equal.

907-683.02.3--Portable Power Unit. The materials used in this construction shall meet the requirements of Subsection 723.07.

907-683.02.4--Lowering Device. Some existing lowering devices, as noted on the plans, shall be removed and disposed of by the Contractor. New lowering devices shall be installed. Contractor shall provide all parts necessary to mount the new winch to the pole. Any adaptors needed to mount the winch and head frame to the pole will be included with the lowering device. Not a separate pay item.

Some existing lowering devices, as noted on the plans, shall be retained. These lowering devices shall be cleaned, serviced, missing parts replaced and the luminaire mounting ring leveled.

907-683.02.4.1--General. The lowering device shall be capable of lowering the luminaires to approximately five (5) feet from ground level for maintenance purposes. The lowering device shall consist of the following assemblies:

(1) Head frame assembly
(2) Luminaire mounting ring assembly
(3) Winch assembly
(4) Hoisting cable assembly

907-683.02.4.2--Head Frame Assembly. The head frame assembly shall be galvanized steel with a weather tight spun aluminum cover. A roller or pulley assembly shall be provided for power cord travel.

Three (3) positive latches shall be provided to support the luminaire ring when the lowering device is not in operation. Reflecting flags, visible from the ground, shall indicate the locking and unlocking of each of the latches. All moving parts of the latches shall be serviceable from the ground. Moving parts shall not be impaired by formation of ice. Latches shall be cast aluminum alloy conforming to ASTM Designations: B 221 or A 36 steel. Latch pins shall be ASTM A 276 stainless steel.

Any adaptors needed to attach the head frame to a pole with either a top plate or tenon shall be included as part of the head frame.

907-683.02.4.3--Luminaire Mounting Ring Assembly. The ring assembly shall be hot dipped galvanized steel channel typically 6-inch x 2-inch, 7 gauge, with the proper number of 2-inch galvanized steel pipe luminaire mounting arms. The ring assembly shall be prewired with type ST distribution wiring, insulation rated at minimum 105ºC. A cast aluminum or stainless steel, hinged cover, weather tight junction box shall be provided with a prewired 600-volt terminal block and a weatherproof twist lock power inlet, for testing of luminaires at ground level. This box shall be aligned with the access hand hole cover.

The ring assembly shall be equipped with roller contact spring loaded guide arms to stabilize the ring on the pole while lowering device is in operation.

907-683.02.4.4--Winch Assembly. The winch shall be rated for 1500 pounds with a worm gear reduction minimum 30 to 1 ratio, and an integral friction drag brake to prevent free spooling. The winch shall be rated for intermittent motor operation or for hand crank operation. The 1/4-inch stainless steel hoisting cable shall be prewound on the winch. The winch drum shall be secured at both ends to prevent tilting or locking in the raise or lowering assemblies.

Any adaptors needed to install the winch assembly in an existing pole shall be included as part of the winch assembly, not a separate pay item.

907-683.02.4.5--Hoisting Cable Assembly. The hoisting cable shall be minimum 1/4-inch, 7 x 19 stainless steel. The three (3) suspension cables shall be minimum 3/16-inch stainless steel. The cable terminators shall be hot dipped galvanized.

Power cable shall be type SO and of a length and size as shown on plans.

Certain poles have hand holes and winches mounted higher than normal (above the retaining wall). The hoisting cable and power cable for these assemblies shall be of the correct length.

907-683.02.5--Luminaires. New high mast luminaires shall be installed on all new lowering devices. Photometrics shall be as indicated on the plans. Existing luminaires shall be cleaned and re-lamped.

Low mast luminaires shall be post top or mast arm mounted with 150 watt, 250 watt or 400 watt high pressure sodium lamps as required on the plans. Underpass luminaires shall be 70 watt or 150 watt high pressure sodium as required on the plans.

907-683.02.5.1--General. The high mast luminaires shall be of the enclosed ventilated type with a one (1) piece spun specular aluminum reflector, finished with an alzak or equivalent process. The reflector shall be encased in a spun and sealed aluminum cover or ribbed to provide additional structural integrity.

907-683.02.5.2--Ballast. The ballast for high mast luminaires shall be enclosed in a cast aluminum weather tight housing. Connections shall be through a quick disconnect plug. The ballast shall be fused with inline fuses sized as per manufacturer's recommendations. The ballast shall be copper wound.

Electrical characteristics shall closely conform to the following:

Ballast Type	Lead
Primary Voltage	480V
Secondary Voltage (open circuit)	400V
Power Factor	over 90%
Input Watts	1100
Wattage Regulation	±12% at 10% line volt variation
Minimum Ambient Starting Temperature	20ºF
Operating Line Current	2.35A

907-683.02.5.3--Mounting. The mounting for high mast and low mast luminaires shall be with an adjustable slipfitter for a 2-inch pipe bracket.

907-683.02.5.4--Lamp Socket. The lamp socket shall be heavy-duty, nickel-plated, porcelain enclosed with an integral lamp gripper and a lamp clamp of insulated stainless steel.

907-683.02.5.5--Photometrics. The luminaire shall provide Illuminating Engineering Society (I.E.S.) Type III or Type V cutoff distribution as shown on the plans and shall have an output efficiency of 60% bare lamp lumens.

The lamp arc tube shall be optically shielded above 90 degrees from the nadir. The maximum beam candle power for each shall be 22,200 at 80 degrees vertical for I.E.S. Type V.

Test reports with illumination data for each type distribution shall be provided with luminaire submittals. These reports must be certified, or conducted by an independent testing laboratory.

907-683.02.6--Lamps. Lamps for high mast luminaires shall be universal burning 1000-watt high pressure sodium. The lamp shall be mogul base and T-18 bulb designation. The lamp shall meet or exceed the following criteria:

Mean Lumens	126,000
Initial Lumens	140,000
Rated Average Life at 10 hr/start	24,000 HR

907-683.02.7--Miscellaneous. Ground rods shall be tested to ensure they still meet code requirements. Any rods that fail to meet current code requirements shall be augmented by a ¾" x 10' copper coated steel rod installed in accordance with Section 250 of the National Electrical Code.

Lightning rods, cable, bolts and other items making up the high mast lighting assembly shall be provided as per plans and manufacturer's recommendations.

All wiring, fuses and fuse holders on low mast lighting assemblies shall be replaced.

Other materials shall be provided as per plans (i.e. replace or repair hand hole doors, clean and galvanize anchor bolts, etc.) to provide a complete and operating lighting assembly. These items shall be included in the bid price to repair the high mast lighting assembly and are not a separate pay item.

All incidental items necessary for complete and working lighting assemblies shall be provided whether or not mentioned in these specifications.

907-683.03--Construction Requirements. All components of the high mast lighting assemblies shall be installed as shown in the plans, as per manufacturer's guidelines, or in accordance with these specifications.

All components of the low mast lighting assemblies shall be installed as shown in the plans, as per manufacturer's guidelines, or in accordance with this specification.

907-683.03.1--Field Assembly of All Components. Repair work will require poles to be taken down. Due care and caution will be taken to accomplish this. While on the ground the poles shall be properly supported to prevent warping. When the repairs are finished the poles shall be erected as described in this special provision. The sections shall be lashed together by an approved method which will not damage the pole during erection and to prevent the sections from slipping apart.

Cutting or welding shall be done by qualified personnel at the approval of the Engineer. Care shall be taken to ensure the structural integrity of the pole is not affected by the heat.

Wiring, lowering device, cables, and all components, except luminaires, shall be installed on the pole before erection, as per manufacturer's guidelines.

The Contractor shall submit eight (8) copies of a letter of certification from the high mast manufacturer on manufacturer's letterhead, certifying that all of the lowering devices, poles and luminaires on this project have been installed in accordance with the manufacturer's guidelines.

907-683.03.2--Setting and Aligning Poles. The pole shall be lifted at a point as far above center of gravity as possible. The lifting shall be smooth, continuous and free of abrupt motions. The base shall be placed on pre-leveled nuts and supported by the crane until anchor bolt nuts are tightened. Do not tie to poles using cables or chains which can damage finishes.

Poles shall be plumbed by the method shown on the plans. The plumbing shall be done early in the morning while minimum heat is affecting the pole and while there is no appreciable wind. After the pole is plumb the existing anchor bolt nuts shall be tightened and secured against loosening by tightening the nuts until there is an abrading or coining of the base plate under the nut.

Grout the space between the top of the foundation and the bottom of the base plate, maximum three (3) inch depth, making two (2) drainage openings with 3/4-inch PVC pipe for internal condensate drainage.

907-683.03.3--Cables. Care shall be taken to remove all twisting from hoisting cables before installation and/or operation of the lowering device.

907-683.04--Method of Measurement. Repair of High Mast Lighting Assembly (907-683-G1) will be measured as a unit per each, will include repairs to existing high mast lighting assemblies within the project. This will include purchasing, installing and testing all items needed to return the high mast lighting assemblies to full service.

Repair of High Mast Lighting Assembly (907-683-G2) will be measured as a unit per each, will include repairs to existing high mast lighting assemblies within the project. This will include purchasing, installing and testing all items needed to return the high mast lighting assemblies to full service.

Repair of Low Mast Lighting Assembly (907-683-H1) will be measured as a unit per each, will include repairs to existing low mast lighting assemblies within the project. This will include purchasing, installing and testing all items needed to return all low mast lighting assemblies to full service.

907-683.05--Basis of Payment. Repair of High Mast Lighting Assembly (907-683-G1) shall be paid for at the contract price per each, which price shall be full compensation for various work needed on each high mast lighting assembly; for furnishing all materials; for constructing, erecting, installing, connecting and testing; for installing new lowering devices, winches and adapters; for luminaires, lamps, conduits, wire, fuses and hardware; for final clean up; and for all equipment, labor, tools and incidentals necessary for completion of the work.

Repair of High Mast Lighting Assembly (907-683-G2) shall be paid for at the contract price per each, which price shall be full compensation for various work needed on each high mast lighting assembly; for furnishing all materials; for installing, connecting and testing; for luminaires, lamps, conduits, wire, fuses and hardware; for final clean up; and for all equipment, labor, tools and incidentals necessary for completion of the work.

Repair of Low Mast Lighting Assembly (907-683-H1) shall be paid for at the contract price per each, which price shall be full compensation for various work needed on each low mast lighting assembly; for furnishing all materials; for constructing, erecting, installing, connecting and testing; for luminaires, lamps, conduits, wire, fuses and hardware; for final clean up; and for all equipment, labor, tools and incidentals necessary for completion of the work.

Payment will be made under:

907-683-G1: Repair of High Mast Lighting Assembly, Type - per each

907-683-G2: Repair of High Mast Lighting Assembly, Type - per each

907-683-H1: Repair of Low Mast Lighting Assembly, Type - per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-684-1 **CODE: (SP)**

DATE: 5/26/2009

SUBJECT: Contractor Designed Pole Foundations

PROJECT: NHS-0010-01(144) / 105281301 – HARRISON COUNTY

Section 684, Pole Foundations, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-684.01--Description. After the last paragraph of Subsection 684.01 on page 576, add the following:

The Contractor shall submit to the Project Engineer a pole foundation design based on a cast-in-place concrete piling. Design drawings, calculations and other necessary supporting data shall be submitted as soon as possible after the Pre-Construction Conference. The design shall be prepared by a Professional Engineer registered in the State of Mississippi proficient in the design of concrete pilings. The pole foundations shall meet the requirements in the 2001 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. The wind loading used in the design shall be as per Subsection 907-723.04.1.

907-684.03-Construction Requirements. Delete the first sentence of the first paragraph of Subsection 684.03 on page 576 and substitute the following:

Pole foundations shall be constructed in accordance with the design details, these specifications, and the plans.

907-684.04--Method of Measurement. Delete the first sentence of the first paragraph of Subsection 684.04 on page 577 and substitute the following:

Contractor designed pole foundations of the sizes specified will be measured per each.

907-684.05--Basis of Payment. Delete the first sentence of the first paragraph of Subsection 684.05 on page 577 and substitute the following:

Pole foundations, measured as prescribed above, will be paid for at the contract unit price per each, which price shall include full compensation for concrete, structure excavation, and reinforcing steel; for placing, vibrating, curing, and installing; for final clean-up; and for all equipment, labor, tools and incidentals necessary to complete the work.

Delete the first pay item listed on page 577 and substitute the following:

907-684-A: Pole Foundation, ___" Diameter - per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-699-4 **CODE: (IS)**

DATE: 02/15/2012

SUBJECT: Construction Stakes

Section 699, Construction Stakes, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-699.01--Description. After the first paragraph of Subsection 699.01 on page 585, add the following:

This work may be performed utilizing Automated Machine Guidance technologies and systems in accordance with the standard specifications and contract documents. Automated Machine Guidance (AMG) is defined as the utilization of positioning technologies such as Global Positioning Systems (GPS), Robotic Total Stations, lasers, and sonic systems to automatically guide and adjust construction equipment according to the intended design requirements. The Contractor may use any type of AMG system(s) that result in compliance with the contract documents and applicable Standard Specifications.

Automated Machine Guidance (AMG) is not a mandatory requirement. Automated Machine Guidance (AMG), conventional staking, or a combination of both may be used at the Contractor's option for staking on this project.

907-699.02--Materials. After the last sentence of the first paragraph of Subsection 699.02 on page 585, add the following.

All equipment required to accomplish automated machine guidance shall be provided by the Contractor. The Contractor may use any type of AMG equipment that achieves compliance with the contract documents and applicable Standard Specifications.

907-699.03--Construction Requirements. Delete the first sentence of Subsection 699.03 on page 585 and substitute the following:

The Department will establish, one time only, secondary control points with elevations at distances not to exceed 1500 feet or that minimum distance necessary to maintain inter-visibility.

Delete the third sentence of the fourth paragraph of Subsection 699.03 on page 587, and substitute the following.

The duties performed by said Registrant shall conform to the definitions under the "practice of engineering" and practice of "land surveying" in Mississippi Law and the latest edition of the MDOT Survey Manual. The MDOT Survey Manual can be obtained online at the following address.

http://www.gomdot.com/Divisions/Highways/Resources.aspx?Div=RoadwayDesign.

After the last paragraph of Subsection 699.03 on page 587, add the following.

907-699.03.1--Automated Machine Guidance.

907-699.03.1.1--Automated Machine Guidance Work Plan. The Contractor shall submit a comprehensive written Automated Machine Guidance Work Plan to the Engineer for review at least 30 days prior to use. The submittal of a AMG Work Plan shall be an indication of the Contractor's intention to utilize AMG instead of conventional methods on the project areas and elements stated in the Work Plan. The Engineer shall review the Automated Machine Guidance Work Plan to ensure that the requirements of this special provision are addressed. The Contractor shall assume total responsibility for the performance of the system utilized in the Work Plan. Any update or alteration of the Automated Machine Guidance Work Plan in the course of the work shall be approved and submitted to MDOT for determination of conformance with requirements of this special provision.

The Automated Machine Guidance Work Plan shall describe how the automated machine guidance technology will be integrated into other technologies employed on the project. This shall include, but not limited to, the following:

1. A description of the manufacturer, model, and software version of the AMG equipment.
2. Information on the Contractor's experience in the use of Automated Machine Guidance system (or Related Technologies) to be used on the project, including formal training and field experience of project staff.
3. A single onsite staff person as the primary contact, and up to one alternate contact person for Automated Machine Guidance technology issues.
4. A definition of the project boundaries and scope of work to be accomplished with the AMG system.
5. A description of how the project proposed secondary control(s) is to be established. It shall also include a list and map detailing control points enveloping the site.
6. A description of site calibration procedures including, but not limited to, equipment calibration and the frequency of calibration as well as how the equipment calibration and information will be documented to MDOT and the Project Engineer. The documentation shall contain a complete record of when and where the tests were performed and the status of each equipment item tested within or out of the ranges of required tolerances.
7. A description of the Contractor's quality control procedures for checking mechanical calibration and maintenance of equipment. It shall also include the frequency and type of checks to be performed.
8. A description of the method and frequency of field verification checks and the submission schedule of results to the Project Engineer.
9. A description of the Contractor's contingency plan in the event of failure/outage of the AMG system.
10. A schedule of Digital Terrain Models (DTM) intended for use on the project. This shall be submitted to the Engineer for review, feedback, and communication.

The Contractor and MDOT will agree on the quantity and schedule of Contractor-provided training on the utilized AMG system required under Subsection 907-699.03.1.3.

907-699.03.1.2--State's Responsibilities. The District Surveyor will set the primary horizontal

and vertical control points in the field for the project as per latest edition of the MDOT Survey Manual. The control points shall be in Mississippi State Plane coordinate system.

MDOT will provide an electronic alignment file and primary control file for the project. This file will be based on the appropriate Mississippi State Plane Coordinate Zone either West or East. These files will be created with the computer software applications MicroStation (CADD software) and GEOPAK (civil engineering software). The data files will be provided in the native formats. The Contractor shall perform necessary conversion of the files for their selected grade control equipment, field verify the data for accuracy, and immediately report any errors to MDOT.

MDOT will provide design data, if available, in an electronic format to the Contractor. These files will be created with the computer software applications MicroStation (CADD software) and GEOPAK (civil engineering software). The data files will be provided in the native formats as specified in the Data Format section of this specification. No guarantee is made to the data accuracy or completeness, or that the data systems used by MDOT will be directly compatible with the systems used by the Contractor. Information shown on the paper plans marked with the seal (official plans as advertised) shall govern.

The Engineer will perform spot checks as necessary of the Contractor's machine control grading results, surveying calculations, records, field procedures, and actual staking. If the Engineer determines that the work is not being performed in accordance with the Specifications, the Engineer shall order the Contractor to re-construct the work to the requirements of the contract documents at no additional cost to the Department.

907-699.03.1.3--Contractor's Responsibilities The Contractor shall provide formal training, if requested, on the use of the Automated Machine Guidance Equipment and the Contractor's systems to MDOT project personnel prior to the start of construction activities utilizing AMG. This training is for providing MDOT project personnel with an understanding of the equipment, software, and electronic data being used by the Contractor.

The Contractor shall use the alignment and control data provided by MDOT.

The Contractor shall bear all costs, including but not limited to the cost of actual reconstruction work that may be incurred due to errors in application of Automated Machine Guidance techniques or manipulation of MDOT design data in Digital Terrain Models (DTM).

The Contractor shall be responsible for converting the information on the plans and/or electronic data file provided by MDOT into a format compatible with the Contractor's AMG system.

The Contractor shall establish secondary control points at locations along the length of the project and outside the project limits and/or where work is performed beyond the project limits as required by the Automated Machine Guidance system utilized. The Contractor shall establish this secondary control using survey procedures as outlined in the latest edition of the MDOT Survey Manual. A copy of all new control point information shall be provided to the Engineer prior to construction activities. The Contractor shall be responsible for all errors resulting from their efforts and shall correct deficiencies to the satisfaction of the Engineer and at no additional cost to the State.

The Contractor shall preserve all reference points and monuments that are established by the District Surveyor outside the construction limits. If the Contractor fails to preserve these items, they shall be re-established by the Contractor to their original quality at no additional cost to the State.

The Contractor shall set grade stakes at the top of the finished sub-grade and base course at all hinge points on the typical sections at 2000-foot maximum intervals on mainline, critical points such as, but not limited to, PC's, PT's, beginning and ending super elevation transition sections, middle of the curve, and at least two locations on each of the side roads and ramps, and at the beginning and end of each cross slope transition where Automated Machine Guidance is used. These grade stakes shall be established using conventional survey methods for use by the Engineer to check the accuracy of the construction.

The Contractor shall meet the same accuracy requirements as detailed in the Mississippi Standard Specifications for Road and Bridge Construction. Grade stakes shall be established as per Section 699 of the Mississippi Standard Specifications for Road and Bridge Construction for use by the Engineer to check the accuracy of the construction.

The Contractor shall be responsible for implementing the AMG system using the Mississippi State Plane Coordinate System. No localization methods will be accepted.

907-699.03.1.4--Data Format. It is the Contractor's responsibility to produce the Digital Terrain Model(s) and/or 3D line work needed for Automated Machine Guidance. MDOT does not produce this data in its design process. MDOT does provide CADD files created in the design process to the Contractor. The CADD files provided by MDOT are provided in the native software application formats in which they are created with no conversions, and their use in developing 3D data for machine guidance is at the discretion of the Contractor. The CADD files that may be available are listed below. Cross-Sections are one of the items provided but are not necessarily created at critical design locations. Therefore their use in Digital Terrain Models (DTM) for AMG is limited.

1. Project Control - Microstation DGN file and ASCII file
2. Existing Topographic Data - Microstation DGN file(s)
3. Preliminary Surveyed Ground Surface - GeoPak TIN, if available
4. Horizontal and Vertical alignment information - GeoPak GPK file and/or Microstation DGN file(s)
5. 2D Design line work (edge of pavement, shoulder, etc.) - Microstation DGN file(s)
6. Cross sections - Microstation DGN file(s), GeoPak format
7. Superelevation - Microstation DGN file(s), GeoPak format
8. Form Grades - Microstation DGN file(s)
9. Design Drainage - Microstation DGN file(s)

It is expressly understood and agreed that MDOT assumes no responsibility in respect to the sufficiency or accuracy of these CADD files. These files are provided for convenience only and the contract plans are the legal document for constructing the project.

907-699.05--Basis of Payment. Add the "907" prefix to the pay items listed on page 588.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-701-4 **CODE: (IS)**

DATE: 11/09/2010

SUBJECT: Hydraulic Cement

Section 701, Hydraulic Cement, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete Subsection 701.01 on pages 595 & 596, and substitute the following:

907-701.01--General. The following requirements shall be applicable to hydraulic cement:

Only hydraulic cements conforming to Section 701 shall be used. Hydraulic cements shall not be listed or designated as meeting more than one AASHTO or Department type.

Different brands of hydraulic cement, or the same brand of hydraulic cement from different mills, shall not be mixed or used alternately in any one class of construction or structure, without written permission from the Engineer; except that this requirement will not be applicable to hydraulic cement treatment of design soils, or bases.

The Contractor shall provide suitable means for storing and protecting the hydraulic cement against dampness. Hydraulic cement, which for any reason, has become partially set or which contains lumps of caked hydraulic cement will be rejected. Hydraulic cement salvaged from discarded or used bags shall not be used.

The temperature of bulk hydraulic cement shall not be greater than l65°F at the time of incorporation in the mix.

Acceptance of hydraulic cement will be based on the certification program as described in the Department's Materials Division Inspection, Testing, and Certification Manual and job control sampling and testing as established by Department SOP.

Retests of hydraulic cement may be made for soundness and expansion within 28 days of test failure and, if the hydraulic cement passes, it may be accepted. Hydraulic cement shall not be rejected due to failure to meet the fineness requirements if upon retests after drying at 212°F for one hour, it meets such requirements.

Delete Subsection 701.02 on page 596, and substitute the following:

907-701.02--Portland Cement.

907-701.02.1--General.

907-701.02.1.1--Types of Portland Cement. Portland cement (cement) shall be either Type I or Type II conforming to AASHTO Designation: M85 or Type I(MS), as defined by the description below Table 1. Type III cement conforming to AASHTO Designation: M85 or Type III(MS), as defined by the description below Table 1, may be used for the production of precast or precast-prestressed concrete members.

907-701.02.1.2--Alkali Content. All cement types in this Subsection shall meet the Equivalent alkali content requirement for low-alkali cements listed in AASHTO Designation: M85, Table 2.

907-701.02.2--Replacement by Other Cementitious Materials. The maximum replacement of cement by weight is 25% for fly ash or 50% for ground granulated blast furnace slag (GGBFS). The minimum tolerance for replacement shall be 5% below the maximum replacement content. Replacement contents below this minimum tolerance by fly ash or GGBFS may be used, but shall not be given any special considerations, like the maximum acceptance temperature for Portland cement concrete containing pozzolans. Special considerations shall only apply for replacement of cement by fly ash or GGBFS.

907-701.02.2.1--Portland Cement Concrete Exposed to Soluble Sulfate Conditions or Seawater. When Portland cement concrete is exposed to moderate or severe soluble sulfate conditions, or to seawater, cement types and replacement of cement by Class F fly ash, GGBFS, or silica fume shall be as follows in Table 1.

Table 1- Cementitious Materials for Soluble Sulfate Conditions

Sulfate Exposure	Water-soluble sulfate (SO_4) in soil, % by mass	Sulfate (SO_4)in water, ppm	Cementitious material required*
Moderate and Seawater	0.10 - 0.20	150 - 1,500	Type II **, ***, **** cement, or Type I cement with one of the following replacements of cement by weight: 25% Class F fly ash, 50% GGBFS, or 8% silica fume
Severe	0.20 - 2.00	1,500 - 10,000	Type I cement with a replacement by weight of 50% GGBFS, or Type II ** cement with one of the following replacements of cement by weight: 25% Class F fly ash, 50% GGBFS, or 8% silica fume

* The values listed in this table for replacement of Portland cement by the cementitious materials listed are maximums and shall not be exceeded. The minimum tolerance for replacement shall be 0.5% below the maximum replacement content. Replacement contents below this minimum tolerance by the cementitious materials listed in this table do not meet the requirements for the exposure conditions listed and shall not be allowed.

** Type I cement conforming to AASHTO Designation: M85 with a maximum 8% tricalcium aluminate (C_3A) may be used in lieu of Type II cement; this cement is given the designation "Type I(MS)". Type III cement conforming to AASHTO Designation: M85 with a maximum 8% tricalcium aluminate (C_3A) may be used in lieu of Type II cement as allowed in Subsection 907-701.02.1; this cement is given the designation "Type III(MS)".

*** Blended cement meeting the sulfate resistance requirements of Subsection 907-701.04 may be used in lieu of Type II as allowed in Subsection 907-701.04. No additional cementitious materials shall be added to or as a replacement for blended cement.

**** Class F fly ash or GGBFS may be added as a replacement for cement as allowed in Subsection 907-701.02.2.

Class C fly ash shall not be used as a replacement for cement in any of the sulfate exposure conditions listed above.

907-701.02.2.2--Cement for Soil Stabilization Exposed to Soluble Sulfate Conditions or Seawater. When Portland cement for use in soil stabilization is exposed to moderate or severe soluble sulfate conditions, or to seawater, cement types and replacement of cement by Class F fly ash or GGBFS shall meet the requirements of Subsection 907-701.02.2.1. Neither metakaolin nor silica fume shall be used to bring the cementitious materials into compliance with the requirements of Table 1.

Delete Subsection 701.03 on page 596, and substitute the following:

907-701.03--Masonry Cement. Masonry cement shall conform to ASTM Designation: C 91 and shall only be used in masonry applications.

Delete Subsection 701.04 on page 596, and substitute the following:

907-701.04--Blended Hydraulic Cement.

907-701.04.1--General.

907-701.04.1.1--Types of Blended Cement. Blended hydraulic cements (blended cements) shall be of the following types and conform to AASHTO Designation: M 240:

Type I(SM) – Slag-modified Portland cement
Type IS – Portland blast-furnace slag cement
Type I(PM) – Pozzolan-modified Portland cement
Type IP – Portland-pozzolan cement

Blended cement for use in Portland cement concrete or soil stabilization exposed to the moderate soluble sulfate condition or exposure to seawater as defined in Table 1 shall meet the Sulfate resistance requirement listed in AASHTO Designation: M 240, Table 2 and the "(MS)" suffix shall be added to the type designation.

907-701.04.1.2--Alkali Content. All blended cement types in this Subsection shall meet the Mortar expansion requirements listed in AASHTO Designation: M 240, Table 2.

907-701.04.2--Replacement by Other Cementitious Materials. No additional cementitious materials, such as Portland cement, performance hydraulic cement, fly ash, GGBFS, metakaolin, or others, shall be added to or as a replacement for blended cement.

907-701.04.3--Exposure to Soluble Sulfate Conditions or Seawater. When Portland cement concrete or blended cement for soil stabilization is exposed to moderate soluble sulfate conditions or to seawater, where the moderate soluble sulfate condition is defined in Table 1, the blended cement shall meet the sulfate resistance requirement listed in AASHTO Designation: M 240, Table 2.

When Portland cement concrete or blended cement for soil stabilization is exposed to severe soluble sulfate conditions, where the severe soluble sulfate condition is defined in Table 1, blended cements shall not be used.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-702-3 **CODE: (SP)**

DATE: 05/08/2012

SUBJECT: Polyphosphoric Acid (PPA) Modification of Petroleum Asphalt Cement

Section 702.05, Petroleum Asphalt Cement, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-702.05--Petroleum Asphalt Cement. Delete the third paragraph of Subsection 702.05 on page 598, and substitute the following.

The bituminous material used in all types of asphalt mixtures shall conform to AASHTO Designation: M 320, Performance Grade PG 67-22, as modified in the table below, except that Polyphosphoric Acid (PPA) may be used at low dosage rates as a modifier to enhance the physical properties of a base binder to meet the requirements for Performance Grade PG 67-22. In addition, PPA may be used as a catalyst or mixing agent at low dosage rates in the production of Polymer Modified, Performance Grade PG 76-22.

When PPA is used as a modifier, in no case shall the PPA modifier be used to adjust the physical properties of the binder a full binder grade. For example: the base binder (unmodified) is graded as a PG 64-22 and should only be modified by the addition of PPA to a modified binder grade of PG 67-22.

When petroleum asphalt cement is modified by PPA, the following dosage limits shall be applied.

Grade	Dosage Limit
PG 67-22	0.75% by weight of binder
PG 76-22	0.50% by weight of binder

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-703-10

DATE: 1/08/2013

SUBJECT: Aggregates

Before Subsection 907-703.06.1.2 on page 1, add the following.

907-703.06.1--Coarse Aggregates. Delete the third paragraph of Subsection 703.06.1 on page 613, and substitute the following.

When tested in accordance with AASHTO Designation: T 19, the dry rodded unit weight of all aggregates except expanded clay and shale shall not be less than 70 pounds per cubic foot.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-703-10 **CODE: (SP)**

DATE: 06/06/2012

SUBJECT: Aggregates

Section 703, Aggregates, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-703.03.2.4--Gradation. Delete the last sentence of the last paragraph of Subsection 703.03.2.4 on page 611.

907-703.04--Aggregate for Crushed Stone Courses.

907-703.04.1--Coarse Aggregate. Delete the first paragraph of Subsection 703.04.1 on page 611, and substitute the following.

Coarse aggregate, defined as material retained on No. 8 sieve, shall be either crushed limestone, steel slag, granite, concrete, or combination thereof. Crushed concrete is defined as recycled concrete pavement, structural concrete, or other concrete sources that can be crushed to meet the gradation requirements for Size No. 825 B as modified below. In no case shall waste from concrete production (wash-out) be used as a crushed stone base.

907-703.04.2--Fine Aggregate. Delete the first sentence of the first paragraph of Subsection 703.04.2 on page 612, and substitute the following.

Fine aggregate, defined as material passing No. 8 sieve, shall be material resulting from the crushing of limestone, steel slag, granite, concrete, or combination thereof.

Delete the third paragraph of Subsection 703.04.2 on page 612.

907-703.04.3--Gradation. After the table in Subsection 703.04.3 on page 613, add the following.

If crushed concrete is used, the crushed material shall meet the gradation requirements of Size No. 825 B with the exception that the percent passing by weight of the No. 200 sieve shall be 2 – 18.

907-703.06--Aggregates for Hot Mix Asphalt.

907-703.06.1.2--Fine Aggregates. Delete the last sentence of Subsection 703.06.1.2 on page 614.

907-703.20.3--Gradation. Delete the table and notes in Subsection 703.20.3 at the top of page 626, and substitute the following.

PERCENT PASSING BY WEIGHT

Square Mesh Sieves	Shell	Coarse			Medium	Fine
		Size I	Size II Note (1)	Size III Note (3)		
3 inch				100		
2 1/2 inch	90-100			90-100		
2 inch		100				
1 1/2 inch		90-100	100	25-60		
1 inch		80-100	97-100			
3/4 inch		55-100	55-100	0-10		
1/2 inch		35-85	35-85	0-5	100	
3/8 inch		12-65	12-65		97-100	
No. 4, Note (2)		0-30	0-30		92-100	
No. 10		0-8	0-8		80-100	100
No. 40					10-40	80-100
No. 60					0-20	30-100
No. 100						15-80
No. 200	0-5	0-4	0-4		0-5	0-30
PI Material Passing No. 40					6 or less	0

Note (1): Size II is intended for use in bases in which portland cement is used.
Note (2): Ground shell shall contain at least 97% passing the No. 4 sieve.
Note (3): Size III is intended for use in stabilized construction entrances.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-707-4 **CODE: (SP)**

DATE: 04/24/2012

SUBJECT: Rubber Type Gaskets

Section 707, Joint Materials, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-707.04--Rubber Type Gaskets for Joining Conduit. In the first sentence of Subsection 707.04 on page 636, delete the reference to "AASHTO Designation: M 315" and substitute "ASTM Designation: C 443".

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-708-5

DATE: 04/11/2012

SUBJECT: Non-Metal Drainage Structures

After Subsection 907-708.02.1.2 on page 1, add the following.

907-708.02.1.4--Coarse Aggregate. Delete the last sentence of Subsection 708.02.1.4 on page 639.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-708-5 **CODE: (IS)**

DATE: 05/12/2008

SUBJECT: Non-Metal Drainage Structures

Section 708, Non-Metal Structures and Cattlepasses, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-708.02.1.2--Fly Ash. In the first sentence of Subsection 708.02.1.2 on page 639, change "20 percent" to "25%".

907-708.02.3.2--Marking. Delete the second sentence of Subsection 708.02.3.2 on page 640, and substitute the following:

Machine made pipe shall be marked in accordance with one of the following methods: 1) the pipe shall be inscribed on the outside of the pipe and stenciled on the inside of the pipe, or 2) the pipe shall be inscribed on the inside of the pipe, only. All other pipe may be stenciled.

907-708.17--Corrugated Plastic Pipe Culverts.

907-708.17.1--Corrugated Polyethylene Pipe Culverts. Delete the first sentence of the first paragraph of Subsection 708.17.1 on page 645 and substitute the following.

Corrugated polyethylene pipe shall conform to the requirements of AASHTO Designation: M 294, Type S and/or SP, as applicable, and shall have soil tight joints, unless otherwise specified.

Delete the last sentence of the second paragraph of Subsection 708.17.1 on page 645.

After Subsection 708.17.1 on page 645, add the following:

907-708.17.1.1--Inspection and Final Acceptance of Corrugated Polyethylene Pipe Culverts. Approximately 50% of the installed length of corrugated polyethylene pipe shall be inspected for excess deflection no sooner than 30 days after the embankment material over the pipe is placed to the required subgrade elevation or the maximum required fill height. The inspection shall be performed using either electronic deflectometers, calibrated television or video cameras, or a "go, no-go" mandrel that has an effective diameter of 95% of the nominal inside diameter of the pipe.

Pipe found to have deflection values greater than 5% shall be removed and replaced at no cost to the State.

907-708.17.2--Corrugated Poly (Vinyl Chloride) (PVC) Pipe Culverts. Delete the first sentence of the first paragraph of Subsection 708.17.2 on page 645 and substitute the following.

Corrugated poly (vinyl chloride) (PVC) pipe shall conform to the requirements of AASHTO Designation: M 304 and shall have soil tight joints, unless otherwise specified. Non-perforated PVC pipe used in underdrains shall either be manufactured with an ultra-violet light inhibitor or be fully coated with an ultra-violet light inhibitor.

After Subsection 708.17.2 on page 645, add the following:

907-708.17.2.1--Inspection and Final Acceptance of Poly (Vinyl Chloride) (PVC) Pipe Culverts. Approximately 50% of the installed length of PVC pipe shall be inspected for excess deflection no sooner than 30 days after the embankment material over the pipe is placed to the required subgrade elevation or the maximum required fill height. The inspection shall be performed using either electronic deflectometers, calibrated television or video cameras, or a "go, no-go" mandrel that has an effective diameter of 95% of the nominal inside diameter of the pipe.

Pipe found to have deflection values greater than 5% shall be removed and replaced at no cost to the State.

907-708.18--Sewer Pipe Used for Underdrains.

907-708.18.1--General. After the second paragraph of Subsection 708.18.1 on page 645 add the following:

In lieu of the pipe listed in this subsection, pipe meeting the requirements of Subsection 708.19 may also be used for plastic underdrain pipe.

907-708.18.3--Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe. After the first sentence of Subsection 708.18.3 on page 645, add the following.

Non-perforated PVC pipe shall either be manufactured with an ultra-violet light inhibitor or be fully coated with an ultra-violet light inhibitor.

907-708.18.4--Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe. Delete the paragraph in Subsection 708.18.4 on page 645 and substitute the following.

This pipe shall conform to the following requirements. For pipe sizes less than or equal to six inches (≤ 6"), the pipe shall be Class PS46 meeting the requirements of AASHTO Designation: M 278. For pipe sizes greater than six inches (> 6"), the pipe shall meet the requirements of AASHTO Designation: M 304. Non-perforated PVC pipe shall either be manufactured with an ultra-violet light inhibitor or be fully coated with an ultra-violet light inhibitor.

Delete Subsection 708.19 on page 645 and substitute the following:

907-708.19--Corrugated Polyethylene Pipe. This pipe shall be high density polyethylene pipe or drainage tubing meet the requirements of AASHTO Designation: M 294, Type S or SP, or

AASHTO Designation: M 252, Type S or Type SP, as applicable.

907-708.22.2--Exceptions to AASHTO. Delete the sixth paragraph of Subsection 708.22.2 on page 647.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-709-1 **CODE: (IS)**

DATE: 05/05/2008

SUBJECT: Metal Pipe

Section 709, Metal Pipe, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

After Subsection 709.02 on page 649, add the following:

907-709.02.1--Aluminized Corrugated Metal Culvert Pipe and Pipe Arches. All aluminized metal pipe and arches shall be manufactured from Type 2 corrugated metal pipe and arches in accordance with the requirements of Subsection 709.02.

907-709.03--Bituminous Coated Corrugated Metal pipe and Pipe Arches.

907-709.03.1--Materials. Delete the first sentence of the first paragraph of Subsection 709.03.1 on page 649, and substitute the following:

Bituminous coated corrugated metal pipe and arches shall conform to the requirements of AASHTO Designation: M 190 and be completely coated inside and out with an asphalt cement which will meet the performance requirements hereinafter set forth.

907-709.05--Polymer Coated Corrugated Metal Pipe and Pipe Arches. Delete the first sentence of the first paragraph of Subsection 709.05 on pages 649 and 650, and substitute the following:

Polymer coated corrugated metal pipe and arches shall conform to the requirements of AASHTO Designation: M 245, except the minimum gauge thickness shall be as shown on the plans or in the contract; however, corrugated metal pipe manufactured from sheets thicker than that specified will be acceptable when approved by the Engineer. The internal diameter of corrugated metal pipe will be determined by inside measurement between the crests of the corrugations. Corrugations greater than 3" x 1" will not be allowed in arch pipe.

907-709.06--Corrugated Metal Pipe for Underdrains. Delete the sentence in Subsection 709.06 on page 650, and substitute the following:

Corrugated metal pipe shall conform to AASHTO Designation: M 36, Type III. Type I pipe which has been perforated to permit the in-flow or out-flow of water may be used in lieu of Type III pipe.

907-709.06.1--Aluminized Corrugated Metal Culvert Pipe For Underdrains. All aluminized corrugated metal pipe for underdrains shall be manufactured from Type 2 corrugated metal pipe

and arches in accordance with the requirements of AASHTO Designation: M 36, Type III. Manufacturer must repair any damaged coating caused from perforating the pipe.

907-709.07--Bituminous Coated Corrugated Metal Pipe for Underdrains. Delete the sentence in Subsection 709.07 on page 650, and substitute the following:

Bituminous coated corrugated metal pipe shall conform to the requirements of AASHTO Designation: M 190, Type A with a bituminous coating applied in accordance with the requirements of Subsection 709.03. Manufacturer must repair any damaged coating caused from perforating the pipe.

907-709.08--Polymer Coated Corrugated Metal Pipe for Underdrains. Delete the sentence in Subsection 709.08 on page 650, and substitute the following:

The metal pipe for underdrains shall conform to the requirements of AASHTO Designation: M 245, Type III and the polymer coating shall conform to the requirements of Subsection 709.05. Type I pipe which has been perforated to permit the in-flow or out-flow of water may be used in lieu of Type III pipe. Manufacturer must repair any damaged coating caused from perforating the pipe.

907-709.09--Corrugated Aluminum Alloy Culvert Pipe and Arches. Delete the first sentence in Subsection 709.09 on page 650, and substitute the following:

Corrugated aluminum culvert pipe and arches shall conform to the requirements of AASHTO Designation: M l96, Type IA.

907-709.10--Corrugated Aluminum Alloy Pipe for Underdrains. Delete the first sentence in Subsection 709.10 on page 650, and substitute the following:

Corrugated aluminum pipe underdrains shall conform to the requirements of AASHTO Designation: M 196, Type III. Type I pipe which has been perforated to permit the in-flow or out-flow of water may be used in lieu of Type III pipe.

907-709.11--Bituminous Coated Corrugated Aluminum Alloy Culvert Pipe and Arches. Delete the sentence in Subsection 709.11 on page 650, and substitute the following:

Bituminous coated aluminum culvert pipe and arches shall conform to AASHTO Designation: M 196, Type IA, and in addition shall be coated inside and out as specified in Subsection 709.03. Manufacturer must repair any damaged coating caused from perforating the pipe.

907-709.13--Bituminous Coated Corrugated Aluminum Alloy Pipe for Underdrains. Delete the sentence in Subsection 709.13 on page 650, and substitute the following:

This pipe shall conform to AASHTO Designation: M 196, Type III, and shall be coated with bituminous material conforming to AASHTO Designation: M 190, type coating as specified. Manufacturer must repair any damaged coating caused from perforating the pipe.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-710-1 **CODE: (SP)**

DATE: 06/24/10

SUBJECT: Fast Dry Solvent Traffic Paint

Section 710, Paint, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is amended as follows:

After Subsection 710.05 on Page 661, add the following:

907-710.06--Fast Dry Solvent Traffic Paint. Fast dry solvent traffic paints intended for use under this specification shall include products that are single packaged and ready mixed. Upon curing, these materials shall produce an adherent, reflective pavement marking capable of resisting deformation by traffic. The manufacturer shall have the option of formulating the material according to their own specifications. However, the requirements delineated in this specification, Section 619 and Section 710 shall apply regardless of the formulation used. The material shall be free from all skins, dirt and foreign objects.

907-710.06.1--Composition.

907-710.06.1.1--Percent Pigment. The percent pigment by weight shall be not less than 51% nor more than 58% when tested in accordance with ASTM D 3723.

907-710.06.1.2--Viscosity. The consistency of the paint shall be not less than 75 nor more than 95 Krebs Units (KU) when tested in accordance with ASTM D 562.

907-710.06.1.3--Weight per Gallon. The paint shall weigh a minimum 11.8 pounds per gallon and the weight of the production batches shall not vary more than +/- 0.5 pounds per gallon from the weight of the qualification samples when tested in accordance with ASTM D 1475.

907-710.06.1.4--Total Solids. The percent of total solids shall not be less than 70% by weight when tested in accordance with ASTM D 2369.

907-710.06.1.5--Dry Time (No pick-up). The paint shall dry to a no tracking condition in a maximum of 10 minutes.

907-710.06.1.6--Volatile Organic Content. The volatile organic content (VOC) shall contain a maximum of 1.25 pounds of volatile organic matter per gallon of total non-volatile paint material when tested in accordance with ASTM D 3960.

907-710.06.1.7--Bleeding. The paint shall have a minimum bleeding ratio of 0.95 when tested in accordance with Federal Specification TT-P-115D.

907-710.06.1.8--Color. The initial daytime chromaticity for yellow materials shall fall within the box created by the following coordinates:

Initial Daytime Chromaticity Coordinates (Corner Points)

	1	2	3	4
x	0.53	0.51	0.455	0.472
y	0.456	0.485	0.444	0.4

The initial daytime chromaticity of white materials shall fall within the box created by the following coordinates:

Initial Daytime Chromaticity Coordinates (Corner Points)

	1	2	3	4
x	0.355	0.305	0.285	0.355
y	0.355	0.305	0.325	0.375

907-710.06.2--Environmental Requirements. All yellow materials using lead chromate pigments shall meet the criteria of non-hazardous waste as defined by 40 CFR 261.24 when tested in accordance with EPA Test Method 1311, Toxicity Characteristics Leaching Procedures (TCLP). The striping and marking material , upon preparation and installation, shall not exude fumes which are toxic, or detrimental to persons or property. All material using lead free pigments shall NOT contain either lead or other Resource Conservation and Recovery Act (RCCA) materials in excess of the standard defined by EPA Method 3050 and 6010.

907-710.06.3--Acceptance Procedures. Acceptance of all fast dry solvent based traffics paint will be based on the Manufacturer's Certification and Certified Test Results. The Contractor shall furnish the Engineer with three copies of the manufacturer's certification stating that each lot of material in a shipment complies with the requirements of this contract. In addition, the Contractor shall provide Certified Test Reports for all tests required by this specification. The test results shall be representative of the material contained with the shipment.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-711-4 **CODE: (IS)**

DATE: 06/26/2009

SUBJECT: Synthetic Structural Fiber Reinforcement

Section 711, Reinforcement and Wire Rope, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

After Subsection 711.03.4.3 on page 665, add the following:

907-711.04--Synthetic Structural Fiber. The synthetic structural fibers shall be approved for listing in the Department's "Approved Sources of Materials" prior to use. The synthetic structural fibers shall be added to the concrete and mixed in accordance with the manufacturer's recommended methods.

907-711.04.1--Material Properties. The fibers shall meet the requirements of ASTM Designation: C 1116, Section 4.1.3. The fibers shall be made of polypropylene, polypropylene/polyethylene blend, nylon, or polyvinyl alcohol (PVA).

907-711.04.2--Minimum Dosage Rate. The dosage rate shall be such that the average residual strength ratio ($R_{150,3.0}$) of fiber reinforced concrete beams is a minimum of 20.0 percent when the beams are tested in accordance with ASTM Designation: C 1609. The dosage rate for fibers shall be determined by the following.

The fiber manufacturer shall have the fibers tested by an acceptable, independent laboratory acceptable to the Department and regularly inspected by the Cement and Concrete Reference Laboratory of the National Institutes of Standards and Technology and approved to perform ASTM Designations: C 39, C 78, and C192.

The laboratory shall test the fibers following the requirements of ASTM Designation: C 1609 in a minimum of three (3) test specimens cast from the same batch of concrete, molded in 6 x 6 x 20-inch standard beam molds meeting the requirements of ASTM Designation: C 31. The beams shall be tested on an 18-inch span. The tests for $R_{150,3.0}$ shall be performed when the average compressive strength of concrete used to cast the beams is between 3500 and 4500 psi. The tests for compressive strength shall follow the requirements of ASTM Designation: C 39. The average compressive strength shall be determined from a minimum of two (2) compressive strength cylinders.

The value for $R_{150,3}$ shall be determined using the following equation:

$$R_{150,3.0} = \frac{f_{150,3.0}}{f_1} \times 100$$

The residual flexural strength ($f_{150,3.0}$) shall be determined using the following equation:

$$f_{150,3.0} = \frac{P_{150,3.0} \times L}{b \times d^2}$$

where:

$f_{150,3.0}$ is the residual flexural strength at the midspan deflection of $L/150$, (psi),
$P_{150,3.0}$ is the residual load capacity at the midspan deflection of $L/150$, (lbf),
L is the span, (in),
b is the width of the specimen at the fracture, (in), and
d is the depth of the specimen at the fracture, (in).

For a 6 x 6 x 20-inch beam, the $P_{150,3.0}$ shall be measured at a midspan deflection of 0.12 inch.

Additionally, $R_{150,3.0}$, $f_{150,3.0}$, and $P_{150,3.0}$ may also be referred to as R_{150}^{150}, f_{150}^{150}, and P_{150}^{150} respectively.

At the dosage rate required to achieve the minimum $R_{150,3}$, the mixture shall both be workable and the fibers shall not form clumps.

The manufacturer shall submit to the State Materials Engineer certified test reports from the independent laboratory showing the test results of each test specimen.

907-711.04.3--Job Control Requirements. The synthetic structural fibers shall be one from the Department's "Approved Sources of Materials."

At the required dosage rate, the mixture shall both be workable and the fibers shall not form clumps to the satisfaction of the Engineer. If the mixture is determined by the Engineer to not be workable or have clumps of fibers, the mixture may be rejected.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-713-2

DATE: 04/04/2012

SUBJECT: Admixtures for Concrete

After the last sentence of the first paragraph of Subsection 907-713.02 on page 1, add the following.

Admixtures providing a specific performance characteristic(s) other than those of water reduction or set retardation shall meet the minimum requirements for Type S. For admixtures meeting the requirements for Type S, the manufacturer shall provide data to substantiate the specific performance characteristic(s) to the satisfaction of the State Materials Engineer.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-713-2 **CODE: (IS)**

DATE: 11/09/2010

SUBJECT: Admixtures for Concrete

Section 713, Concrete Curing Materials and Admixtures, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

After the second paragraph of Subsection 713.01.2 on page 676, add the following.

Type 1-D compound may be used on bridge rails, median barriers, and other structures requiring a spray finish. When Type 1-D compound is used, it will be the Contractor's responsibility to assure that the compound has dissipated from the structure prior to applying the spray finish and that the spray finish adheres soundly to the structure.

Delete Subsection 713.02 on pages 676 & 677, and substitute the following:

907-713.02--Admixtures for Concrete. Air-entraining admixtures used in Portland cement concrete shall comply with AASHTO Designation: M 154. Set-retarding, accelerating, and/or water-reducing admixtures shall comply with AASHTO Designation: M 194. Water-reducing admixture shall meet the minimum requirements for Type A. Set-retarding admixtures shall meet the minimum requirements for Type D.

In order to obtain approval of an admixture, the State Materials Engineer shall have been furnished certified test reports, made by an acceptable independent laboratory regularly inspected by the Cement and Concrete Reference Laboratory of the National Institutes of Standards and Technology, which show that the admixture meets all the requirements of the applicable AASHTO Standard Specification.

The Department reserves the right to sample, for check tests, any shipment or lot of admixture delivered to a project.

The Department reserves the right to require tests of the material to be furnished, using the specific cement and aggregates proposed for use on the project, as suggested in AASHTO Designation: M 154 and outlined in AASHTO Designation: M 194.

After an admixture has been approved, the Contractor shall submit to the State Materials Engineer, with each new lot of material shipped, a certification from the manufacturer in accordance with the requirements of Subsection 700.05.1 and stating the material is of the same composition as originally approved and has not been changed or altered in any way. The requirement in Subsection 700.05.1(b) is not required on the certification from the manufacturer.

Admixtures containing chlorides will not be permitted.

Failure to maintain compliance with any requirement of these specifications shall be cause for rejection of any previously approved source or brand of admixture.

Admixtures shall only be used in accordance with the manufacturer's recommended dosage range as set forth in the manufacturer's approval request correspondence. When an admixture is used in Portland cement concrete, it shall be the responsibility of the Contractor to produce satisfactory results.

907-713.02.1--Source Approval. In order to obtain approval of an admixture, the Producer/Suppliers shall submit to the State Materials Engineer the following for review: certified test reports, made by an acceptable independent laboratory regularly inspected by the Cement and Concrete Reference Laboratory of the National Institutes of Standards and Technology, which show that the admixture meets all the requirements of the applicable AASHTO or Department Specification for the specific type and the dosage range for the specific type of admixture.

907-713.02.2--Specific Requirements. Admixtures containing chlorides will not be permitted.

907-713.02.3--Acceptance. The Department reserves the right to sample, for check tests, any shipment or lot of admixture delivered to a project.

The Department reserves the right to require tests of the material to be furnished, using the specific cement and aggregates proposed for use on the project, as suggested in AASHTO Designation: M 154 and outlined in AASHTO Designation: M 194.

Failure to maintain compliance with any requirement of these specifications shall be cause for rejection of any previously approved source or brand of admixture.

With each new lot of material shipped the Contractor shall submit to the State Materials Engineer, a notarized certification from the manufacturer showing that the material complies with the requirements of the applicable AASHTO or Department Specification.

When an admixture is used, it shall be the responsibility of the Contractor to produce satisfactory results.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-714-3 **CODE: (SP)**

DATE: 04/19/2006

SUBJECT: Stabilizing Fibers

Section 714, Miscellaneous Materials, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete Subsection 714.07 on page 682 and substitute the following:

907-714.07--Stabilizing Fibers.

907-714.07.1--General. Stabilizing fibers shall be used in Stone Matrix Asphalt (SMA) mixtures and other mixtures, as necessary, for draindown reduction. Fibers shall be added at a minimum dosage rate of 0.30 percent for both cellulose and mineral fibers by weight of total mix. The produced mixture containing the fibers shall exhibit a draindown of 0.30 percent or less when tested in accordance with Mississippi Test Method MT-82.

Either cellulose or mineral fibers may be used. A pelletized fiber comprised of either cellulose or mineral fiber may also be used.

907-714.07.2--Cellulose Fibers. Cellulose fibers shall conform to the following properties:

Property	**Specification Requirement**
Fiber Length	0.25 inch maximum
Sieve Analysis	
a. Alpine Air Jet Sieve Method (Passing No. 100 sieve)	60 – 80 percent
b. Mesh Screen Sieve Method (Passing No. 20 sieve) (Passing No. 40 sieve) (Passing No. 100 sieve)	 75 – 95 percent 55 – 75 percent 20 – 40 percent
Ash Content	18.0 ± 5 percent
PH	7.5 ± 1.0
Oil Absorption	5.0 ± 1.0
Moisture Content	5.0 percent maximum

907-714.07.3--Mineral Fibers. Mineral fibers shall conform to the following properties:

Property	Specification Requirement
Average Fiber Length	0.25 inch maximum
Average Fiber Thickness	0.0002 inch maximum
Shot Content (ASTM C612)	
(Passing the No. 60 sieve)	85 – 95 percent
(Passing the No. 230 sieve)	60 – 80 percent

907-714.07.4--Pelletized Fibers.
Pelletized fibers shall conform to the properties provided in Subsection 907-714.07.2 or 907-714.07.3.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-714-6 **CODE: (IS)**

DATE: 11/09/2010

SUBJECT: Miscellaneous Materials

Section 714, Miscellaneous Materials, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-714.05--Fly Ash. Delete Subsections 714.05.1 & 714.05.2 on pages 680 & 681, and substitute the following:

907-714.05.1--General. The fly ash source must be approved for listing in the Department's "Approved Sources of Materials" prior to use. The acceptance of fly ash shall be based on certified test reports, certification of shipment from the supplier, and tests performed on samples obtained after delivery in accordance with the Department's Materials Division Inspection, Testing, and Certification Manual and Department SOP.

Different classes of fly ash or different sources of the same class shall not be mixed or used in the construction of a structure or unit of a structure without written permission from the Engineer.

The Contractor shall provide suitable means for storing and protecting the fly ash from dampness. Separate storage silos, bins, or containers shall be provided for fly ash. Fly ash which has become partially set or contains lumps of caked fly ash shall not be used.

The temperature of the bulk fly ash shall not be greater than 165°F at the time of incorporation into the work.

All classes of fly ash shall meet the supplementary option chemical requirement for available alkalies listed in AASHTO Designation: M 295, Table 2. Class F fly ash shall have a calcium oxide (CaO) content of less than 6.0%. Class C fly ash shall have a CaO content of greater than or equal to 6.0%.

The replacement of Portland cement with fly ash shall be in accordance with the applicable replacement content specified in Subsection 907-701.02.2.

In addition to these requirements, fly ash shall meet the following specific requirements for the intended use.

907-714.05.2--Fly Ash for Use in Concrete. When used with Portland cement in the production of concrete or grout, the fly ash shall meet the requirements of AASHTO Designation: M 295, Class C or F, with the following exception:

The loss on ignition shall not exceed 6.0 percent.

No additional cementitious materials, such as blended hydraulic cement, GGBFS, metakaolin, or others, shall be added to or as a replacement for Portland cement when used with fly ash.

907-714.06--Ground Granulated Blast Furnace Slag (GGBFS). Delete Subsection 714.06.1 on page 681, and substitute the following:

907-714.06.1--General. The GGBFS source must be approved for listing in the Department's "Approved Sources of Materials" prior to use. The acceptance of GGBFS shall be based on certified test reports, certification of shipment from the supplier, and tests performed on samples obtained after delivery in accordance with the Department's Materials Division Inspection, Testing, and Certification Manual and Department SOP.

The Contractor shall provide suitable means for storing and protecting the GGBFS against dampness and contamination. Separate storage silos, bins, or containers shall be provided for GGBFS. GGBFS which has become partially set, caked or contains lumps shall not be used.

The State Materials Engineer shall be notified in writing of the nature, amount and identity of any processing or other additions made to the GGBFS during production.

GGBFS from different mills shall not be mixed or used alternately in any one class of construction or structure without written permission from the Engineer; except that this requirement will not be applicable to cement treatment of design soils or bases.

No additional cementitious materials, such as blended hydraulic cement, fly ash, metakaolin, or others, shall be added to or as a replacement for Portland cement when used with GGBFS in the production of concrete. The replacement of Portland cement with GGBFS shall be in accordance with the applicable replacement content specified in Subsection 907-701.02.2.

Delete Subsection 714.07 on page 682, and substitute the following:

907-714.07--Additional Cementitious Materials.

907-714.07.1--Metakaolin.

907-714.07.1.1--General. Metakaolin shall only be used as a supplementary cementitious material in Portland cement concrete for compliance with the requirements for cementitious materials exposed to soluble sulfate conditions. Metakaolin from different sources shall not be mixed or used alternately in any one class of construction or structure without written permission from the Engineer. No additional cementitious materials, such as blended hydraulic cement, fly ash, GGBFS, or others, shall be added to or as a replacement for Portland cement when used with metakaolin in the production of concrete.

The State Materials Engineer shall be notified in writing of the nature, amount and identity of any processing, or other additions made to the metakaolin during production.

907-714.07.1.2--Source Approval. The approval of each metakaolin source shall be on a case by case basis as determined by the State Materials Engineer. In order to obtain approval of a metakaolin source, the Producer/Suppliers shall submit to the State Materials Engineer the

following for review: certified test reports, made by an acceptable, independent laboratory regularly inspected by the Cement and Concrete Reference Laboratory of the National Institutes of Standards and Technology, which show that the metakaolin meets all the requirements of AASHTO Designation: M295, including the Effectiveness in contributing to sulfate resistance, Procedure A, listed in AASHTO Designation: M295, Table 4 for Supplementary Optional Physical Requirements, and other requirements listed herein.

In order to demonstrate effectiveness in contributing to sulfate resistance, included in this test data shall be results of metakaolin from the proposed source tested in accordance with ASTM Designation: C 1012. There shall be two sets of test specimens per the following:

a. One set of test specimens shall be prepared using a Type I Portland cement meeting the requirements of AASHTO Designation: M85 and having a tricalcium aluminate (C_3A) content of more than 8.0%,

b. One set of test specimens shall be prepared using a Type II Portland cement meeting the requirements of AASHTO Designation: M85.

c. The proposed metakaolin shall be incorporated at the rate of 10% cement replacement in each set of test specimens and shall meet both of the acceptance criteria listed below for source approval.

The requirement for acceptance of the test sample using Type I Portland cement is an expansion of 0.10% or less at the end of six months. The requirement for acceptance of the test sample using Type II Portland cement is an expansion of 0.05% or less at the end of six months.

907-714.07.1.3--Storage. The Contractor shall provide suitable means for storing and protecting the metakaolin against dampness and contamination. Metakaolin which has become partially set, caked, or contains lumps shall not be used.

907-714.07.1.4--Specific Requirements. Metakaolin shall meet the requirements of AASHTO Designation: M 295, Class N with the following modifications:

1. The sum of $SiO_2 + Al_2O_3 + Fe_2O_3$ shall be at least 85%. The Material Safety Data Sheet shall indicate that the amount of crystalline silica, as measured by National Institute of Occupation Safety and Health (NIOSH) 7500 method, after removal of the mica interference, is less than 1.0%.
2. The loss on ignition shall be less than 3.0%.
3. The available alkalies, as equivalent Na_2O, shall not exceed 1.0%.
4. The amount of material retained on a No. 325 mesh sieve shall not exceed 1.0%.
5. The strength activity index at seven (7) days shall be at least 85%.

907-714.07.1.5--Acceptance. With each new lot of material shipped the Contractor shall submit to the State Materials Engineer a certified test report from the manufacturer showing that the material meets the requirements AASHTO Designation: M295, Class N and the requirements of this Subsection.

The Department reserves the right to sample, for check tests, any shipment or lot of metakaolin delivered to a project.

907-714.07.2--Silica Fume.

907-714.07.2.1--General. Silica fume shall only be used as a supplementary cementitious material in Portland cement concrete for compliance with the requirements for cementitious materials exposed to soluble sulfate conditions. Silica fume from different sources shall not be mixed or used alternately in any one class of construction or structure without written permission from the Engineer. No additional cementitious materials, such as blended hydraulic cement, performance hydraulic cement, fly ash, GGBFS, or others, shall be added to or as a replacement for Portland cement when used with silica fume in the production of concrete.

The State Materials Engineer shall be notified in writing of the nature, amount and identity of any processing, or other additions made to the silica fume during production.

907-714.07.2.2--Source Approval. The approval of each silica fume source shall be on a case by case basis as determined by the State Materials Engineer. In order to obtain approval of a silica fume source, the Producer/Suppliers shall submit to the State Materials Engineer the following for review: certified test reports, made by an acceptable, independent laboratory regularly inspected by the Cement and Concrete Reference Laboratory of the National Institutes of Standards and Technology, which show that the silica fume meets all the requirements of AASHTO Designation: M307, Table 3, including the Sulfate resistance expansion, listed in the table for Optional Physical Requirements, and other requirements listed herein.

In order to demonstrate effectiveness in contributing to sulfate resistance, included in this test data shall be results of silica fume from the proposed source tested in accordance with ASTM Designation: C 1012. There shall be two sets of test specimens per the following:

a. One set of test specimens shall be prepared using a Type I Portland cement meeting the requirements of AASHTO Designation: M85 and having a tricalcium aluminate (C_3A) content of more than 8.0%,

b. One set of test specimens shall be prepared using a Type II Portland cement meeting the requirements of AASHTO Designation: M85.

c. The proposed silica fume shall be incorporated at the rate of 8% cement replacement in each set of test specimens and shall meet both of the acceptance criteria listed below for source approval.

The requirement for acceptance of the test sample using Type I Portland cement is an expansion of 0.10% or less at the end of six months. The requirement for acceptance of the test sample using Type II Portland cement is an expansion of 0.05% or less at the end of six months.

907-714.07.2.3--Storage. The Contractor shall provide suitable means for storing and protecting the silica fume against dampness and contamination. Silica fume which has become partially set, caked, or contains lumps shall not be used.

907-714.07.2.4--Acceptance. With each new lot of material shipped, the Contractor shall submit to the State Materials Engineer a certified test report from the manufacturer showing that the material meets the Chemical and Physical Requirements of AASHTO Designation: M307.

The Department reserves the right to sample, for check tests, any shipment or lot of silica fume

delivered to a project.

Delete Subsection 714.11.6 on pages 690 and 691, and substitute the following:

907-714.11.6--Rapid Setting Cementitious Patching Compounds for Concrete Repair. Rapid setting concrete patching compounds must be approved for listing in the Department's "Approved Sources of Materials" prior to use. Upon approval, a product must be recertified every four (4) years to remain on the "Approved Sources of Materials" list. Each product shall be pre-measured and packaged dry by the manufacturer. All liquid solutions included by the manufacturer as components of the packaged material shall be packaged in a watertight container. The manufacturer may include aggregates in the packaged material or recommend the addition of Contractor furnished aggregates.

The type, size and quantity of aggregates, if any, to be added at the job site shall be in accordance with the manufacturer's recommendations and shall meet the requirements of Subsection 703.02 for fine aggregate and Subsection 703.03 for coarse aggregate. Required mixing water to be added at the job site shall meet the requirements of Subsection 714.01.2.

Only those bonding agents, if any, recommended by the manufacturer of the grout or patching compounds may be used for increasing the bond to old concrete or mortar surfaces.

Patching compounds containing soluble chlorides will not be permitted when in contact with steel.

Site preparation, proportioning of materials, mixing, placing and curing shall be performed in accordance with the manufacturer's recommendation for the specific type of application, and the Contractor shall furnish a copy of these recommendations to the Engineer.

Rapid setting cementitious concrete patching compounds, including components to be added at the job site, shall conform to the following physical requirements:

Non-shrink cementitious grouts shall not be permitted for use.

Compressive strength shall equal or exceed 3000 psi in 24 hours in accordance with ASTM C 928 for Type R2 concrete or mortar.

Bond strength shall equal or exceed 1000 psi in 24 hours in accordance with ASTM C 928 for Type R2 concrete or mortar.

The material shall have a maximum length change of ±0.15% in accordance with ASTM C 928 for Type R2 concrete or mortar.

The Contractor shall furnish to the Engineer three copies of the manufacturer's certified test report(s) showing results of all required tests and certification that the material meets the specifications when mixed and place in accordance with the manufacturer's instructions. When the mixture is to be placed in contact with steel, the certification shall further state that the packaged material contains no chlorides. Certified test report(s) and certification shall be furnished for each lot in a shipment.

The proportioning of materials must be approved by the State Materials Engineer and any subsequent change in proportioning must also be approved. A sample of each component shall be submitted to the Engineer along with the quantity or percentage of each to be blended. At least 45 days must be allowed for initial approval.

The proportioning of materials for subsequent lots may be approved by the State Materials Engineer upon receipt of certification from the manufacturer that the new lot of material is the same composition as that originally approved by the Department and that the material has not been changed or altered in any way.

907-714.11.7--Commercial Grout for Anchoring Doweled Tie Bars in Concrete. Before Subsection 714.11.7.1 on page 691, add the following:

Approved Non-"Fast Set" Epoxy anchor systems as specified below may be used for the repair of concrete pavements that do not involve permanent sustained tension applications or overhead applications.

"***Fast Set Epoxy***" may not be used for any Adhesive Anchor Applications. Adhesive Anchor Systems (Fast Set epoxy or otherwise) shall not be used for permanent sustained tension applications or overhead applications. "Fast Set Epoxy" refers to an epoxy produced by the Sika Corporation called Sikadur AnchorFix-3 and repackaged for sale under a variety of names/companies listed at the Federal Highway Administration web site at the following link:

http://www.fhwa.dot.gov/Bridge/adhesives.cfm

907-714.11.7.4--Acceptance Procedure. After the last sentence of the first paragraph of Subsection 714.11.4 on page 691, add the following:

Upon approval, a product must be recertified every four (4) years to remain on the "Approved Sources of Materials" list.

907-714.11.8--Epoxy Joint Repair System.

907-714.11.8.1--General. After the last sentence of the first paragraph of Subsection 714.11.8.1 on page 692, add the following:

Upon approval, a product must be recertified every four (4) years to remain on the "Approved Sources of Materials" list.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-715-3

DATE: 06/14/2012

SUBJECT: Roadside Development Materials

Add the following to the table in Subsection 907-715.03.2 on page 1.

Wheat	-	80	98

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-715-3 **CODE: (IS)**

DATE: 01/25/2008

SUBJECT: Roadside Development Materials

Section 715, Roadside Development Materials, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-715-02.2.1--Agricultural Limestone. Delete the first sentence of Subsection 715-02.2.1 on page 704 and substitute the following.

Agricultural limestone shall be either a hard-rock limestone material or a marl or chalk agricultural liming material as addressed in the latest amendment to the Mississippi Agricultural Liming Material Act of 1993, published by the Mississippi Department of Agriculture and Commerce.

907-715.02.2.1.1--Screening Requirements. Delete the first sentence of Subsection 715.02.2.1.1 on page 704.

Delete Subsection 715.02.2.1.2 on page 704 and substitute the following:

907-715-02.2.1.2--Calcium Carbonate Equivalent. Marl or chalk liming material shall not have less than 70% calcium and magnesium carbonate calculated as calcium carbonate equivalent when expressed on a dry weight basis.

907-715-02.2.1.3--Neutralizing Values. Hard-rock limestone material shall have a minimum Relative Neutralizing Value (RNV) of 63.0%, which is determined as follows:

% RNV = CCE x (% passing #10 mesh + % passing #50 mesh)/2

Where: CCE = Calcium Carbonate Equivalent

907-715.03--Seed.

907-715.03.2--Germination and Purity Requirements. Add the following to Table B on page 705.

Name (Kind)	Name (Variety)	Percent Germination	Percent Purity
GRASSES			
Rye Grass	Annual	80	98

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-720-1

DATE: 10/04/2012

SUBJECT: Pavement Marking Material

Before Subsection 907-720.02 on page 1, add the following.

907-720.01--Glass Beads. After the first sentence of Subsection 720.01 on page 729, add the following.

The glass beads shall contain no more than 200 ppm (mg/kg) total concentration for lead, arsenic, or antimony. The manufacture shall furnish the Engineer with a certified test report indicating that the glass beads meet the above requirement.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-720-1 **CODE: (IS)**

DATE: 3/17/2008

SUBJECT: Pavement Markings Materials

Section 720, Pavement Marking Materials, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-720.02--Thermoplastic Pavement Markings. Delete the first paragraph of Subsection 720.02 on page 730 and substitute the following:

The thermoplastic material shall be lead free and conform to AASHTO Designation: M 249 except the glass beads shall be moisture resistant coated.

After the first sentence of the second paragraph of Subsection 720.02 on page 730, add the following:

In addition, the certification for the thermoplastic material shall state that the material is lead free.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-723-1 **CODE: (SP)**

DATE: 08/16/2007

SUBJECT: High Mast Lighting Wind Velocity

Section 723, Materials For Roadway Lighting Installation, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-723.04--High Mast Lighting Assembly.

907-723.04.1--Pole. Delete the last sentence of the first paragraph of Subsection 723.04.1 on page 792 and substitute the following.

Designed wind velocity shall be in accordance with the 2001 AASHTO Standard Specifications for Structural Supports for High Signs, Luminaires and Traffic Signals to support the number and type luminaires and lowering device required on the different assembly types. Design wind velocities shall be as follows:

140 MPH------- Hancock, Harrison & Jackson Counties
130 MPH------- Pearl River, Stone, & George Counties
120 MPH------- Lamar, Forrest, Perry & Greene Counties
110 MPH------- Pike, Walthall, Marion, Jefferson Davis, Covington, Jones & Wayne Counties
100 MPH------- Wilkinson, Amite, Adams, Franklin, Lincoln,, Lawrence, Simpson, Smith, Jasper & Clarke Counties
90 MPH------- All counties north of and including Jefferson, Copiah, Rankin, Scott, Newton, & Lauderdale

Ice Loading shall be considered in the design for structures in all counties above and including Washington, Humphreys, Holmes, Attala, Winston, & Noxubee.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-803-2

DATE: 05/30/2012

SUBJECT: Maturity Meters in Drilled Shafts

Delete Subsection 907-803.03.2.7.1 on page 1 and substitute the following.

907-803.03.2.7.1--General. Delete the fourth and fifth paragraphs of Subsection 803.03.2.7.1 on page 834, and substitute the following.

For tremied or pumped concrete, the elapsed time from the beginning of concrete placement in the shaft to the completion of the placement shall not exceed four (4) hours, except as noted below. Retarders and/or water reducers in the concrete mixture shall be adjusted as approved for the conditions encountered on the job, so that the concrete remains in a workable plastic state throughout the four hour placement limit. This is defined as a minimum slump of four (4) inches existing everywhere within the concrete shaft after placement has been completed. Prior to concrete placement, the Contractor shall provide test results meeting the requirements of Subsection 907-804.02.10 and a slump loss test per the requirements in Subsection 907-804.02.10.3. The Contractor may request a longer placement time, provided a concrete mixture is supplied that will maintain a slump of four (4) inches or greater over the longer placement time, as demonstrated by slump loss tests.

In the event that free-fall concrete placement is approved and used, the four-inch slump in four hours requirement will be waived.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-803-2 **CODE: (IS)**

DATE: 02/05/2008

SUBJECT: Maturity Meters in Drilled Shafts

Section 803, Deep Foundations, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-803.03--Construction Requirements.

907-803.03.2--Drilled Shafts.

907-803.03.2.3.1.1--Protection of Existing Structures. Delete the fifth sentence of the first paragraph of Subsection 803.03.2.3.1.1 on page 820, and substitute the following:

Advancing an uncased drilled shaft excavation or the use of a vibratory hammer to install casings within 30 feet of a newly constructed shaft will not be permitted unless the concrete in that shaft has attained a compressive strength of 2500 psi, as determined by cylinder tests, or maturity meter probe when maturity meter readings indicate that the required concrete strength is achieved.

After the first paragraph of Subsection 803.03.2.3.1.1 on page 820, add the following:

If a maturity meter probe is used, it shall be located in the last concrete placed. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO Designation: T 325 and ASTM Designation: C 1074 specifications. Technicians using the maturity meter or calculating strength/maturity graphs shall be required to have at least two hours of training prior to using the maturity equipment.

907-803.03.2.7--Concrete Placement.

907-803.03.2.7.1--General. Delete the last sentence of the fifth paragraph of Subsection 803.03.2.7.1 on pages 834.

907-803.03.2.8.1--Static Load Tests. Delete the first sentence of the first paragraph of Subsection 803.03.2.8.1 on pages 836 & 837, and substitute the following

Static load testing shall not begin until the concrete has attained a compressive strength of 3000 psi as determined from cylinder tests, or maturity meter probe in accordance with Subsection 803.03.2.3.1.1. If a maturity meter probe is used, it shall be located the last concrete placed.

907-803.05--Basis of Payment. Delete pay items 803-K, 803-L, and 803-M on page 846, and substitute the following:

907-803-K: Drilled Shaft, ___" Diameter - per linear foot

907-803-L: Test Shaft, ___" Diameter - per each

907-803-M: Trial Shaft, ___" Diameter - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-804-13

DATE: **02/14/2013**

SUBJECT: **Concrete Bridges And Structures**

After the second paragraph of Subsection 907-804.02.10 on page 2, add the following.

After the first paragraph of Subsection 804.02.10 on page 850, add the following.

If the Contractor chooses to cure the concrete in accordance with the requirements listed under **Length of Time Defined by Development of Compressive Strength** in Subsection 907-804.03.17, the compressive strength/maturity relationship shall be developed for the mixture design for a minimum of 28 days following the requirements of Subsection 907-804.03.15. The compressive strength/maturity relationship information shall be submitted with the mixture design information.

In the ** Note of Subsection 907-804.02.10 on page 2, delete "metakaolin" from the list of other cementitious materials.

After the first sentence of the last paragraph of Subsection 907-804.02.10 on page 3, add the following.

Mixture designs containing accelerating admixtures will not be approved. Admixtures providing a specific performance characteristic other than those of water reduction or set retardation may be used in accordance with the manufacturer's recommended dosage range.

After Subsection 907-804.02.10.1.1 on page 3, add the following.

907-804.02.10.1.2--Proportioning on the Basis of Laboratory Trial Mixtures. Delete subparagraph d) of Subsection 804.02.10.1.2 on pages 852 & 853, and substitute the following.

d) For each proposed mixture, at least three compressive test cylinders shall be made and cured in accordance with AASHTO Designation: T 126. Each change of water-cementitious ratio shall be considered a new mixture. The cylinders shall be tested for strength in accordance with AASHTO Designation: T 22 and shall be tested at 28 days.

After Subsection 907-804.02.10.3 on page 4, add the following.

After Subsection 804.02.10.3 on page 853, add the following.

907-804.02.10.3.1--Slump Retention of Class DS Concrete Mixture Designs. Prior to concrete placement, the Contractor shall provide test results of a slump loss test using approved methods to demonstrate that the mixture meets the four hour requirement in Subsection 907-803.02.7.1. These tests shall be conducted successfully by an approved testing laboratory within

30 days prior to installation of the trial shaft, with personnel from the Department's Central Laboratory present. The slump loss test shall be conducted at temperatures and conditions similar to those expected at the job site at the time of the installation of the trial shaft. The sample for the slump loss test shall be from a minimum batch size of four cubic yards of concrete. If the time between the previous successful slump loss test and the installation of the trial shaft exceeds 30 days, another successful slump loss test shall be performed on the first truckload of concrete as part of the installation of the trial shaft. This requirement limiting the time between the previous slump loss test and an installation of the trial shaft also applies to Class DS concrete mixture designs being transferred from another project. During any shaft installation a slump loss test shall be conducted by the Contractor at the direction of the Engineer from the concrete at the site for verification of slump loss requirements using a sample from a minimum batch size of four cubic yards of concrete.

Before Subsection 907-804.02.12.3 on page 5, add the following.

907-804.02.12.1.1--Elements of Plan. After item 3) in Subsection 804.02.12.1.1 on page 855, add the following.

4) Job Site Batch Adjustments by Addition of Chemical Admixtures:

   The Plan shall address if the Contractor intends to adjust either the slump and/or total air content of a batch on the job site by adding chemical admixture(s) to a batch. The Contractor shall include the names of the personnel designated to perform this batch adjustment, the equipment used to add the chemical admixture(s), and the procedure by which the batch adjustment will be accomplished. Only the Contractor's designated personnel shall adjust a batch. Only calibrated dispensing equipment shall be used to add chemical admixture(s) to a batch. Only the procedure described in section of the Plan shall be utilized.

   If the maximum permitted slump or total air content is exceeded after the addition of admixtures at the job site, the concrete shall be rejected.

   If the Contractor elects to utilize Job Site Batch Adjustments by Addition of Chemical Admixture within Item 2, Procedures for Corrective Actions for Non Compliance of Specifications, to adjust batches which do not meet the minimum specification requirements for slump and/or total air content, no more than three batches on any one project shall be allowed to be adjusted.

5) Construction of Concrete Bridge Decks, including the following:

   - the description of the equipment used for placing concrete on the bridge deck in accordance with Subsection 907-804.03.6 and, as applicable, Subsections 907-804.03.7 and 907-804.03.8 including any accessories added to the pump to ensure the entrained air in the concrete mixture remains entrained during pumping and depositing of the concrete mixture,
   - the description of and the number of pieces of equipment used to consolidate the concrete in accordance with Subsection 907-804.03.6.2,

- the description of the equipment used to finish the bridge deck in accordance with Subsection 907-804.03.19.7,
- the plan for ensuring a continuous rate of finishing the bridge deck without delaying the application of curing materials within the time specified in Subsection 907-804.03.17, including ensuring a continuous supply of concrete throughout the placement with an adequate quantity of concrete to complete the deck and filling diaphragms and end walls in advance of deck placement,
- the plan for applying the curing materials within the time specified in Subsection 907-804.03.17,
- the description of the powered fogging equipment in accordance with Subsection 907-804.03.17,
- a sample of the documentation used as the daily inspection report for ensuring maintenance of the continuous wet curing in accordance with Subsection 907-804.03.17, as required,
- the description of the equipment used to apply the liquid membrane, including but not limited to, the nozzles, pumping/pressurization equipment, and liquid membrane tanks, in accordance with Subsection 907-804.03.17,
- the method for determining the rate of applied liquid membrane meets the application rate requirements in accordance with Subsection 907-804.03.17,
- a sample of the documentation used for the application rate verification of the liquid membrane in accordance with Subsection 907-804.03.17.

After Subsection 907-804.03.6.2 on page 7, add the following.

907-804.03.8--Pumping Concrete. Delete the second paragraph of Subsection 804.03.8 on page 866, and substitute the following.

Where concrete mixture is conveyed and placed by mechanically applied pressure (pumping), the equipment shall be suitable in kind and adequate in capacity for the work. The Contractor shall select concrete mixture proportions such that the concrete mixture is pumpable and placeable with the selected equipment.

The pumping equipment shall be thoroughly cleaned prior to concrete placement. Excess form release agent shall be removed from the concrete pump hopper. The Contractor shall prime the pump at no additional cost to the Department by pumping and discarding enough concrete mixture to produce a uniform mixture exiting the pump. At least 0.25 cubic yard of concrete mixture shall be pumped and discarded to prime the pump. This shall be accomplished by using the pump to fill a commercially-available six (6) cubic foot wheelbarrow to overflowing or filling a commercially-available eight (8) cubic foot wheel barrow to level. Only concrete mixture shall be added directly into the concrete pump hopper after placement has commenced. If anything other than concrete mixture is added to the concrete pump hopper, all concrete mixture in the concrete pump hopper and pump line shall be discarded and the pump re-primed at no additional cost to the Department.

The discharge end of the pump shall be of such a configuration that the concrete does not move in the pump line under its own weight. The intent of this requirement is to ensure that entrained air in the concrete mixture remains entrained during pumping and depositing the concrete mixture. This shall be accomplished with one or both of the following:

- a minimum 10-foot flexible hose attached to the discharge end of a steel reducer having a minimum length of three (3) feet and a minimum reduction in area of 20% which is attached to the discharge end of the pump line, or
- a flexible reducing hose to the discharge end of the pumpline with a minimum reduction in area of 20% over a minimum 10-foot hose length.

Regardless of the configuration chosen, the Contractor shall ensure that the concrete is pumped and does not free-fall more than five (5) feet within the entire length of pump line and after discharge from the end of pump line.

The Contractor shall not have any type of metal elbow, metal pipe, or other metal fitting within five (5) feet of any person during discharge of concrete mixture.

Boom pumps shall have a current Concrete Pump Manufacturers Association's ASME/ANSI B30.27 certification. Equipment added to the boom and pump line shall meet the pump manufacturer's specifications and shall not exceed the manufacturer's maximum recommended weight limit for equipment added to the boom and pump line.

The operation of the pump shall be such that a continuous stream of concrete without air pockets is produced. When pumping is completed, the concrete remaining in the pipe line, if it is to be used, shall be ejected in such a manner that there will be no contamination of the concrete or separation of the ingredients. After this operation, the entire equipment shall be thoroughly cleaned.

Before Subsection 907-804.03.15 on page 7, add the following.

907-804.03.14.2--Stay-In-Place Metal Forms. Delete the sentence in Subsection 804.03.14.2 on page 871 and substitute the following.

Stay-in-place (SIP) metal forms are corrugated metal sheets permanently installed between the supporting superstructure members. After the concrete has cured, these forms shall remain in place as permanent, non-structural members of the bridge.

Pay quantities for bridge deck concrete will be computed from the dimensions shown in the Contract Plans with no allowance for changes in deflection and /or changes in dimensions necessary to accommodate the SIP metal forms.

There will be no direct payment for the cost of the forms and form supports, or any material, tools, equipment, or labor incidental thereto, but the cost shall be considered absorbed in the contract unit price for bridge deck concrete.

Before fabricating any material, three (3) complete sets of SIP metal form shop drawings and design calculations, bearing the Design Engineer's Seal, shall be submitted to the Director of Structures, State Bridge Engineer, through the Project Engineer, for review. The Contractor's SIP metal form Design Engineer shall be a MS Registered Professional Engineer who is knowledgeable in the field of structural design.

In no case shall additional dead load produced by the use of SIP metal forms overstress any bridge component. Design calculations shall indicate any additional dead load from SIP metal form self-weight, form support hangers, concrete in flutes, concrete due to form deflection, etc. not included in the Contract Plans. The additional dead loads shall be clearly labeled and tabulated on the shop drawings. Bridge Division will evaluate the additional load for overstress of the bridge components. In the event that the additional dead load produces an overstress in any bridge component, Bridge Division will reject the Contractor's design. Deflection and loads produced by deflection of the SIP metal forms shall be considered and indicated in the design calculations.

The cambers and deflections provided in the Contract Plans do not consider the effects of SIP metal forms. The Contractor's Engineer shall take into account the weight of the forms and any additional dead load when developing the "Bridge Superstructure Construction Plan".

For the purpose of reducing any additional dead load produced by the SIP metal forms, the flutes of SIP metal forms may be filled with polystyrene foam. When polystyrene foam is used to fill the forms, the form flutes shall be filled completely; no portion of the polystyrene foam shall extend beyond the limits of the flutes. The Contractor shall ensure that the polystyrene foam remains in its required position within flutes during the entire concrete placement process. The Contractor shall not use reinforcing steel supports or other accessories in such a manner as to cause damage to the polystyrene foam. All damaged polystyrene foam shall be replaced to the satisfaction of the Project Engineer. All welding of formwork shall be completed prior to placement of polystyrene foam.

For bridges not located in horizontal curves, the Contractor may reduce the additional dead load by matching the flute spacing with the transverse steel spacing of the bottom layer. The bottom longitudinal layer of steel shall have one (1) inch of minimum concrete cover measured from the bottom of the reinforcing to the top of the flute. The Contractor will not be allowed to vary the reinforcing steel spacing or size from the Contract Plans for the purpose of matching flute spacing.

907-804.03.14.2.1--Materials. SIP metal forms and supports shall meet the requirements of ASTM Designation: A653 having a coating designation G165. Form materials that are less than 0.03-inch uncoated thickness shall not be allowed.

907-804.03.14.2.2--Certification. The Contractor shall provide written certification from the manufacturer stating the product meets the requirements of this specification to the Project Engineer along with the delivery of the coated forms to the job site.

All welds shall be performed by certified welders meeting the requirements of the approved shop drawings.

907-804.03.14.2.3--Polystyrene Foam. The polystyrene foam shall be comprised of expanded polystyrene manufactured from virgin resin of sufficient density to support the weight of concrete without deformation. The polystyrene foam shall be extruded to match the geometry of the flutes and provide a snug fit. The polystyrene foam shall have a density of not less than 0.8 pounds per cubic foot. The polystyrene foam shall have water absorption of less than 2.6% when tested according to ASTM Designation: C272. The Contractor shall provide written certification

from the manufacturer stating the polystyrene foam product meets the requirements of this specification to the Project Engineer along with the delivery of the coated forms to the job site.

907-804.03.14.2.4--Design. The design of the SIP metal forms shall meet the following criteria.

1. The maximum self-weight of the stay in place metal forms, plus the weight of the concrete or expanded polystyrene required to fill the form flutes (where used), shall not exceed 20 psf.

2. The forms shall be designed on the basis of dead load of form, reinforcement, and plastic concrete plus 50 pounds per square foot for construction loads. The design shall use a unit working stress in the steel sheet of not more than 0.725 of the specified minimum yield strength of the material furnished, but not to exceed 36,000 psi.

3. Deflection under the weight of the forms, reinforcement, and plastic concrete shall not exceed 1/180 of the form span or 1/2 inch, whichever is less, for form spans of 10 feet or less, or 1/240 of the form span or 3/4 inch, whichever is less, for form spans greater than 10 feet.

4. The design span of the form shall equal the clear span of the form plus two (2) inches. The span shall be measure parallel to the form flutes.

5. Physical design properties shall be computed in accordance with requirements of the AISI Specifications for the Design of Cold Formed Steel Structural Members, latest published edition.

6. The design concrete cover required by the plans shall be maintained for all reinforcement.

7. The plan dimensions of both layers of primary deck reinforcement from the top surface of the concrete deck shall be maintained.

8. The SIP metal form shall not be considered as lateral bracing for compression flanges of supporting structural members.

9. SIP metal forms shall not be used under closure pours or in bays where longitudinal slab construction joints are located. SIP metal forms shall not be used under cantilevered slabs such as the overhang outside of fascia members.

10. Forms shall be secured to the supporting members by means other than welding directly to the member. Welding to the top flanges of steel stringers and/or girders shall not be allowed. Alternate installation procedures shall be submitted addressing this condition.

907-804.03.14.2.5--Construction. SIP metal form sheets shall not rest directly on the top of the stringer of floor beam flanges. Sheets shall be fastened securely to form supports, and maintain a minimum bearing length of one (1) inch at each end for metal forms. Form supports shall be placed in direct contact with the flange of the stringer or floor beam. All attachments for coated metal forms shall be made by bolts, clips, screws, or other approved means.

907-804.03.14.2.6--Form Galvanizing Repairs. Where forms or their installation are unsatisfactory in the opinion of the Project Engineer, either before or during placement of the concrete, the Contractor shall correct the defects before proceeding with the construction work. The cost of such corrective work shall be at the sole expense of the Contractor. Minor heat discoloration in areas of welds shall not be touched up.

907-804.03.14.2.7--Placing of Concrete. The Contractor shall insure that concrete placement does not damage the SIP metal forms. The concrete shall be vibrated to avoid honeycomb and voids, especially at construction joints, expansion joints, valleys and ends of form sheets. Approved pouring sequences shall be used. Calcium chloride or any other admixture containing chloride salts shall not be used in the concrete. The completed SIP metal form system shall be sufficiently tight to prevent leakage of mortar or concrete.

907-804.03.14.2.8--Inspection. The Project Engineer will observe the Contractor's method of construction during all phases of the construction of the bridge deck slab, including the installation of the SIP metal form system; location and fastening of the reinforcement; composition of concrete items; mixing procedures, concrete placement, and vibration; and finishing of the bridge deck. Should the Project Engineer determine that the procedures used during the placement of the concrete warrant inspection of the underside of the deck, at least one section of the metal forms shall be removed in each span for this purpose. This shall be done as soon after placing the concrete as practical in order to provide visual evidence that the concrete mix and the procedures are obtaining the desired results. An additional section shall be removed in any span if the Project Engineer determines that there has been any change in the concrete mix or in the procedures warranting additional inspection.

If, in the Project Engineer's judgment, inspection is needed to check for defects in the bottom of the deck or to verify soundness, the SIP metal forms shall be sounded with a hammer after the deck concrete has been in place a minimum of two days. If sounding discloses areas of doubtful soundness to the Project Engineer, the SIP metal forms shall be removed from such areas for visual inspection after the concrete has attained adequate strength. The SIP metal bridge deck forms shall be removed at no expense to the State.

At locations where sections of the metal forms have been removed, the Project Engineer will not require the Contractor to replace the metal forms. The adjacent metal forms and supports shall be repaired to present a neat appearance and to ensure their satisfactory retention. As soon as the form is removed, the Project Engineer will examine the concrete surfaces for cavities, honeycombing, and other defects. If irregularities are found and the Project Engineer determines that these irregularities do not justify rejection of the work, the concrete shall be repaired as directed by the Project Engineer. If the Project Engineer determines that the concrete where the form is removed is unsatisfactory, additional metal forms as necessary shall be removed to inspect and repair the slab, and the Contractor's method of construction shall be modified as required to obtain satisfactory concrete in the slab. All unsatisfactory concrete shall be removed and replaced as directed at no expense to the State.

If the method of construction and the results of the inspections as outlined above indicate that sound concrete has been obtained throughout the slabs, the amount of sounding and form removal may be reduced when approved by the Project Engineer.

The Contractor shall provide a safe and convenient means of conducting of the inspection.

Delete Table 6 of Subsection 907-804.03.15 on page 8, and substitute the following.

Table 6
Minimum Compressive Strength Requirements for Form Removal

Forms:	
Columns	1000 psi
Side of Beams	1000 psi
Walls not under pressure	1000 psi
Other Parts	1000 psi
Centering:	
Under Beams	2400 psi
Under Bent Caps	2000 psi
Limitation for Placing Beams on:	
Pile Bents, pile under beam	2000 psi
Frame Bents, two or more columns	2200 psi
Frame Bents, single column	2400 psi

Forms for bridge deck slabs overhead and bridge deck slabs between beams shall be removed with the approval of the Engineer, between two weeks and four weeks after the removal of the wet burlap applied in accordance with Subsection 907-804.03.17.1, or application of liquid membrane applied in accordance with Subsection 907-804.03.17.2.

Delete the second paragraph of Subsection 907-804.03.16.1 on page 9, and substitute the following.

At the option of the Contractor with the approval of the Engineer, when concrete is placed during cold weather and there is a probability that the ambient temperatures will be lower than 40°F, an approved maturity meter may be used to determine concrete strengths by inserting probes into concrete placed in a structure. The minimum number of maturity meter probes required for each structural component shall be in accordance with Table 7. An approved insulating blanketing material shall be used to protect the work when ambient temperatures are less than 40°F and shall remain in place until the required concrete strength in Table 6 is achieved. Within 30 minutes of removal of the insulating blanketing material in any area, the Contractor shall have curing of the concrete established in accordance with the requirements in Subsection 907-804.03.17. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO Designation: T 325 and ASTM Designation: C 1074 specifications. Technicians using the maturity meter or calculating strength/maturity graphs shall be required to have at least two hours of training prior to using the maturity equipment.

Before Subsection 907-804.03.19 on page 9, add the following.

907-804.03.17--Curing Concrete. Delete Subsection 804.03.17 on pages 874 & 875, and substitute the following.

Curing is defined as all actions taken to ensure the moisture and temperature conditions of freshly placed concrete exist so the concrete may develop its potential properties. Curing shall take place from the time of placement until its potential properties have developed. The Contractor shall use the guidance in ACI 308R-01 to:

a) cure the concrete in such a manner as to prevent premature moisture loss from the concrete,
b) supply additional moisture to the concrete as required in order to ensure sufficient moisture within the concrete, and
c) maintain a concrete temperature beneficial to the concrete.

Curing in accordance with the requirements in either Subsection 907-804.03.17.1 or Subsection 907-804.03.17.2 shall be completely established within 20 minutes after finishing, except as noted for bridge decks. Finishing is complete when the pan drag, burlap drag, or other is complete.

The length of time for curing shall be maintained in accordance with either of the following:

1. **Prescribed Length of Time:**
   a) Curing following the requirements of Subsection 804.03.17.1 shall continue uninterrupted for at least 14 days.
   b) Curing following the requirements of Subsection 804.03.17.2 shall continue uninterrupted for at least 10 days.

OR

2. **Length of Time Defined by Development of Compressive Strength:**
   Curing following the application requirements of Subsection 907-804.03.17.1 or Subsection 907-804.03.17.2 shall continue uninterrupted for each day's production until the compressive strength of the concrete exceeds 75% of the 28-day compressive strength submitted as the Basis of Proportioning per Subsection 907-804.02.10.1. Therefore, if an area is being cured in accordance with Subsection 907-804.03.17.1, the curing by wet burlap shall continue until the concrete in that area has attained a minimum of 75% of the 28-day compressive strength submitted as the Basis of Proportioning per Subsection 907-804.02.10.1. Likewise, if an area is being cured in accordance with Subsection 907-804.03.17.2, the curing by liquid membrane shall continue until the concrete in that area has attained a minimum of 75% of the 28-day compressive strength submitted as the Basis of Proportioning per Subsection 907-804.02.10.1.

   The compressive strength of the concrete may be determined by the use of maturity meter in accordance with Subsection 907-804.03.15.

907-804.03.17.1--Water With Waterproof Cover. All burlap shall be completely saturated and wet prior to placing it on the concrete. The burlap shall have been fully soaked in water for a minimum of 12 hours prior to placement on the concrete.

For bridge decks, the Contractor shall apply one (1) layer of saturated burlap within 20 minutes of the initial strike-off for bridges without a skew and 25 minutes of the initial strike-off for bridges with a skew. For all other concrete, the Contractor shall apply one (1) layer of saturated burlap within 20 minutes of completing finishing.

Following the first layer of burlap, the Contractor shall apply a second layer of saturated burlap within five (5) minutes of applying the first layer. The concrete surface shall not be allowed to dry after strike-off or at any time during the curing period.

The Contractor shall maintain the burlap in a fully wet condition using powered fogging equipment capable of producing a fog spray of atomized droplets of water until the concrete has gained sufficient strength to allow foot traffic without the foot traffic marring the surface of the concrete. Burlap shall not be maintained in the fully wet condition using equipment which does not produce a fog spray of atomized droplets of water or by use of manually pressurized sprayers. For bridge decks, once the concrete has gained sufficient strength to allow foot traffic which does not mar the surface of the concrete, soaker hoses shall be placed on the burlap. The soaker hoses shall then be supplied with running water continuously to maintain continuous saturation of all burlap and the entire concrete surface.

If there is a delay in the placement of the first layer of saturated burlap outside the time limit, the struck-off and finished concrete shall be kept wet by use of the powered fogging equipment used to keep the burlap wet.

White polyethylene sheets shall be placed on top of the wet burlap and, as applicable, soaker hoses covering the entire concrete surface as soon as practical and not more than 12 hours after the placement of the concrete. White polyethylene sheets of the widest practical width shall be used, overlapping adjacent sheets a minimum of six inches (6") and tightly sealed with an adhesive like pressure sensitive tape, mastic, glue, or other approved methods to form a complete waterproof cover of the entire concrete surface. White polyethylene sheets which overlap a minimum of two feet (2') may be held in place using means other than an adhesive. The white polyethylene sheets shall be secured so that wind will not displace them. The Contractor shall immediately repair the broken or damaged portions or replace sections that have lost their waterproof qualities.

If burlap and/or white polyethylene sheets are temporarily removed for any reason during the curing period, the Contractor shall keep the entire exposed area continuously wet. The saturated burlap and white polyethylene sheets shall be replaced, resuming the specified curing conditions, as soon as possible.

The Contractor shall inspect the concrete surface once every 8 hours for the entirety of the curing period, so that all areas remain wet for the entire curing period and all curing requirements are satisfied and document the inspection in accordance with Subsection 907-804.03.17.1.1.

At the end of the curing period, one coating of liquid membrane shall be applied following the requirements of Subsection 907-804.03.17.1.2. The purpose of the coating of liquid membrane is

to allow for slow drying of the concrete. The application of liquid membrane to any area shall be complete within 30 minutes of the beginning of removal of the white polyethylene sheets, soaker hoses, and burlap from this area.

907-804.03.17.1.1--Documentation. The Contractor shall provide the Engineer with a daily inspection report that includes:

- documentation that identifies any deficiencies found (including location of deficiency);
- documentation of corrective measures taken;
- a statement of certification that all areas are wet and all curing material is in place on the entire bridge deck;
- documentation showing the time and date of all inspections and the inspector's signature;
- documentation of any temporary removal of curing materials including location, date and time, length of time curing was removed, and means taken to ensure exposed area was kept continuously wet.

907-804.03.17.1.2--Liquid Membrane. At the end of the 14-day wet curing period the wet burlap and polyethylene sheets shall be removed and within 30 minutes, the Contractor shall apply white liquid membrane to the deck. The liquid membrane shall be thoroughly mixed within the time recommended by the liquid membrane producer but no more than an hour before use. If the use of liquid membrane results in a streaked or blotched appearance, the method shall be stopped and water curing applied until the cause of defective appearance is corrected.

The liquid membrane shall be applied when no free water remains on the surface but while the surface is still wet. The liquid membrane shall be applied according to the manufacturer's instructions with a minimum spreading rate per coat of one (1) gallon per 200 square feet of concrete surface. If the concrete is dry or becomes dry, the Contractor shall thoroughly wet it with water applied as a fog spray by means of approved equipment.

The application of liquid membrane shall be accomplished by the use of power applied spray equipment using nozzles and other equipment recommended by the liquid membrane producer. Manually pressurized or manual pump-up type sprayers shall not be used to apply the first application of liquid membrane.

As a visual guide, the color of concrete covered with the required amount of liquid membrane should be indistinguishable from a sheet of commercially available standard "letter" size white copier paper placed on top of it when viewed from a distance of about five feet (5') away horizontally if standing on the same grade as the concrete. The appearance of the concrete does not supersede applying the minimum spreading rate.

The coating shall be protected against marring for at least seven (7) days after the application of the curing compound. The coating on bridge decks shall receive extra attention and may require additional protection as required by the Engineer. All membrane marred or otherwise disturbed shall be given an additional coating. Manually pressurized or manual pump-up type sprayers may be used for giving marred areas the required additional application of liquid membrane. Should the surface coating be subjected repeatedly to injury, the Engineer may require that the water curing method be applied at once.

The 7-day period during which the liquid membrane is applied and protected shall not be reduced even if the period of wet curing is extended past the required 14 days.

907-804.03.17.1.2.1--Liquid Membrane Documentation. The Contractor shall make available to the Engineer an application rate verification method and any information necessary during application of the liquid membrane to verify that the rate of application meets the prescribed rate for the various surfaces of the concrete, including, but not limited to, the top surface of the bridge deck and exposed sides of the bridge deck after any forms are removed. The Contractor shall submit this application verification method to the Engineer in accordance with Subsection 907-804.02.12.1.1.

One method of verifying the rate of application is as follows:

1. Determine the volume of liquid membrane in the container. For a container with a uniform cross-sectional area, for example a 55-gallon drum, determine the area of the cross-section. Determine the height of the surface of the liquid membrane from the bottom of the container. This may be accomplished by inserting a sufficiently long, clean dip-stick parallel with the axis of the container into the liquid membrane until the inserted end of the dip-stick contacts the bottom of the container. On removing the dip-stick, measure the length from the end which was inserted to the point on the dip-stick where the liquid membrane ceases to coat the dip-stick. Multiply the area of the cross-section by the height of the level of liquid membrane, maintaining consistent units, to determine the volume.
2. Perform step 1 prior to beginning applying the liquid membrane to establish the initial volume.
3. During the period of application, perform step 1 each 100 square feet of bridge deck.
4. In order to meet the required application rate of one (1) gallon per 200 square feet, the amount in the container shall be at least 0.5 gallon less than the previous volume in the previous 100 square feet. Other changes in volume may apply depending on the manufacturer's recommended application rate.
5. Additional applications to an area shall be applied until the required rate is satisfied. Areas which are not visually satisfactory to the Engineer shall have additional liquid membrane applied as directed by the Engineer.

The amount of liquid membrane applied shall be determined each day using the application verification method. This information shall be submitted to the Engineer within 24 hours of applying the liquid membrane.

907-804.03.17.2--Liquid Membrane Method. Surfaces on which curing is to be by liquid membrane shall be given the required surface finish prior to the application of liquid membrane. Concrete surfaces cured by liquid membrane shall receive two applications of white liquid membrane. Neither application shall be made from a position supported by or in contact with the freshly placed concrete. Both applications shall be applied perpendicularly to the surface of the concrete.

When using liquid membrane, the liquid membrane shall be thoroughly mixed within the time recommended by the liquid membrane producer but no more than an hour before use. If the use of liquid membrane results in a streaked or blotched appearance, the method shall be stopped and water curing applied until the cause of defective appearance is corrected.

The application of liquid membrane shall accomplished by the use of power applied spray equipment using nozzles and other equipment recommended by the liquid membrane producer. Manually pressurized or manual pump-up type sprayers shall not be used to apply the first two applications of liquid membrane.

The liquid membrane shall be applied when no free water remains on the surface but while the surface is still wet. The liquid membrane shall be applied according to the manufacturer's instructions with a minimum spreading rate per coat of one (1) gallon per 200 square feet of concrete surface. If the concrete is dry or becomes dry, the Contractor shall thoroughly wet it with water applied as a fog spray by means of approved equipment.

The first application of the liquid membrane shall be made as the work progresses. For bridge decks, the first application shall be completed in each area of the deck within 20 minutes of initial strike-off for bridges with no skew and within 25 minutes of initial strike-off for bridges with skew. For all other concrete, the first application of the liquid membrane shall be completed within 20 minutes of finishing.

The second application shall be applied within 30 minutes after the first application. The liquid membrane shall be uniformly applied to all exposed concrete surfaces.

As a visual guide, the color of concrete covered with the required amount of liquid membrane should be indistinguishable from a sheet of commercially available standard "letter" size white copier paper placed on top of it when viewed from a distance of about five feet (5') away horizontally if standing on the same grade as the concrete. The appearance of the concrete does not supersede applying the minimum spreading rate.

The Contractor shall make available to the Engineer an application rate verification in accordance with Subsection 907-804.03.17.1.2.1.

The coating shall be protected against marring for at least 10 days after the application of the curing compound. The coating on bridge decks shall receive extra attention and may require additional protection as required by the Engineer. All membrane marred or otherwise disturbed shall be given an additional coating. Manually pressurized or manual pump-up type sprayers may be used for giving marred areas the required additional application of liquid membrane. Should the surface coating be subjected repeatedly to injury, the Engineer may require that the water curing method be applied at once.

Delete Subsection 907-804.19.7 on page 9, and substitute the following.

907-804.03.19.7--Finishing Bridge Decks.

907-804.03.19.7.1--General. Delete the third paragraph of Subsection 804.03.19.7.1 on page 884, and substitute the following.

Except when indicated otherwise on the plans, the finish of the bridge deck shall be either a belt finish, a broom finish, or one of the following drag methods: pan, double pan, burlap, or pan and burlap. Manual finishing of the bridge deck shall be performed only in areas inaccessible by the

finishing equipment mounted to the strike-off screed, but shall not hinder the requirements for curing in accordance with Subsection 907-804.03.17.1. The surface texture specified and surface requirements shall be in accordance with the applicable requirements of Subsections 501.03.17 and 501.03.18 modified only as the Engineer deems necessary for bridge deck construction operations.

At no time shall water on the surface of the concrete from bleeding, fogging, curing, or other sources be worked into the concrete or used as an aid for finishing.

Regardless of the method of finishing selected, requirements for curing per Subsection 907-804.03.17 shall be completed within the specified time limits. If the requirements in Subsection 907-804.03.17 are not completed within the specific time limits, the Contractor shall cease operations, revise his operations up to and including acquiring new or additional equipment or additional personnel in order to satisfy the requirements in Subsection 907-804.03.17, and, on approval from the Engineer, resume operations

907-804.03.19.7.2--Longitudinal Method. Before the first paragraph of Subsection 804.03.19.7.2 on page 884, add the following.

The longitudinal method may be used for repairs to bridge decks or bridge widening projects. For bridge widening projects, the time for establishing curing in accordance with Subsections 907-804.03.17 shall be increased to within 30 minutes for bridges without skew and within 35 minutes for bridges with skew.

907-804.03.19.7.3--Transverse Method. Delete the first sentence of the second paragraph of Subsection 804.03.19.7.3 on page 885, and substitute the following.

The machine shall be so constructed and operated as to produce a bridge deck of uniform density with minimum manipulation of the fresh concrete and achieved in the shortest possible time.

Delete the fourth paragraph of Subsection 804.03.19.7.3 on page 885, and substitute the following.

At least one dry run shall be made the length of each pour with a "tell-tale" device attached to the screed carriage to assure the specified clearance to the reinforcing steel.

Delete the last sentence of the fifth paragraph of Subsection 804.03.19.7.3 on page 885, and substitute the following.

The screed shall be mechanically actuated to deliver the screeding action and for travel in a longitudinal direction at a uniform rate along the bridge deck.

Delete the last paragraph of Subsection 804.03.19.7.3 on page 886, and substitute the following.

Other finishing requirements shall be in accordance with the general requirements in Subsection 907-804.03.19.7.1 and as specified on the plans.

Regardless of the finish, the requirements for curing per Subsection 907-804.03.17 shall be completed within the specified time limits.

After Subsection 907-804.03.19.7.4 on page 9, add the following.

Delete the title of Subsection 804.03.19.7.4.1.3 on page 888, and substitute the following.

907-804.03.19.7.4.1.3--Final Surface Texture.

907-804.03.20--Opening Bridges.

907-804.03.20.2--Construction Traffic. Delete the paragraph in Subsection 804.03.20.2 on page 889, and substitute the following:

Unless otherwise specified, the concrete bridge decks shall be closed to construction traffic for the time required for curing in Subsection 907-804.03.17 and until the required compressive strength for the concrete is obtained.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-804-13 **CODE: (IS)**

DATE: 11/09/2010

SUBJECT: Concrete Bridges And Structures

Section 804, Concrete Bridges And Structures, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-804.02-- Materials.

907-804.02.1--General. Delete the third and fourth sentences of the first paragraph of Subsection 804.02.1 on page 846, and substitute the following:

For projects with 1000 cubic yards and more, quality control and acceptance shall be achieved through statistical evaluation of test results. For projects of more than 200 but less than 1000 cubic yards, quality control and acceptance shall be achieved by individual test results.

Add the following materials to the list of materials in Subsection 804.02.1 on page 847.

Blended Cement..... 907-701.01 and 907-701.04
Ground Granulated Blast Furnace Slag (GGBFS)..... 907-714.06
Silica Fume 907-714.07.2

907-804.02.8--Laboratory Accreditation. In Table 1 of Subsection 804.02.8 on page 849, substitute AASHTO: R 39 - Making and Curing Concrete Test Specimens in the Laboratory for AASHTO: T 126 - Making and Curing Concrete Test Specimens in the Laboratory.

907-804.02.9--Testing Personnel. Delete Table 2 in this subsection and replace it with the following.

Table 2

Concrete Technician's Tasks	Test Method Required	Certification Required**
Sampling or Testing of Plastic Concrete	AASHTO Designation:T 23, T 119, T 121, T 141, T 152, T 196, and ASTM Designation: C 1064	MDOT Class I certification
Compressive Strength Testing of Concrete Cylinders	AASHTO Designation: T 22 and T 231	MDOT Concrete Strength Testing Technician certification
Sampling of Aggregates	AASHTO Designation: T 2	Work under the supervision of an MDOT Class II certified technician

Testing of Aggregates	AASHTO Designation: T 19, T 27, T 84, T 85, T 248, and T 255	MDOT Class II certification
Proportioning of Concrete Mixtures*	AASHTO Designation: M 157 and R 39	MDOT Class III
Interpretation and Application of Maturity Meter Readings	AASHTO Designation: T 325 and ASTM Designation: C 1074	MDOT Class III or Two hours maturity method training

* Technicians making concrete test specimens for meeting the requirements of Subsection 804.02.10.1.2 shall be MDOT Class I certified and under the direct supervision of an MDOT Class III certified technician.

** MDOT Class I certification encompasses the same test procedures and specifications as ACI Concrete Field Testing Technician Grade I. MDOT Class II certification encompasses the same test procedures and specifications as ACI Aggregate Testing Technician - Level 1. MDOT Concrete Strength Testing Technician encompasses the same test procedures and specifications as ACI Concrete Strength Testing certification.

For specifics about the requirements for each level of certification, please refer to the latest edition of the Department's *Concrete Field Manual*. Technicians holding current MDOT Class I, MDOT Class II and/or MDOT Class III certifications shall be acceptable until those certifications expire. Upon a current certification expiration, recertification with the certifications listed in Table 2 shall be required. Technicians currently performing either specific gravity testing of aggregates or compressive strength tests shall be required to either:

- have the required MDOT certification listed in Table 2, or
- have a current MDOT Class III certification or work under the direct supervision of current MDOT Class III technician, and have demonstrated the specific gravity and/or compressive strength test during the inspection of laboratory equipment by the Materials Division, Concrete Section.

907-804.02.10--Portland Cement Concrete Mix Design. Delete the first sentence of the first paragraph of Subsection 804.02.10 on page 850 and substitute the following:

At least 30 days prior to production of concrete, the Contractor shall submit to the Engineer proposed concrete mixture designs complying with the Department's *Concrete Field Manual*.

Delete the Notes under Table 3 of Subsection 804.02.10 on pages 850 & 851, and substitute the following:

* Maximum size aggregate shall conform to the concrete mix design for the specified aggregate.

** The replacement limits of Portland cement by weight by other cementitious materials (such as fly ash, GGBFS, metakaolin, silica fume, or others) shall be in accordance with the values in Subsection 907-701.02. Other hydraulic cements may be used in accordance with the specifications listed in Section 701.

*** The slump may be increased up to eight (8) inches with :
- an approved water-reducing admixture,
- an approved water-reducing/set-retarding admixture, or
- a combination of an approved water-reducing admixture and an approved set-retarding admixture, in accordance with 907-713.02. Minus slump requirements shall meet those set forth in Table 3 of AASHTO Designation: M157.

**** Entrained air is not required except for concrete exposed to seawater. For concrete exposed to seawater, the total air content shall be 3.0 % to 6.0%. For concrete not exposed to seawater, the total air content shall not exceed 6.0%.

***** Class DS Concrete for drilled shafts shall have an 8±1-inch slump.

Delete the last paragraph of Subsection 804.02.10 on page 851 and substitute the following:

At least one water-reducing admixture shall be used in all classes of concrete in accordance with the manufacturer's recommended dosage range. Any combinations of admixtures shall be approved by the Engineer before their use.

907-804.02.10.1.1--Proportioning on the Basis of Previous Field Experience of Trial Mixtures. Delete the first sentence of the first paragraph of Subsection 804.02.10.1.1 on page 851, and substitute the following:

Where a concrete production facility has a record, based on at least 10 consecutive strength tests from at least 10 different batches within the past 12 months from a mixture not previously used on Department projects, the standard deviation shall be calculated.

907-804.02.10.3--Field Verification of Concrete Mix Design. Delete the first sentence of the third paragraph of Subsection 804.02.10.3 on page 853 and substitute the following:

For all Classes of concrete, the mixture shall be verified to yield within 2.0% of the correct volume when all the mix water is added to the batch.

For all Classes of concrete other than DS, F, and FX, the mixture shall produce a slump within a minus 1½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of three inches (3") or less or within a minus 2½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of greater than three inches (3"), and producing a total air content within a minus 1½ percent tolerance of the maximum allowable air content in Table 3.

For Class DS, the slump shall be within the requirements in Note ***** below Table 3. For Class DS exposed to seawater, the total air content shall be within a minus 1½ percent tolerance of the maximum allowable air content in Note **** below Table 3. For Class DS not exposed to seawater the total air content shall be within the requirements in Note **** below Table 3.

For Classes F and FX, the slump shall be within a minus 1½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of three inches (3") or less or within a minus 2½-inch tolerance of the maximum permitted for mixtures with a maximum permitted

slump of greater than three inches (3"). For Classes F and FX exposed to seawater, the total air content shall be within a minus 1½ percent tolerance of the maximum allowable air content in Note **** below Table 3. For Classes F and FX not exposed to seawater the total air content shall be within the requirements in Note **** below Table 3.

Delete the third sentence of the third paragraph of Subsection 804.02.10.3 on page 853, and substitute the following:

If the requirements of yield, slump, or total air content are not met within three (3) production days after the first placement, subsequent field verification testing shall not be permitted on department projects, and the mix design shall not be used until the requirements listed above are met

907-804.02.10.4--Adjustments of Mixture Proportions. Delete the paragraph in Subsection 804.02.10.4 on page 854, and substitute the following:

The mixture may be adjusted by the Class III Certified Technician representing the Contractor in accordance with the allowable revisions listed in the Department's Concrete Field Manual, paragraph 5.7. Written notification shall be submitted to the Engineer a minimum of seven (7) days prior to any source or brand of material change, aggregate size change, allowable material type change, or decrease in any cementitious material content. Any adjustments of the concrete mixture design shall necessitate repeat of field verification procedure as described in Subsection 804.02.10.3 and approval by the Engineer.

907-804.02.11--Concrete Batch Plants. Delete the first three paragraphs of Subsection 804.02.11 on page 854, and substitute the following:

The concrete batch plant shall meet the requirements of the National Ready Mixed Concrete Association *Quality Control Manual, Section 3, Plant Certification Checklist* as outlined in the latest edition of the Department's *Concrete Field Manual*. The Contractor shall submit a copy of the approved checklist along with proof of calibration of batching equipment, i.e., scales, water meter, and admixture dispenser, to the Engineer 30 days prior to the production of concrete.

For projects with 1000 cubic yards and more, the concrete batch plant shall meet the requirements for an automatic system capable of recording batch weights. It shall also have automatic moisture compensation for the fine aggregate. For projects of more than 200 but less than 1000 cubic yards the plant can be equipped for manual batching with a fine aggregate moisture meter visible to the plant operator.

The concrete batch plant shall have available adequate facilities to cool concrete during hot weather.

Mixer trucks to be used on the project are to be listed in the checklist and shall meet the requirements of the checklist.

907-804.02.12--Contractor's Quality Control. Delete the fourth paragraph of Subsection 804.02.12 on page 854 & 855, and substitute the following:

The Contractor's Quality Control program shall encompass the requirements of AASHTO Designation: M 157 into concrete production and control, equipment requirements, testing, and batch ticket information. The requirement of AASHTO Designation: M 157, Section 11.7 shall be followed except, on arrival to the job site, a maximum of 1½ gallons per cubic yard is allowed to be added. Water shall not be added at a later time. If the maximum permitted slump is exceeded after the addition of water at the job site, the concrete shall be rejected.

907-804.02.12.3--Documentation. After the second sentence of the second paragraph of Subsection 804.02.12.3 on page 856, add the following:

Batch tickets and gradation data shall be documented in accordance with Department requirements. Batch tickets shall contain all the information in AASHTO Designation: M157, Section 16 including the additional information in Subsection 16.2 with the following exception: the information listed in paragraphs 16.2.7 and 16.2.8 is not required. Batch tickets shall also contain the concrete producer's permanent unique mix number assigned to the concrete mix design.

907-804.02.12.5--Non-Conforming Materials. In Table 4 of Subsection 804.02.12.5 on page 857, delete "/ FM" from the requirements on line B.3.a.

In Table 4 of Subsection 804.02.12.5 on page 857, replace "One set (two cylinders) for 0-100 yd^3 inclusive" with "A minimum of one set (two cylinders) for each 100 yd^3,"

907-804.02.13--Quality Assurance Sampling and Testing. Delete subparagraph c) in Subsection 804.02.13 on page 858 and substitute the following:

c) For concrete, the Contractor's QC and Department's QA testing of concrete compressive strengths compare when using the data comparison computer program with an alpha value of 0.01 for projects with 1000 cubic yards and more; or, strength comparisons are within 990 psi for projects of more than 200 but less than 1000 cubic yards.

In Table 5 of Subsection 804.02.13 on page 858, delete "and FM" from the requirements on line A.3.

Delete Subsection 907-804.02.13.1 beginning on page 859 and substitute the following:

907-804.02.13.1--Basis of Acceptance.

907-804.02.13.1.1--Sampling. Sampling of concrete mixture shall be performed in accordance with the latest edition of the Department's *Concrete Field Manual*.

907-804.02.13.1.2--Slump. Slump of plastic concrete shall meet the requirements of Table 3: MASTER PROPORTION TABLE FOR STRUCTURAL CONCRETE DESIGN. A check test shall be made on another portion of the sample before rejection of any load.

907-804.02.13.1.3--Air. Total air content of concrete shall be within the specified range for the class of concrete listed in Table 3: MASTER PROPORTION TABLE FOR STRUCTURAL CONCRETE DESIGN. A check test shall be made on another portion of the sample before rejection of any load.

907-804.02.13.1.4--Yield. If the yield of the concrete mix design is more than plus or minus 3% of the designed volume, the mix shall be adjusted by a Class III Certified Technician representing the Contractor to yield the correct volume plus or minus three percent (±3%). If batching of the proportions of the mix design varies outside the batching tolerance range of the originally approved proportions by more than the tolerances allowed in Subsection 804.02.12.1, the new proportions shall be field verified per Subsection 804.02.10.3.

907-804.02.13.1.5--Temperature. Cold weather concreting shall follow the requirements of Subsection 907-804.03.16.1. Hot weather concreting shall follow the requirements of Subsection 804.03.16.2 with a maximum temperature of 95°F for Class DS concrete or for concrete mixes containing cementitious materials meeting the requirements of Subsection 907-701.02.2 as a replacement of Portland cement. For other concrete mixes, the maximum concrete temperature shall be 90°F. Concrete with a temperature more than the maximum allowable temperature shall be rejected and not used in Department work.

907-804.02.13.1.6--Compressive Strength. Laboratory cured concrete compressive strength tests shall conform to the specified strength (f'_c) listed in the specifications. Concrete represented by compressive strength test below the specified strength (f'_c) may be removed and replaced by the Contractor. If the Contractor elects not to remove the material, it will be evaluated by the Department as to the adequacy for the use intended. All concrete evaluated as unsatisfactory for the intended use shall be removed and replaced by the Contractor at no additional cost to the Department. For concrete allowed to remain in place, reduction in payment will be as follows:

Projects with 1000 Cubic Yards and More. When the evaluation indicates that the work may remain in place, a statistical analysis will be made of the QC and QA concrete test results. If this statistical analysis indicates at least 93% of the material would be expected to have a compressive strength equal to or greater than the specified strength (f'_c) and 99.87% of the material would be expected to have a compressive strength at least one standard deviation above the allowable design stress (f_c), the work will be accepted. If the statistical analysis indicates that either of the two criteria are not met, the Engineer will provide for an adjustment in pay as follows for the material represented by the test result.

Total Pay on Material in Question = Unit Price - (Unit Price x % Reduction)

$$\% \text{ Reduction} = \frac{(f'_c - X)}{f'_c - (f_c + s)} \times 100$$

where:

f'_c = Specified 28-day compressive strength, psi

X = Individual compressive strength below f'_c, psi
s = standard deviation, psi*
f_c = allowable design stress, psi

* Standard deviation used in the above reduction of pay formula shall be calculated from the applicable preceding compressive strengths test results plus the individual compressive strength below f'_c. If below f'_c strengths occur during the project's first ten compressive strength tests, the standard deviation shall be calculated from the first ten compressive strength tests results.

Projects of More Than 200 but Less Than 1000 Cubic Yards. When the evaluation indicates that the work may remain in place, a percent reduction in pay will be assessed based on a comparison of the deficient 28-day test result to the specified strength. The Engineer will provide for an adjustment in pay as follows for the material represented by the test result.

Total Pay on Material in Question = Unit Price - (Unit Price x % Reduction)

$$\% \text{ Reduction} = \frac{(f'_c - X)}{f'_c} \times 100$$

where:

f'_c = Specified 28-day compressive strength, psi
X = Individual compressive strength below f'_c, psi

907-804.03--Construction Requirements.

907-804.03.6--Handling and Placing Concrete.

907-804.03.6.2--Consolidation. After the last sentence of Subsection 804.03.6.2 on page 864, add the following:

If the Department determines that there is an excessive number of projections, swells, ridges, depressions, waves, voids, holes, honeycombs or other defects in the completed structure, removal of the entire structure may be required as set out in Subsection 105.12.

907-804.03.15--Removal of Falsework, Forms, and Housing. Delete the first sentence of the second paragraph of Subsection 804.03.15 on page 871, and substitute the following:

Concrete in the last pour of a continuous superstructure shall have attained a compressive strength of 2,400 psi, as determined by cylinder tests or maturity meter probe, prior to striking any falsework.

Delete the first sentence of the third paragraph of Subsection 804.03.15 on page 871, and substitute the following:

At the Contractor's option and with the approval of the Engineer, the time for removal of forms may be determined by cylinder tests, in accordance with the requirements listed in Table 6, in which case the Contractor shall furnish facilities for testing the cylinders.

Delete the fourth and fifth paragraphs of Subsection 804.03.15 on pages 871 & 872, and substitute the following:

The cylinders shall be cured under conditions which are not more favorable than those existing for the portions of the structure which they represent.

Delete the table in Subsection 804.03.15 on page 872, and substitute the following:

Table 6
Minimum Compressive Strength Requirements for Form Removal

Forms:	
Columns	1000 psi
Side of Beams	1000 psi
Walls not under pressure	1000 psi
Floor Slabs, overhead	2000 psi
Floor Slabs, between beams	2000 psi
Slab Spans	2400 psi
Other Parts	1000 psi
Centering:	
Under Beams	2400 psi
Under Bent Caps	2000 psi
Limitation for Placing Beams on:	
Pile Bents, pile under beam	2000 psi
Frame Bents, two or more columns	2200 psi
Frame Bents, single column	2400 psi

In lieu of using concrete strength cylinders to determine when falsework, forms, and housings can be removed, an approved maturity meter may be used to determine concrete strengths by inserting probes into concrete placed in a structure. The minimum number of maturity meter probes required for each structural component shall be in accordance with Table 7. Falsework, forms, and housings may be removed when maturity meter readings indicate that the required concrete strength is achieved. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO Designation: T 325 and ASTM Designation: C 1074 specifications. Technicians using the maturity meter or calculating strength/maturity graphs shall be required to have at least two hours of training prior to using the maturity equipment.

Table 7
Requirements for use of Maturity Meter Probes

Structure Component	Quantity of Concrete	No. of Probes
Slabs, beams, walls, & miscellaneous items	0 - 30 yd^3	2
	> 30 to 60 yd^3	3
	> 60 to 90 yd^3	4
	> 90 yd^3	5
Footings, Columns & Caps	0 - 13 yd^3	2
	> 13 yd^3	3
Pavement, Pavement Overlays	1200 yd^2	2
Pavement Repairs	Per repair or 900 yd^2 Whichever is smaller	2

907-804.03.16--Cold or Hot Weather Concreting.

907-804.03.16.1--Cold Weather Concreting. After the third paragraph of Subsection 804.03.16.1 on page 873, add the following:

In lieu of the protection and curing of concrete in cold weather, at the option of the Contractor with the approval of the Engineer, when concrete is placed during cold weather and there is a probability of ambient temperatures lower that 40°F, an approved maturity meter may be used to determine concrete strengths by inserting probes into concrete placed in a structure. The minimum number of maturity meter probes required for each structural component shall be in accordance with Table 7. An approved insulating blanketing material shall be used to protect the work when ambient temperatures are less than 40°F and shall remain in place until the required concrete strength in Table 6 is achieved. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO Designation: T 325 and ASTM Designation: C 1074 specifications. Technicians using the maturity meter or calculating strength/maturity graphs shall be required to have at least two hours of training prior to using the maturity equipment.

Rename the Table in Subsection 804.03.16.1 on page 874 from "Table 6" to "Table 8".

907-804.03.19--Finishing Concrete Surfaces.

907-804.03.19.7--Finishing Bridge Floors.

907-804.03.19.7.4--Acceptance Procedure for Bridge Deck Smoothness. After the first sentence of the second paragraph of Subsection 804.03.19.7.4 on page 886, add the following:

Auxiliary lanes, tapers, shoulders and other areas that are not checked with the profilograph, shall meet a 1/8 inch in 10-foot straightedge check made transversely and longitudinally across the deck or slab.

907-804.05--Basis of Payment. Add the "907" prefix to the pay items listed on page 898.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-825-1 **CODE: (SP)**

DATE: 01/07/2013

SUBJECT: Soil Nail Retaining Walls

PROJECT: NHS-0010-01(144) / 105281301 -- Harrison County

Section 907-825, Soil Nail Retaining Walls, is hereby added to and made a part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

SECTION 907-825 - SOIL NAIL RETAINING WALLS

907-825.01--Description. This work shall consist of designing and constructing permanent soil nail retaining walls in accordance with the lines, grades and dimensions shown on the plans and specifications.

907-825.01.1--General. Design and construct of soil nail retaining walls shall consist of soil nails spaced at a regular pattern and a temporary reinforced shotcrete facing. Subsequent to construction of the soil nail wall to its full height, cast-in-place reinforced concrete face shall be constructed to the front of the temporary shotcrete facing. A soil nail shall consist of a steel bar grouted in a drilled hole inclined at an angle below horizontal. The temporary support of excavations during construction shall be performed using shotcrete. Soil nail retaining walls shall be designed and constructed based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Soil Nail Wall shall be defined as a soil nail retaining wall. Soil Nail Wall Contractor shall be defined as the Anchored Wall Contractor installing soil nails and applying shotcrete. Nail shall be defined as a soil nail. Concrete facing shall be defined as a cast-in-place or precast reinforced concrete face.

The time required for the preparation and review of the soil nail wall design calculations and shop drawings has been included in the allowable contract time. No additional compensation will be made for any additional material, equipment, or other items found necessary by the Department. All submittals shall be submitted to the Bridge Engineer for approval prior to construction.

The soil nail retaining wall shall follow the lines, grades and location as shown in the plans. In the event that the plan dimensions are revised due to field conditions or other reasons, the Contractor shall be responsible for revising the wall plans, design calculations, and summary of quantities.

907-825.01.2--Soil Nail Wall Contractors Experience Requirements. The Contactor shall be experienced in the construction of permanent soil nail retaining walls and have successfully constructed at least five (5) projects in the last three (3) years involving construction of permanent soil nail retaining walls totaling at least 15,000 square feet of wall face area and at

least 700 permanent soil nails.

Workers, including foremen, nozzlemen, delivery equipment operators, and drill operators, shall be fully experienced to perform the work. All shotcrete nozzlemen on the project shall have experience on at least three (3) projects in the past three (3) years in similar shotcrete application work and shall demonstrate ability to satisfactorily place the shotcrete.

Initial qualification of shotcrete nozzlemen will be based on previous ACI certification or satisfactory completion of preconstruction test panels. The requirement for nozzlemen to shoot preconstruction qualification test panels will be waived for nozzlemen who can submit documented proof they have been certified in accordance with ACI 506.3R Guide to Certification of Shotcrete Nozzlemen. The Certification shall have been done by an ACI recognized shotcrete testing lab and/or recognized shotcreting consultant and have covered the type of shotcrete (plain wet-mix, plain dry-mix or steel fiber reinforced) to be used. All nozzlemen will be required to periodically shoot production test panels during the course of the work at the frequency specified herein.

A Professional Engineer, employed by the Soil Nailing Contractor and having experience in construction of at least three (3) completed permanent soil nail retaining wall projects over the past three (3) years, shall supervise the work. The Contractor shall not use consultants or manufacturer's representatives to satisfy the supervising Engineer requirements of this section.

The soil nail wall shall be designed by a Professional Engineer licensed to practice in the State of Mississippi with experience in the design of at least three (3) successfully completed permanent soil nail retaining wall projects over the past three (3) years. The wall designer may be either an employee of the Soil Nail Wall Contractor or a Consultant designer meeting the stated experience requirements.

At least 45 calendar days before the planned start of wall excavation, the Soil Nail Wall Contractor shall submit the experience qualifications and details for the referenced design and construction projects, including a brief project description with the owner's name and current phone number. Upon receipt of the experience qualifications submittal, the Bridge Engineer will have 15 calendar days to approve or reject the proposed Soil Nailing Contractor and Designer.

907-825.01.3--Preconstruction Requirements.

907-825.01.3.1--Soil Nail Wall Surveys. The Retaining Wall Plans show a plan view, typical sections, details, notes and an elevation or profile view (wall envelope) for the soil nail wall. Before beginning soil nail wall design, the Contractor shall survey existing ground elevations shown in the plans and other elevations in the vicinity of soil nail wall locations as needed. Based on these elevations, finished grades and actual soil nail wall dimensions and details, revised wall envelopes shall be submitted for acceptance. The accepted wall envelopes shall be used for design.

907-825.01.3.2--Soil Nail Wall Design. Three copies of working drawings, three copies of design calculations, and a PDF copy of each for soil nail wall designs shall be submitted at least

30 days before the preconstruction meeting. All design calculations and plans shall be prepared, stamped and signed by a Professional Engineer licensed to practice in the State of Mississippi. Soil nail wall construction shall not begin until a design submittal is accepted.

The soil nail wall shall be designed in accordance with the plans and Load and Resistance Factor Design method LRFD in the FHWA Manual for Design & Construction Monitoring of Soil Nail Walls (Publication No. FHWA-SA-96-069R). Because the soil nail wall will support the soils below an existing bridge abutment, the soil nail wall should be considered a critical structure and the appropriate LRFD resistance factors specified in Table 4.8 of FHWA-SA-96-069R shall be used in the design. The Contractor shall perform analyses for the final conditions and for the temporary conditions that will exist following cut excavation but before nail installation for at least the bottom two rows of soil nails.

The soil nail wall shall be designed using the soil parameters recommended in the geotechnical report prepared by Burns Cooley Dennis, Inc. and shown in the Plans. The Contractor's designer shall be responsible for estimating the grout/ground bond strengths.

Soil nails shall be designed to meet the following unless otherwise approved.

1. Horizontal and vertical spacing of at least three feet (3'),

2. Inclination of at least 10 degrees (10°) below horizontal,

3. Clearance between ends of bars and drill holes of at least two inches (2") and

4. Soil nail drill holes diameter of six inches (6") to ten inches (10").

The designer of the soil nail wall shall locate nails to prevent intersection with the piles supporting the existing bridge abutment. For portions of wall supporting roadways, median, or roadway berms, the soil nail walls shall be designed for a live load (traffic) surcharge of 250 pounds per square foot.

Wall drainage systems shall consist of geocomposite drain strips, drains and outlet components. Drain strips shall be placed with a horizontal spacing of no more than 10 feet and center strips between adjacent nails. Drain strips shall be attached to a collection pipe located near the bottom of the wall and the collection pipe outlet to the ends of the wall.

Shotcrete used for temporary facing shall be at least four inches (4") thick and reinforced with reinforcement bars and/or welded wire mesh. The Contractor may elect to use fiber reinforced shotcrete using steel or fibrillated polypropylene fibers conforming to ASTM C 1116.

Permanent concrete facing shall be attached to each nail bearing plate with welded stud shear connectors. The concrete facing shall be at least eight inches (8") thick and the facing shall be extended at least 12" above where the grade intersects the back of the concrete facing, unless required otherwise in the plans.

907-825.01.3.3--Submittals. The soil nail wall design submittal shall include three sets of wall plans and three sets of design calculations and technical specifications. The design calculations, wall plans, and technical specifications shall be prepared, stamped and sealed by a Professional Engineer licensed to practice in the state of Mississippi. The soil nail wall calculations shall be performed in accordance with the procedures presented in FHWA-SA-96-069R. The calculations shall also include justification for the grout/ground bond strengths selected for the design. At least one analysis is required for each wall section with different soil nail lengths

The drawings shall include all details, dimensions, technical specifications, and cross-sections necessary to construct the wall. The soil nail wall drawings shall include, but not be limited to, the following items.

1. A title sheet that included a drawing index, general notes, material specifications and construction sequence.

2. A plan and elevation sheet or sheets for the wall shall contain the following.

    a. The elevation view of the wall shall indicate the elevation at the top of the wall, and at all horizontal and vertical break points, and at least every 50 feet along the wall; elevations of the bottom of the wall facing, and the original and final ground line. The elevation view shall also include the locations of each soil nail head referenced to the project baseline and the elevation

    b. The plan view of the wall shall show the offset from the construction centerline at the face of the wall. Also included should be the drainage ditch at the top of the soil nail wall.

3. Typical cross-sections showing wall facing soil nails and lined ditch at the top of the soil nail wall.

4. A drawing(s) showing details for a typical soil nail and corrosion protection, temporary and permanent facing, bearing plates, verification and proof test nails, geocomposite drainage strips and collection pipe, lined ditch at the top of the wall, and construction and expansion joint details for the wall facing

907-825.01.3.4--Soil Nail Wall Construction Plan. The Contractor shall submit three copies and a PDF copy of a soil nail wall construction plan at least 30 days before the preconstruction meeting addressed in Subsection 907-825.01.3.5. Soil nail wall construction shall not begin until the construction plan submittal is accepted. Detailed project specific information shall be provided in the soil nail wall construction plan that includes the following.

1. Overall description and sequence of soil nail wall construction;

2. List and sizes of excavation equipment, drill rigs and tools, tremies and grouting equipment;

3. Procedures for excavations, drilling and grouting, soil nail and wall drainage system installation and facing construction;

4. Details of shotcrete equipment and application including mix process, test panels, thickness gauges and shooting methods;

5. Shotcrete nozzleman with certification;

6. Plan and methods for nail testing with calibration certificates dated within 90 days of the submittal date;

7. Examples of construction and test nail records to be used;

8. Soil Nail grout mix design;

9. Shotcrete mix design; and

10. Other information shown in the plans or requested by the Engineer.

If alternate construction procedures are proposed or necessary, a revised soil nail wall construction plan submittal may be required. If the work deviates from the accepted submittal without prior approval, the Engineer may suspend soil nail wall construction until a revised plan is accepted.

907-825.01.3.5--Preconstruction Meeting. Before starting soil nail wall construction, a soil nail wall construction preconstruction meeting shall be held to discuss the construction, inspection, and testing of the soil nail walls. This meeting shall be scheduled after all soil nail wall submittals have been accepted. Bridge Construction Engineer, Project Geotechnical Engineer, Prime Contractor and Soil Nail Wall Contractor Engineer and Superintendent shall attend this preconstruction meeting.

907-825.02—Materials.

907-825.02.1--Soil Nail Bars. Soil nail bars shall be ASTM Designation: A 615, Grade 75 All-Thread bars. Threading shall be continuous spiral deformed ribbing provided by bar deformations (e.g. Dywidag or Williams continuous threadbar or equivalent). Nail bars shall be new and straight and epoxy coated. The bars shall be coated by fusion bonded (electrostatically applied) epoxy coating in accordance with the requirements in ASTM Designation: A 775 with the exception that the minimum coating thickness shall be 0.012 inch. Coating at the wall anchorage end of the epoxy coated bars may be omitted over the length provided for threading the nut against the bearing plate.

The Contactor shall handle and store epoxy coated bars in a way that will prevent them from being damaged beyond what is permitted by ASTM Designation: D 3963. The Contractor shall repair damaged epoxy coating in accordance with the requirements given in ASTM Designation: A775 and the coater's recommendations using and epoxy field repair kit recommended by the

epoxy manufacturer. All repaired areas shall have a minimum 0.012-inch coating thickness.

Nail couplers shall be epoxy coated equivalently to the soil nail bars and shall develop the full ultimate tensile strength of the bars as certified by the manufacturer.

907-825.02.2--Soil Nail Grout. Nail grout shall be comprised of neat Portland cement (Type I or II) conforming to ASTM Designation: C 150 and potable water. Nail grout shall exhibit a minimum 3-day compressive strength of 1500 psi and a minimum 28-day compressive strength of 3000 psi per AASHTO Designation: T106/ASTM Designation: C 109.

Admixtures which control bleed, improve flowability, reduce water content, retard set and conform to AASHTO Designation: M 194 may be used in the grout subject to review and acceptance by the Bridge Engineer. Accelerators are not permitted. Expansive admixtures may only be used in grout used for filling sealed encapsulations. Admixtures shall be compatible with the grout and mixed in accordance with the manufacturer's recommendations.

907-825.02.3--Centralizers. Centralizers shall be installed to align the soil nail bar in the hole drilled into the soil. Centralizers shall be manufactured from Schedule 40 PVC pipe, steel or other material that will not be detrimental to the performance of the soil nail. Wood shall not be used. Centralizers shall have a means for being securely attached to the soil nail bar. The centralizers shall be sized to position the soil nail bar within 1-inch of the center of the drill hole, sized to also tremie pipe insertion to the bottom of the drill hole and to allow grout to freely flow up the drill hole.

907-825.02.4--Concrete. Concrete for permanent facing and lined ditch at top of wall shall meet the requirements for Class "AA" concrete as set forth in Section 804 of the Standard Specifications.

907-825.02.5--Reinforcing Steel. Reinforcing steel for temporary and permanent soil nail facings shall consist of welded wire fabric and reinforcing bars conforming to the requirements set forth in Subsection 711.02 of the Standard Specifications.

907-825.02.6--Shotcrete. Shotcrete shall have a minimum compressive strength of 2000 psi at three days and 4000 psi at 28 days. Materials comprising shotcrete and shotcrete batching and mixing shall conform to ACI 506.2

907-825.02.7--Drainage Geocomposite. Geocomposite drain strip shall be Mirafi 6000, Ameridrain 500, or an approved equivalent. Geotextile for geocomposite drain strip shall conform to AASHTO Designation: 288, Class 3, permittivity 0.2 per second (minimum) and AOS 0.01 inch (maximum).

907-825.02.8--Drain Pipes and Connectors. Drain pipes shall conform to ASTM Designation: D 1785 Schedule 40 PVC, solid and perforated wall, cell classification 12454-B or 12354-C, wall thickness SDR35, with solvent wed or elastomeric gasket joints. Pipe fittings shall conform to ASTM Designation: D 3034, cell classification 12454-B or 12454-C, wall thickness SDR 35, with solvent weld or elastomeric gasket joints.

907-825.02.9--Soil Nail Head Assembly. Bearing plates shall conform to ASTM Designation: A 572 Grade 50 or ASTM Designation: A 36 Grade 36. Nuts shall conform to AASHTO Designation: M291, Grade B, Hexagonal, fitted with a beveled washer or spherical seat to provide uniform bearing. Headed studs shall be Grade 65 steel and strength of weld of stud to plate shall be equivalent to the tensile strength of the stud.

907-825.03--Construction Requirements. Drainage shall be controlled during construction in the vicinity of soil nail walls. Run-off water shall be directed away from soil nail walls and areas above and behind walls.

Soil nail walls shall be installed in accordance with the accepted submittals and as directed. Excavation behind soil nail walls will not be allowed. If over-excavation occurs, walls shall be repaired with an approved method and a revised soil nail wall design or construction plan may be required.

907-825.03.1--Excavation. Excavation for soil nail walls shall be from the top down in accordance with the accepted submittals. Excavation shall be in staged horizontal lifts with no negative batter (excavation face leaning forward). Lifts shall be excavated in accordance with the following.

1. Heights not to exceed vertical nail spacing,

2. Bottom of lifts no more than three feet (3') below nail locations for current lift; and

3. Horizontal and vertical alignment within two feet (2') of location shown in the accepted submittals.

Any cobbles, boulders, rubble or debris that will protrude more than two inches (2") into the required shotcrete thickness shall be removed. Rocky ground such as colluvium, boulder fills and weathered rock may be difficult to excavate without leaving voids.

Shotcrete shall be applied to excavation faces within 24 hours of excavating each lift unless otherwise approved. Shotcreting may be delayed if it can be demonstrated that delays will not adversely affect excavation stability. If excavation faces will be exposed for more than 24 hours, polyethylene sheets anchored at the top and bottom of lifts shall be used to protect excavation faces from changes in moisture content.

If an excavation becomes unstable at any time, soil nail wall construction shall be suspended and the excavation shall be temporarily stabilized by immediately placing an earth berm up against the unstable excavation face. When this occurs, the walls shall be repaired with an approved method and a revised soil nail wall design or construction plan may be required.

Excavation of the next lift shall not be performed until nail installations and testing, and shotcrete application for the current lift is accepted, and grout and shotcrete for the current lift has cured at least three (3) days and one (1) day, respectively.

907-825.03.2--Soil Nail Installation. Soil nails shall be installed in the same way as acceptable test nails. Nails shall be drilled and grouted the same day and drill holes shall not be left open overnight.

Drilling and grouting shall be controlled to prevent excessive ground movement, damage to structures and pavements, or fractures to rock and soil formations. If ground heave or subsidence occurs, soil nail wall construction shall be suspended and corrective action shall be taken to minimize movement. If property damage occurs, repairs shall be made with an approved method and a revised soil nail wall design or construction plan may be required.

1. Drilling. Drill rigs shall be of the size necessary to install soil nails and with sufficient capacity to drill through whatever materials are encountered. Holes shall be drilled straight and cleaned to the dimensions and inclination shown in the accepted submittals. Holes shall be drilled within six inches (6") of the locations and two degrees (2°) of the inclination shown in the accepted submittals unless otherwise approved.

   Drill holes shall be stabilized with temporary casings if unstable, caving or sloughing material is anticipated or encountered. Drilling fluids shall not be used to stabilize drill holes or remove cuttings.

2. Steel Bars. Steel bars shall be centered in drill holes with centralizers. Centralizers shall be securely attached along bars at no more than eight feet (8') centers. Uppermost and lowermost centralizers shall be attached 18 inches from excavation faces and ends of holes.

   Steel bars shall not be inserted into drill holes until hole locations, dimensions, inclination and cleanliness has been approved. Bars shall not be vibrated, driven or otherwise forced into holes. If a steel bar cannot be completely and easily inserted into a drill hole, the bar shall be removed and cleaned, or the hole shall be re-drilled.

3. Grouting. Oil, rust inhibitors, residual drilling fluids and similar foreign materials shall be removed from holding tanks/hoppers, stirring devices, pumps, lines, tremie pipes and any other equipment in contact with grout before use.

   Grout shall be injected at the lowest point of drill holes through tremies, e.g., grout tubes, casings, hollow-stem augers or drill rods, in one continuous operation. Drill holes shall be filled progressively from ends of holes to excavation faces and the tremies shall be withdrawn at a slow even rate as holes are filled to prevent voids in grout. Tremies shall be extended into the grout at least five feet (5') at all times except when grout is initially placed in holes.

   The grout shall be free of segregation, intrusions, contamination, structural damage or inadequate consolidation (honeycombing). Cold joints in grout are not allowed except for test nails. Any temporary casings shall be removed as the grout is placed and the grout volume shall be recorded for each drill hole.

4. Nail Heads. Stud shear connectors shall be welded to bearing plates of nails in accordance with manufactures specifications. Nail head assemblies shall be installed after shotcreting. Before shotcrete reaches initial set, bearing plates shall be seated and nuts tightened so the plates contact the shotcrete uniformly. If uniform contact is not possible, nail head assemblies shall be installed on mortar pads so nail heads are evenly loaded.

907-825.03.3--Wall Drainage Systems. The wall drainage systems shall be installed as shown in the accepted submittals. Before shotcreting, geocomposite drain strips shall be placed with the geotextile side against excavation faces. For highly irregular faces and at the discretion of the Engineer, drain strips may be placed after shotcreting over weep holes through the shotcrete. Drain strips shall be held in place with anchor pins so strips are in continuous contact with surfaces to which they are attached and allow for full flow the entire height of soil nail walls. Discontinuous drain strips are not allowed. If splices are needed, drain strips shall be overlapped at least 12 feet so flow is not impeded. Drain strips shall be connected to drainage pipe located near the bottom of the wall.

907-825.03.4--Shotcrete. Ungrouted zones of drill holes shall be cleaned and the faces shall be excavated of loose materials, mud, rebound and other foreign material. Surfaces to receive shotcrete shall be moistened. Reinforcing steel shall be secured so shooting does not displace or vibrate reinforcement. Approved thickness gauges shall be installed on 5-foot centers in the horizontal and vertical directions to measure shotcrete thickness.

Shotcrete shall be applied in accordance with the contract, accepted submittals, and ACI 506.2. Approved shotcrete nozzlemen who made satisfactory preconstruction test panels to apply shotcrete shall be used. Shotcrete shall be directed at right angles to excavation faces except when shooting around reinforcing steel. Nozzle shall be steadily rotated in small circular patterns and shotcrete applied from bottom of lifts up.

Shotcrete surfaces shall be uniform and free of sloughing or sagging. Ungrouted zones of drill holes along with any other voids shall be completely filled with shotcrete. Construction joints shall be tapered to a thin edge over a horizontal distance of at least the shotcrete thickness. Joint surfaces shall be wet before shooting adjacent sections.

Surface defects shall be repaired as soon as possible after shooting. Any shotcrete which lacks uniformity, exhibits segregation, honeycombing or lamination, or contains any voids or sand pockets shall be removed and replaced with fresh shotcrete to the satisfaction of the Engineer. Shotcrete shall be protected from freezing and rain until shotcrete reaches initial set.

907-825.03.5--Concrete Facing. Concrete facing shall be constructed in accordance with the accepted submittals and Section 804 of the Standard Specifications. Forms shall not be removed until the concrete attains a compressive strength of at least 2,400 psi. Unless required otherwise in the plans, a Class 1 surface finish shall be provided for concrete facing that meets Subsection 804.03.19.2 of the Standard Specifications. Concrete facing joints shall be constructed at a maximum spacing of 30 feet unless required otherwise in the plans. One-half inch (½-inch) thick expansion joints meeting the requirements of Subsection 804.03.18.3 of the Standard Specifications shall be made for every third joint and ½-inch deep grooved contraction joints

meeting the requirements of Subsection 804.03.18 shall be made for the remaining joints. Reinforcing steel for concrete facing shall be stopped two inches (2") on either side of expansion joints.

Silicone sealant shall be used to seal joints above and behind soil nail walls between the concrete facing and ditches or concrete slope protection.

907-825.03.6--Construction Records. Two copies of soil nail wall construction records shall be provided within 24 hours of completing each lift. The following shall be included in construction records.

1. Names of Soil Nail Wall Contractor, Superintendent, Nozzleman, Drill Rig Operator, Project Manager and Design Engineer;

2. Wall description, county, Department's contract;

3. Wall station and number and lift location, dimensions, elevations and description;

4. Nail locations, dimensions and inclinations, bar types, sizes and grades, corrosion protection and temporary casing information;

5. Date and time drilling begins and ends, steel bars are inserted into drill holes, grout and shotcrete are mixed and arrives on-site and grout placement and shotcrete application begins and ends;

6. Grout volume, temperature, flow and density records;

7. Ground and surface water conditions and elevations if applicable;

8. Weather conditions including air temperature at time of grout placement and shotcrete application; and

9. All other pertinent details related to soil nail wall construction.

After completing each soil nail wall or stage of a wall, a PDF copy of all corresponding construction records shall be provided.

907-825.03.7--Soil Nail Testing. Soil nails shall be tested in accordance with the contract and as directed. Verification tests shall be performed on nails not incorporated into soil nail walls, i.e., sacrificial nails and proof tests shall be performed on nails incorporated into walls, i.e., production nails. Verification Test Nail and Proof Test Nail shall be defined as a nail tested with either a verification or proof test, respectively. Test Nails shall be defined as verification or proof test nails.

Verification tests are required for at least two nails per wall. Proof tests are required for at least one nail per nail row per soil nail wall or at least five percent (5%) of production nails,

whichever is greater. More or less, test nails may be required depending on subsurface conditions encountered. The Design Engineer shall determine the number and locations of verification and proof tests required. The approximate known test nail locations shall be shown on the plans.

Nails shall not be tested until grout and shotcrete attain the required 3-day compressive strength. Production nails shall not be tested until verification tests are accepted.

907-825.03.7.1--Test Equipment. The following equipment shall be used to test nails.

1. Two dial gauges with rigid supports
2. Hydraulic jack and pressure gauge
3. Jacking block or reaction frame
4. Electrical resistance load cell (verification tests only)

Dial gauges shall have enough range and precision to measure the maximum test nail movement to 0.001 inch. Pressure gauges shall be graduated in 100-psi increments or less. Identification numbers and calibration records shall be provided for load cells, jacks and pressure gauges with the soil nail wall construction plan. Each jack and pressure gauge shall be calibrated as a unit.

Test equipment shall be uniformly aligned to evenly load test the nails. A jacking block or reaction frame shall be used that does not damage or contact the shotcrete within three feet (3') of nail heads. Dial gauges shall be placed opposite each other on either side of test nails and the gauges aligned within 5° of bar inclinations. Test equipment shall be set up so resetting or repositioning equipment during nail testing is not needed.

907-825.03.7.2--Test Nails. Test nails shall include both unbonded and bond lengths. Only bond lengths shall be grouted before nail testing. Unbonded and bond lengths of at least three feet (3') and 10 feet, respectively, shall be provided.

Steel bars for production nails may be overstressed under higher test nail loads. If necessary, larger size or higher grade bars with more capacity for test nails may be used instead of shortening bond lengths to less than the minimum required.

907-825.03.7.2.1--Verification Tests. Verification test nails shall be installed with the same equipment, installation methods, drill hole diameter, and inclination as production nails.

Maximum bond length for verification test nails (L_{BVT}) shall be determined using the following.

$$L_{BVT} \leq (C_{RT} \times A_t \times f_y) / (Q_{ALL} \times 3)$$

Where,
L_{BVT} = bond length (ft)

C_{RT} = reduction coefficient, 0.9 for Grade 60 and 75 bars or 0.8 for Grade 150 bars
A_t = bar area (in^2)
f_y = bar yield stress (ksi)
Q_{ALL} = allowable unit grout/ground bond strength (kips/ft)

Design test load for verification test nails (DTL_{VT}) shall be determined based on as-built bond length and allowable unit grout/ground bond strength using the following.

$$DTL_{VT} = L_{BVT} \times Q_{ALL}$$

Where,
DTL_{VT} = design test load (kips)

Verification tests shall be performed by incrementally loading nails to failure or a load of 300% of DTL_{VT} based on the following schedule.

Load	Hold Time
AL*	1 minute
0.25 DTL_{VT}	10 minutes
0.50 DTL_{VT}	10 minutes
0.75 DTL_{VT}	10 minutes
1.00 DTL_{VT}	10 minutes
1.25 DTL_{VT}	10 minutes
1.50 DTL_{VT}	60 minutes (creep_test)
1.75 DTL_{VT}	10 minutes
2.00 DTL_{VT}	10 minutes
2.50 DTL_{VT}	10 minutes
3.00 DTL_{VT}	10 minutes
AL*	1 minute

* Alignment load (AL) is the minimum load needed to align test equipment and should not exceed 0.05 DTL_{VT}.

After applying alignment load, dial gauges shall be reset to zero. Test nail movement shall be recorded at each load increment and permanent set after load is reduced to alignment load. Verification test nails shall be monitored for creep at the 1.5 DTL_{VT} load increment. Movement shall be measured and recorded during creep test at 1, 2, 3, 5, 6, 10, 20, 30, 50 and 60 minutes. The jack shall be pumped as needed to maintain load during hold times.

907-825.03.7.2.2--Proof Tests. Maximum bond length for proof test nails (L_{BPT}) shall be determined using the following.

$$L_{BVT} \leq (C_{RT} \times A_t \times f_y) / (Q_{ALL} \times 1.5)$$

Where variables are defined in Subsection 907-825.03.7.2.1 above.

Design test load for proof test nails (DTL_{PT}) shall be determined based on as-built bond length and allowable unit grout/ground bond strength using the following.

$$DTL_{PT} = L_{BPT} \times Q_{ALL}$$

Where variables are defined in Subsection 907-825.03.7.2.1 above.

Proof tests shall be performed by incrementally loading nails to failure or a load of 150% of DTL_{PT} based on the following schedule.

Load	Hold Time
AL*	Until movement stabilizes
0.25 DTL_{PT}	Until movement stabilizes
0.50 DTL_{PT}	Until movement stabilizes
0.75 DTL_{PT}	Until movement stabilizes
1.00 DTL_{PT}	Until movement stabilizes
1.25 DTL_{PT}	Until movement stabilizes
1.50 DTL_{PT}	10 or 60 minutes (creep test)
AL*	1 minute

* Alignment load (AL) is the minimum load needed to align test equipment and should not exceed 0.05 DTL_{PT}.

After applying alignment load, the dial gauges shall be re-set to zero. Test nail movement shall be recorded at each load increment and monitor proof test nails for creep at the 1.5 DTL_{PT} load increment. Movement shall be measured and recorded during creep test at 1, 2, 3, 5, 6 and 10 minutes. If test nail movement between 1 and 10 minutes is greater than 0.04 inch, the 1.5 DTL_{PT} load increment shall be maintained for an additional 50 minutes and then movement shall be recorded at 20, 30, 50 and 60 minutes. The jack shall be pumped as needed to maintain load during hold times.

907-825.03.7.3--Test Nail Acceptance. Two copies of test nail records including load versus movement and time versus creep movement plots shall be submitted within 24 hours of completing each verification or proof test. The Engineer will review the test nail records to determine if test nails are acceptable. Test nail acceptance is based in part on the following criteria.

1. For verification tests, total movement during creep test is less than 0.08 inch between the 6 and 60 minute readings and creep rate is linear or decreasing throughout hold time.

2. For proof tests, total movement during creep test is less than 0.04 inch between the 1 and

10 minute readings or less than 0.08 inch between the 6 and 60 minute readings and creep rate is linear or decreasing throughout hold time.

3. Total movement at maximum load exceeds 80% of the theoretical elastic elongation of the unbonded length.

4. Pullout failure does not occur at or before the 2.0 DTL_{VT} or 1.5 DTL_{PT} load increment. Define "pullout failure" as the inability to increase load while movement continues. Record pullout failure load as part of test nail data.

For proof test nails, stability of unbonded lengths shall be maintained for subsequent grouting. If a proof test nail is accepted but the unbonded length cannot be satisfactorily grouted, the proof test nail shall not be incorporated into the soil nail wall and add another production nail to replace the test nail.

If the Bridge Engineer determines a verification test nail is unacceptable, the soil nail design or installation methods shall be revised. A revised soil nail wall design or construction plan shall be submitted for acceptance and acceptable verification test nails shall be provided with the revised design or installation methods.

If the Bridge Engineer determines a proof test nail is unacceptable, the Contractor shall either perform additional proof tests on adjacent production nails or revise the soil nail design or installation methods for the production nails represented by the unacceptable proof test nail as determined by the Engineer. A revised soil nail wall design or construction plan shall be submitted for acceptance, an acceptable proof test nail shall be provided with the revised design or installation methods, and additional production nails for the nails represented by the unacceptable proof test nail shall be installed.

After completing nail testing for each soil nail wall or stage of a wall, a PDF copy of all corresponding test nail records shall be provided.

907-825.04--Method of Measurement. Soil Nail Retaining Walls will be measured per square feet of exposed wall face area with the height equal to the difference between top and bottom of wall elevations. The "top of wall" shall be defined as top of concrete facing. The "bottom of wall" shall be as shown in the plans. No measurement will be made for portions of soil nail walls embedded below bottom of wall elevations.

Soil Nail Verification Tests and Soil Nail Proof Tests will be measured per each. Soil nail testing will be measured as the number of initial verification or proof tests performed. No measurement will be made for subsequent nail testing performed on the same or replacement test nails.

907-825.05--Basis of Payment. Soil Nail Retaining Walls, measured as prescribed above, will be paid for at the contract price per square feet, which price shall be full compensation for providing designs, submittals, labor, tools, equipment and soil nail wall materials, excavating, hauling and removing excavated materials, installing soil nails, grouting, shotcreting and

supplying wall drainage systems, leveling pads, concrete facing and any incidentals necessary to construct soil nail walls, brick veneers (if required) and all other incidentals necessary to complete the work. No additional payment will be made and no extension of contract time will be allowed for any repairing of property damage, over-excavations, unstable excavations, unacceptable test nails, thicker shotcrete, or concrete facing. The contract unit price for Soil Nail Retaining Walls does include the cost for any ditches at the top of the wall, but not for fences, handrails, barrier or guardrail associated with soil nail walls. Payment for these items will be paid for elsewhere in the contract.

Soil Nail Verification Tests and Soil Nail Proof Tests, measured as prescribed above, will be paid for at the contract unit price per each, which price shall be full compensation for nail testing, all labor, tools, equipment, and incidentals necessary to complete the testing. No payment will be made and no extension of contract time will be allowed for subsequent nail testing performed on the same or replacement test nails.

Payment will be made under:

907-825-A: Soil Nail Retaining Walls	- per square foot
907-825-B: Soil Nail Verification Tests	- per each
907-825-C: Soil Nail Proof Tests	- per each

S E C T I O N 9 0 5 - P R O P O S A L

Date _____

Mississippi Transportation Commission
Jackson, Mississippi

Sirs: The following proposal is made on behalf of _____
_____ of _____
_____
for constructing the following designated project(s) within the time(s) hereinafter specified.

The plans are composed of drawings and blue prints on file in the offices of the Mississippi Department of Transportation, Jackson, Mississippi.

The Specifications are the current Standard Specifications of the Mississippi Department of Transportation approved by the Federal Highway Administration, except where superseded or amended by the plans, Special Provisions and Notice(s) to Bidders attached hereto and made a part thereof.

I (We) certify that I (we) possess a copy of said Standard and any Supplemental Specifications.

Evidence of my (our) authority to submit the Proposal is hereby furnished. The proposal is made without collusion on the part of any person, firm or corporation. I (We) certify that I (we) have carefully examined the Plans, the Specifications, including the Special Provisions and Notice(s) to Bidders, herein, and have personally examined the site of the work. On the basis of the Specifications, Special Provisions, Notice(s) to Bidders, and Plans, I (we) propose to furnish all necessary machinery, tools, apparatus and other means of construction and do all the work and furnish all the materials in the manner specified. I (We) understand that the quantities mentioned herein are approximate only and are subject to either increase or decrease, and hereby propose to perform any increased or decreased quantities of work at the unit prices bid, in accordance with the above.

Attached hereto is a certified check, cashier's check or Proposal Guaranty Bond in the amount as required in the Advertisement (or, by law).

INSTRUCTION TO BIDDERS: Alternate and Optional Items on Bid Schedule.

1. Two or more items entered opposite a single unit quantity WITHOUT DEFINITE DESIGNATION AS "ALTERNATE ITEMS" are considered as "OPTIONAL ITEMS". Bidders may or may not indicate on bids the Optional Item proposed to be furnished or performed WITHOUT PREJUDICE IN REGARD TO IRREGULARITY OF BIDS.

2. Items classified on the bid schedule as "ALTERNATE ITEMS" and/or "ALTERNATE TYPES OF CONSTRUCTION" must be preselected and indicated on bids. However, "Alternate Types of Construction" may include Optional Items to be treated as set out in Paragraph 1, above.

3. Optional items not preselected and indicated on the bid schedule MUST be designated in accordance with Subsection 102.06 prior to or at the time of execution of the contract.

4. Optional and Alternate items designated must be used throughout the project.

I (We) further propose to perform all "force account or extra work" that may be required of me (us) on the basis provided in the Specifications and to give such work my (our) personal attention in order to see that it is economically performed.

S E C T I O N 9 0 5 -- P R O P O S A L (CONTINUED)

I (We) further propose to execute the attached contract agreement (Section 902) as soon as the work is awarded to me (us), and to begin and complete the work within the time limit(s) provided for in the Specifications and Advertisement. I (We) also propose to execute the attached contract bond (Section 903) in an amount not less than one hundred (100) percent of the total of my (our) part, but also to guarantee the excellence of both workmanship and materials until the work is finally accepted.

I (We) enclose a certified check, cashier's check or bid bond for **five percent (5%) of total bid** and hereby agree that in case of my (our) failure to execute the contract and furnish bond within Ten (10) days after notice of award, the amount of this check (bid bond) will be forfeited to the State of Mississippi as liquidated damages arising out of my (our) failure to execute the contract as proposed. It is understood that in case I am (we are) not awarded the work, the check will be returned as provided in the Specifications.

Respectfully Submitted,

DATE _____

_____
Contractor

BY _____
Signature

TITLE _____

ADDRESS _____

CITY, STATE, ZIP _____

PHONE _____

FAX _____

E-MAIL _____

(To be filled in if a corporation)

Our corporation is chartered under the Laws of the State of _____ and the names, titles and business addresses of the executives are as follows:

President	Address
Secretary	Address
Treasurer	Address

The following is my (our) itemized proposal.

Interchange Construction of the I-10 / I-110 Interchange Including - CD Roads, Leg Ramps, Loop Ramps and the D'lberville Road Interchange, known as State Project No. NHS-0010-01(144) / 105281301 in Harrison County.

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
					Roadway Items
0010	201-A001		1	Lump Sum	Clearing and Grubbing
0020	202-A001		1	Lump Sum	Removal of Obstructions
0030	202-B005		5,902	Square Yard	Removal of Asphalt Pavement, All Depths
0040	202-B008		1	Each	Removal of Box Culvert
0050	202-B009		1	Each	Removal of Bridge
0060	202-B030		20	Square Yard	Removal of Concrete Pavement, All Depths
0070	202-B036		51	Square Yard	Removal of Concrete Slope Paving
0080	202-B041		13,272	Linear Feet	Removal of Fence, All Types
0090	202-B055		4	Each	Removal of High Mast Lighting Assembly
0100	202-B056		4	Each	Removal of High Mast Lighting Foundation
0110	202-B057		19	Each	Removal of Inlets, All Sizes
0120	202-B060		38	Each	Removal of Low Mast Lighting Assembly
0130	202-B061		38	Each	Removal of Low Mast Lighting Foundation
0140	202-B063		3	Each	Removal of Overhead Sign Including Panels, Truss, Supports & Footing
0150	202-B064		4,454	Linear Feet	Removal of Pipe, 8" And Above
0160	202-B071		740	Square Feet	Removal of Sign Panels Including Hardware
0170	202-B078		19,618	Square Yard	Removal of Pavement, All Types and Depths
0180	202-B087		1,799	Linear Feet	Removal of Guard Rail, Including Rails, Posts and Terminal Ends
0190	202-B093		200	Linear Feet	Removal of Curb & Gutter, All Types
0200	202-B094		2,877	Linear Feet	Removal of Curb &/or Curb and Gutter, All Types
0210	202-B100		3	Each	Removal of Existing Lighting Controllers
0220	202-B102		80	Linear Feet	Removal of Guard Rail
0230	202-B105		40	Each	Removal of Pipe Headwall, All Sizes
0240	202-B106		14,177	Linear Feet	Removal of Pipe, All Sizes
0250	202-B107		10	Each	Removal of Sign, Ground Mounted with Posts
0260	202-B146		20,770	Linear Feet	Removal of Existing Wiring
0270	202-B185		7	Each	Removal of Structure, Every Item In Each Phase
0280	202-B231		10	Each	Removal of Fire Hydrant
0290	202-B235		2	Each	Removal of Lift Station
0300	202-B248		14	Each	Removal of Manhole
0310	202-B290		2	Each	Removal of Power/Light Pole
0320	202-B300		49,813	Gallon	Removal of Sewage

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
0330	203-A003	(E)	85,093	Cubic Yard	Unclassified Excavation, FM, AH
0340	203-EX005	(E)	800	Cubic Yard	Borrow Excavation, AH, FME, Class B3
0350	203-EX013	(E)	105,155	Cubic Yard	Borrow Excavation, AH, FME, Class B7
0360	203-G003	(E)	3,307	Cubic Yard	Excess Excavation, FM, AH
0370	203-I001		3,650	Square Yard	Site Grading
0380	206-A001	(S)	14,932	Cubic Yard	Structure Excavation
0390	206-B001	(E)	66	Cubic Yard	Select Material for Undercuts, Contractor Furnished, FM
0400	209-A004		147,195	Square Yard	Geotextile Stabilization, Type V, Non-Woven
0410	211-A001		306,556	Square Yard	Topsoil for Slope Treatment, From Right-of-Way
0420	212-B001		408,742	Square Yard	Standard Ground Preparation
0430	213-B001		43	Ton	Combination Fertilizer, 13-13-13
0440	213-C001		43	Ton	Superphosphate
0450	216-A001		50,664	Square Yard	Solid Sodding
0460	217-A001		14,723	Square Yard	Ditch Liner
0470	219-A001		113	Thousand Gallon	Watering [$20.00]
0480	220-A001		43	Acre	Insect Pest Control [$30.00]
0490	221-A001	(S)	5	Cubic Yard	Portland Cement Concrete Paved Ditch
0500	234-A001		35,475	Linear Feet	Temporary Silt Fence
0510	236-A004		3	Each	Silt Basin, Type D
0520	239-A001		968	Linear Feet	Temporary Slope Drains
0530	406-A001		152,841	Square Yard	Cold Milling of Bituminous Pavement, All Depths
0540	423-A001		9	Mile	Rumble Strips, Ground In
0550	501-E001		164	Linear Feet	Expansion Joints, Without Dowels
0560	502-A001	(C)	354	Square Yard	Reinforced Cement Concrete Bridge End Pavement
0570	503-C007		3,967	Linear Feet	Saw Cut, Full Depth
0580	602-A001	(S)	51,680	Pounds	Reinforcing Steel
0590	603-A048	(S)	76	Linear Feet	6" Steel Pipe, Wall Thickness 0.188"
0600	603-A049	(S)	80	Linear Feet	6" Steel Pipe, Jacked or Bored, Wall Thickness 0.188"
0610	603-A050	(S)	152	Linear Feet	12" Steel Pipe, Wall Thickness 0.188"
0620	603-A051	(S)	1,181	Linear Feet	20" Steel Pipe, Wall Thickness 0.250"
0630	603-A052	(S)	390	Linear Feet	20" Steel Pipe, Jacked or Bored, Wall Thickness 0.250"
0640	603-A053	(S)	1,299	Linear Feet	24" Steel Pipe, Wall Thickness 0.281"
0650	603-A054	(S)	554	Linear Feet	24" Steel Pipe, Jacked or Bored, Wall Thickness 0.281"
0660	603-A055	(S)	80	Linear Feet	32" Steel Pipe, Wall Thickness 0.500"
0670	603-A056	(S)	721	Linear Feet	36" Steel Pipe, Wall Thickness 0.500"

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
0680	603-A057	(S)	484	Linear Feet	36" Steel Pipe, Jacked or Bored, Wall Thickness 0.500"
0690	603-CA001	(S)	120	Linear Feet	15" Reinforced Concrete Pipe, Class III
0700	603-CA002	(S)	66	Linear Feet	18" Reinforced Concrete Pipe, Class III
0710	603-CA088	(S)	3,841	Linear Feet	18" Reinforced Concrete Pipe, Class III, Rubber Type Gaskets
0720	603-CA089	(S)	2,170	Linear Feet	24" Reinforced Concrete Pipe, Class III, Rubber Type Gaskets
0730	603-CA090	(S)	919	Linear Feet	30" Reinforced Concrete Pipe, Class III, Rubber Type Gaskets
0740	603-CA091	(S)	804	Linear Feet	36" Reinforced Concrete Pipe, Class III, Rubber Type Gaskets
0750	603-CA093	(S)	207	Linear Feet	48" Reinforced Concrete Pipe, Class III, Rubber Type Gaskets
0760	603-CA104	(S)	63	Linear Feet	60" Reinforced Concrete Pipe, Class III, Rubber Type Gasket
0770	603-CB001	(S)	10	Each	18" Reinforced Concrete End Section
0780	603-CB002	(S)	4	Each	24" Reinforced Concrete End Section
0790	603-CB003	(S)	4	Each	30" Reinforced Concrete End Section
0800	603-CB004	(S)	4	Each	36" Reinforced Concrete End Section
0810	603-CB006	(S)	4	Each	48" Reinforced Concrete End Section
0820	603-CB008	(S)	2	Each	60" Reinforced Concrete End Section
0830	603-CE014	(S)	364	Linear Feet	51" x 31" Concrete Arch Pipe, Class A IV
0840	603-CE016	(S)	132	Linear Feet	65" x 40" Concrete Arch Pipe, Class A IV
0850	603-CE037	(S)	114	Linear Feet	65" x 40" Concrete Arch Pipe, Class A III, Flexible Plastic Gaskets
0860	603-CE038	(S)	2,190	Linear Feet	88" x 54" Concrete Arch Pipe, Class A III, Flexible Plastic Gaskets
0870	603-CE040	(S)	434	Linear Feet	51" x 31" Concrete Arch Pipe, Class A III, Flexible Plastic Gaskets
0880	603-CE041	(S)	530	Linear Feet	29" x 18" Concrete Arch Pipe, Class A III, Flexible Plastic Gaskets
0890	603-CE042	(S)	12	Linear Feet	44" x 27" Concrete Arch Pipe, Class A III, Flexible Plastic Gaskets
0900	603-CE043	(S)	114	Linear Feet	58" x 36" Concrete Arch Pipe, Class A III, Flexible Plastic Gaskets
0910	603-CE044	(S)	74	Linear Feet	73" x 45" Concrete Arch Pipe, Class A III, Flexible Plastic Gaskets
0920	603-CE045	(S)	854	Linear Feet	36" x 23" Concrete Arch Pipe, Class A III, Flexible Plastic Gaskets
0930	603-CF002	(S)	6	Each	29" x 18" Concrete Arch Pipe End Section
0940	603-CF003	(S)	14	Each	36" x 23" Concrete Arch Pipe End Section
0950	603-CF004	(S)	2	Each	44" x 27" Concrete Arch Pipe End Section
0960	603-CF005	(S)	10	Each	51" x 31" Concrete Arch Pipe End Section
0970	603-CF006	(S)	2	Each	58" x 36" Concrete Arch Pipe End Section
0980	603-CF007	(S)	2	Each	65" x 40" Concrete Arch Pipe End Section
0990	603-CF009	(S)	2	Each	88" x 54" Concrete Arch Pipe End Section
1000	604-A001		21,649	Pounds	Castings
1010	604-B001		6,650	Pounds	Gratings
1020	606-B001		3,952	Linear Feet	Guard Rail, Class A, Type 1

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
1030	606-C001		7	Each	Guard Rail, Cable Anchor Type 1, Wood Post
1040	606-D008		11	Each	Guard Rail, Bridge End Section, Type H
1050	606-D012		5	Each	Guard Rail, Bridge End Section, Type I
1060	606-E001		22	Each	Guard Rail, Terminal End Section
1070	607-B006		15,924	Linear Feet	60" Type II Chain Link Fence, Class II
1080	607-E001		600	Linear Feet	Barbed Wire Fence, Single Strand
1090	607-P1007		863	Each	Line Post, 7' x 1 1/2" Galvanized Steel
1100	607-P1009		172	Each	Line Post, 9' x 2" Galvanized Steel
1110	607-P1010		115	Each	Line Post, 10' x 2" Galvanized Steel
1120	607-P2019		25	Each	Brace Post, 10' x 2" Galvanized Steel
1130	607-P2022		17	Each	Brace Post, 12' x 2" Galvanized Steel
1140	607-P2023		123	Each	Brace Post, 8' x 2" Galvanized Steel
1150	608-A001	(S)	40	Square Yard	Concrete Sidewalk, Without Reinforcement
1160	609-B001	(S)	1,057	Linear Feet	Concrete Curb, Header
1170	609-D001	(S)	190	Linear Feet	Combination Concrete Curb and Gutter Type 1
1180	609-D005	(S)	3,012	Linear Feet	Combination Concrete Curb and Gutter Type 3B Modified
1190	609-D006	(S)	4,791	Linear Feet	Combination Concrete Curb and Gutter Type 1 Modified
1200	609-D007	(S)	1,370	Linear Feet	Combination Concrete Curb and Gutter Type 2 Modified
1210	614-A002	(S)	59	Square Yard	Concrete Driveway, Without Reinforcement, 6-inch Thickness
1220	615-A003	(S)	2,981	Linear Feet	Concrete Type IV Cast-in-Place Median Barrier
1230	615-A018	(S)	40	Linear Feet	Concrete Bridge End Barrier, 33.5"
1240	616-A001	(S)	2,096	Square Yard	Concrete Median and/or Island Pavement, 4-inch
1250	616-A003	(S)	57	Square Yard	Concrete Median and/or Island Pavement, 10-inch
1260	618-A001		1	Lump Sum	Maintenance of Traffic
1270	618-B001		64	Square Feet	Additional Construction Signs [$10.00]
1280	619-A1001		1,875	Linear Feet	Temporary Traffic Stripe, Continuous White
1290	619-A1004		22	Mile	Temporary Traffic Stripe, Continuous White, Paint
1300	619-A2001		2,500	Linear Feet	Temporary Traffic Stripe, Continuous Yellow
1310	619-A2004		16	Mile	Temporary Traffic Stripe, Continuous Yellow, Paint
1320	619-A3007		16	Mile	Temporary Traffic Stripe, Skip White, Paint
1330	619-A4007		1	Mile	Temporary Traffic Stripe, Skip Yellow, Paint
1340	619-A6002		144	Square Feet	Temporary Traffic Stripe, Legend
1350	619-D1001		1,045	Square Feet	Standard Roadside Construction Signs, Less than 10 Square Feet
1360	619-D2001		1,508	Square Feet	Standard Roadside Construction Signs, 10 Square Feet or More
1370	619-D3001		28	Each	Remove and Reset Signs, All Sizes

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
1380	619-E1001		4	Each	Flashing Arrow Panel, Type C
1390	619-F1001		941	Linear Feet	Concrete Median Barrier, Precast
1400	619-F2001		941	Linear Feet	Remove and Reset Concrete Median Barrier, Precast
1410	619-G4001		816	Linear Feet	Barricades, Type III, Single Faced
1420	619-G4004		24	Linear Feet	Barricades, Type III, Single Faced, Permanent, Red/White
1430	619-G5001		487	Each	Free Standing Plastic Drums
1440	619-G7001		13	Each	Warning Lights, Type "B"
1450	619-J1003		2	Unit	Impact Attenuator, 60 MPH
1460	619-J2002		2	Unit	Impact Attenuator, 60 MPH, Replacement Package
1470	620-A001		1	Lump Sum	Mobilization
1480	627-K001		3,006	Each	Red-Clear Reflective High Performance Raised Markers
1490	627-L001		823	Each	Two-Way Yellow Reflective High Performance Raised Markers
1500	627-M001		19	Each	One-Way Clear Reflective High Performance Raised Markers
1510	630-A001		83	Square Feet	Standard Roadside Signs, Sheet Aluminum, 0.080" Thickness
1520	630-A002		454	Square Feet	Standard Roadside Signs, Sheet Aluminum, 0.125" Thickness
1530	630-B001		660	Square Feet	Interstate Directional Signs, Bolted Extruded Aluminum Panels, Ground Mounted
1540	630-B002		8,080	Square Feet	Interstate Directional Signs, Bolted Extruded Aluminum Panels, Overhead Mounted
1550	630-C003		659	Linear Feet	Steel U-Section Posts, 3.0 lb/ft
1560	630-D004		37	Linear Feet	Structural Steel Beams, W6 x 12
1570	630-D010		86	Linear Feet	Structural Steel Beams, W12 x 26
1580	630-E001		101	Pounds	Structural Steel Angles & Bars, 3" x 3" x 1/4" Angles
1590	630-E004		466	Pounds	Structural Steel Angles & Bars, 7/16" x 2 1/2" Flat Bar
1600	630-F001		112	Each	Delineators, Guard Rail, White
1610	630-F002		51	Each	Delineators, Guard Rail, Yellow
1620	630-F006		64	Each	Delineators, Post Mounted, Single White
1630	630-F007		45	Each	Delineators, Post Mounted, Single Yellow
1640	630-F008		222	Each	Delineators, Post Mounted, Double White
1650	630-F009		91	Each	Delineators, Post Mounted, Double Yellow
1660	630-K002		420	Linear Feet	Welded & Seamless Steel Pipe Posts, 3 1/2"
1670	630-K003		83	Linear Feet	Welded & Seamless Steel Pipe Posts, 4"
1680	640-A001		5	Each	Traffic Signal Heads, Type 1
1690	640-A006		1	Each	Traffic Signal Heads, Type 3
1700	640-A016		9	Each	Traffic Signal Heads, Type 1 LED
1710	640-A027		12	Each	Traffic Signal Head, Type 5T LED
1720	640-A036		2	Each	Traffic Signal Heads, Type 5L, LED

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
1730	640-A045		1	Each	Traffic Signal Heads, Type 3L, LED
1740	640-A046		1	Each	Traffic Signal Heads, Type 7L, LED
1750	642-A001		4	Each	Solid State Traffic Actuated Controllers, Type 8M
1760	644-A001		10	Each	Optical Detector
1770	644-B001		767	Linear Feet	Optical Detector Cable
1780	644-C002		4	Each	Phase Selector, 4 Channel
1790	647-A002		4	Each	Pullbox, Type 3
1800	647-A005		5	Each	Pullbox, Type 2
1810	648-A001		4	Each	Radio Interconnect, Installed in New Controller Cabinet
1820	653-A001		96	Square Feet	Traffic Sign, Encapsulated Lens
1830	666-B054		678	Linear Feet	Electric Cable, Underground in Conduit, IMSA 20-1, AWG 14, 8 Conductor
1840	666-C017		426	Linear Feet	Electric Cable, Aerial Supported, IMSA 20-1, AWG 14, 8 Conductor
1850	668-A018		327	Linear Feet	Traffic Signal Conduit, Underground, Type 4, 2"
1860	668-A020		50	Linear Feet	Traffic Signal Conduit, Underground, Type 4, 3"
1870	668-B025		328	Linear Feet	Traffic Signal Conduit, Underground Drilled or Jacked, Rolled Pipe, 3"
1880	682-A003		34,300	Linear Feet	Underground Branch Circuit, AWG 1/0, 2 Conductor
1890	682-A015		19,215	Linear Feet	Underground Branch Circuit, AWG 2, 3 Conductor
1900	682-A025		8,415	Linear Feet	Underground Branch Circuit, AWG 4, 3 Conductor
1910	682-A031		6,670	Linear Feet	Underground Branch Circuit, AWG 6, 3 Conductor
1920	682-B001		3,860	Linear Feet	Underground Branch Circuit, Jacked or Bored, 4" Conduit Only
1930	682-D001		44	Each	Underground Pull Box
1940	682-F001		5	Each	Secondary Power Controllers
1950	683-A025		9	Each	Lighting Assembly, High Mast, Type 110-4
1960	683-A028		3	Each	Lighting Assembly, High Mast, Type 110-5
1970	683-A031		1	Each	Lighting Assembly, High Mast, Type 110-6
1980	683-A043		14	Each	Lighting Assembly, High Mast, Type 120-4
1990	683-A046		3	Each	Lighting Assembly, High Mast, Type 120-5
2000	683-A049		2	Each	Lighting Assembly, High Mast, Type 120-6
2010	683-A052		2	Each	Lighting Assembly, High Mast, Type 120-8
2020	683-B115		19	Each	Lighting Assembly, Low Mast, Type 50-1-20-250
2030	685-D001		3	Each	Service Pole
2040	686-A001		2	Each	Relocation of Existing Lighting Assemblies
2050	809-A004	(S)	24,174	Square Feet	Mechanically Stabilized Earth Wall System
2060	815-A009	(S)	1,181	Ton	Loose Riprap, Size 300
2070	815-D001	(S)	90	Cubic Yard	Concrete Slope Paving

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
2080	815-F002	(S)	272	Ton	Sediment Control Stone
2090	907-225-A001		90	Acre	Grassing
2100	907-225-B001		169	Ton	Agricultural Limestone
2110	907-225-C001		174	Ton	Mulch, Vegetative Mulch
2120	907-226-A001		86	Acre	Temporary Grassing
2130	907-234-D001		73	Each	Inlet Siltation Guard
2140	907-237-A003		7,380	Linear Feet	Wattles, 20"
2150	907-246-A002		500	Each	Sandbags
2160	907-249-A001		1,893	Ton	Riprap for Erosion Control
2170	907-249-B001		50	Cubic Yard	Remove and Reset Riprap
2180	907-260-A004		1	Lump Sum	Sewage Pumping Station, DD
2190	907-260-A005		1	Lump Sum	Sewage Pumping Station, UU
2200	907-262-A007	(S)	2,526	Linear Feet	8" PVC SDR 26 Sanitary Sewer Main
2210	907-262-A008	(S)	1,188	Linear Feet	10" PVC SDR 26 Sanitary Sewer Main
2220	907-262-A009	(S)	404	Linear Feet	12" PVC SDR 26 Sanitary Sewer Main
2230	907-262-C002		115	Each	6" PVC SDR-26 Sanitary Sewer Service
2240	907-262-D002	(S)	782	Linear Feet	16" HDPE Casing Pipe
2250	907-262-D002	(S)	560	Linear Feet	16" HDPE Casing Pipe Directional Bore
2260	907-262-L001	(S)	135	Linear Feet	2" PVC Sanitary Sewer Force Main
2270	907-262-L002	(S)	230	Linear Feet	4" PVC Sanitary Sewer Force Main
2280	907-262-L003	(S)	2,554	Linear Feet	6" PVC Sanitary Sewer Force Main
2290	907-262-L004	(S)	975	Linear Feet	8" PVC Sanitary Sewer Force Main
2300	907-262-L005	(S)	1,308	Linear Feet	20" PVC Sanitary Sewer Force Main
2310	907-262-L006	(S)	1,343	Linear Feet	6" HDPE Sanitary Sewer Force Main
2320	907-262-L007	(S)	1,250	Linear Feet	20" HDPE Sanitary Sewer Force Main
2330	907-265-A001	(S)	819	Linear Feet	6" PVC Pipe
2340	907-265-A002	(S)	2,614	Linear Feet	8" PVC Pipe, C-900
2350	907-265-A005	(S)	1,077	Linear Feet	10" C900 PVC Water Main
2360	907-265-A007	(S)	6,205	Linear Feet	12" C900 PVC Water Main
2370	907-265-D008		4	Each	10" Gate Valve
2380	907-265-D009		16	Each	12" Gate Valve
2390	907-265-D013		6	Each	8" Water Valve
2400	907-265-D014		7	Each	6" Water Valve
2410	907-265-D015		2	Each	12" Insertion Valve
2420	907-265-D016		2	Each	10" Insertion Valve

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
2430	907-265-D017		3	Each	8" Insertion Valve
2440	907-265-F001		14	Each	Fire Hydrant Assembly
2450	907-265-I003		6	Each	Water Meter Installation
2460	907-265-J006		1	Each	Relocate Fire Hydrant
2470	907-265-K003		1	Each	Cap Existing 6" Water Main
2480	907-265-K004		3	Each	Cap Existing 8" Water Main
2490	907-265-K005		2	Each	12" Line Stop
2500	907-265-K006		4	Each	20" Line Stop
2510	907-265-K007		2	Each	10" Line Stop
2520	907-265-L002	(S)	57	Linear Feet	3/4" Diameter Water Service Line
2530	907-265-L003	(S)	150	Linear Feet	2" Diameter Water Service
2540	907-265-M003		5	Each	3/4" Water Meter
2550	907-265-O001		1	Each	12"x12" Tapping Sleeve & 12" Valve
2560	907-265-O002		1	Each	10"x10" Tapping Sleeve & 10" Valve
2570	907-265-O003		3	Each	8"x8" Tapping Sleeve & 8" Valve
2580	907-265-O004		1	Each	8"x6" Tapping Sleeve & 6" Valve
2590	907-265-O005		2	Each	6"x6" Tapping Sleeve & 6" Valve
2600	907-266-A001		1	Lump Sum	Duplex Pump Control Panel, UU
2610	907-266-A002		1	Lump Sum	Duplex Pump Control Panel, DD
2620	907-267-A001		1	Lump Sum	Wireless Monitoring and Control System, Station UU
2630	907-267-A002		1	Lump Sum	Wireless Monitoring and Control System, Station DD
2640	907-267-A003		1	Lump Sum	Wireless Monitoring and Control System, Station WWTF
2650	907-304-A004	(GY)	818	Cubic Yard	Granular Material, LVM, Class 6, Group C
2660	907-304-F001	(GT)	38,456	Ton	Size 825 Crushed Stone Base
2670	907-402-A002	(BA1)	5,311	Ton	Hot Mix Asphalt, Open Graded Friction Course, 9.5mm Mixture
2680	907-402-B001	(A3)	14,162	Gallon	Bituminous Tack Coat
2690	907-403-AA001	(BA1)	13,640	Ton	Stone Matrix Asphalt, 9.5 mm Mixture
2700	907-403-S004		53	Mile	Joint Sealant
2710	907-407-A001	(A2)	17,581	Gallon	Asphalt for Tack Coat
2720	907-601-A001	(S)	223	Cubic Yard	Class "B" Structural Concrete
2730	907-601-B001	(S)	288	Cubic Yard	Class "B" Structural Concrete, Minor Structures, Per Plans
2740	907-603-ALT01	(S)	173	Linear Feet	18" Type A Alternate Pipe
2750	907-603-DD006	(S)	780	Linear Feet	8" HDPE Force Main Pipe, Directional Bore
2760	907-604-C001	(S)	5	Each	Precast Manhole, 48-inch Diameter 4' Dia. Precast Concrete Manhole(0-6')
2770	907-604-C001	(S)	7	Each	Precast Manhole, 48-inch Diameter 4' Dia. Precast Concrete Manhole(10'-12)

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
2780	907-604-C001	(S)	1	Each	Precast Manhole, 48-inch Diameter 4' Dia. Precast Concrete Manhole(12'-14)
2790	907-604-C001	(S)	1	Each	Precast Manhole, 48-inch Diameter 4' Dia. Precast Concrete Manhole(14'-16'
2800	907-604-C001	(S)	5	Each	Precast Manhole, 48-inch Diameter 4' Dia. Precast Concrete Manhole(6'-8')
2810	907-604-C001	(S)	8	Each	Precast Manhole, 48-inch Diameter 4 Dia. Precast Concrete Manhole(8'-10')
2820	907-604-D001	(S)	32,926	Pounds	Ductile Iron Fittings
2830	907-604-E001	(S)	1,911	Square Feet	100% Solid Polymer Liner
2840	907-617-A001		124	Each	Right-of-Way Marker
2850	907-619-E3001		6	Each	Changeable Message Sign
2860	907-619-L001		500	Linear Feet	Construction Safety Fence
2870	907-626-A003		13	Mile	6" Thermoplastic Traffic Stripe, Skip White
2880	907-626-C003		9	Mile	6" Thermoplastic Double Drop Edge Stripe, Continuous White
2890	907-626-D004		1,127	Linear Feet	6" Thermoplastic Traffic Stripe, Skip Yellow
2900	907-626-E004		3	Mile	6" Thermoplastic Traffic Stripe, Continuous Yellow
2910	907-626-F003		8	Mile	6" Thermoplastic Double Drop Edge Stripe, Continuous Yellow
2920	907-626-G004		22,286	Linear Feet	Thermoplastic Detail Stripe, White
2930	907-626-G005		4,147	Linear Feet	Thermoplastic Detail Stripe, Yellow
2940	907-626-H005		2,264	Square Feet	Thermoplastic Legend, White
2950	907-627-P001		14	Each	Two-Way Blue Reflective High Performance Raised Markers
2960	907-630-I001		1	Lump Sum	Metal Overhead Sign Supports, Assembly No. 1, Contractor Designed
2970	907-630-I002		1	Lump Sum	Metal Overhead Sign Supports, Assembly No. 2, Contractor Designed
2980	907-630-I003		1	Lump Sum	Metal Overhead Sign Supports, Assembly No. 3, Contractor Designed
2990	907-630-I004		1	Lump Sum	Metal Overhead Sign Supports, Assembly No. 4, Contractor Designed
3000	907-630-I005		1	Lump Sum	Metal Overhead Sign Supports, Assembly No. 5, Contractor Designed
3010	907-630-I007		1	Lump Sum	Metal Overhead Sign Supports, Assembly No. 7, Contractor Designed
3020	907-630-I008		1	Lump Sum	Metal Overhead Sign Supports, Assembly No. 8, Contractor Designed
3030	907-630-I009		1	Lump Sum	Metal Overhead Sign Supports, Assembly No. 9, Contractor Designed
3040	907-630-I010		1	Lump Sum	Metal Overhead Sign Supports, Assembly No. 10, Contractor Designed
3050	907-630-I012		1	Lump Sum	Metal Overhead Sign Supports, Assembly No. 11, Contractor Designed
3060	907-630-J001		1	Lump Sum	Overhead Sign Supported on Bridge, Assembly No 1, Contractor Designed
3070	907-630-J002		1	Lump Sum	Overhead Sign Supported on Bridge, Assembly No 2, Contractor Designed
3080	907-630-J004		1	Lump Sum	Overhead Sign Supported on Bridge, Assembly No 3, Contractor Designed
3090	907-631-B001		509	Cubic Yard	Flowable Fill, Non-Excavatable
3100	907-639-A001		2	Each	Traffic Signal Equipment Pole, Type 1, Wood
3110	907-639-A010		1	Each	Traffic Signal Equipment Pole, Type IV, 30' Shaft, 35' Arm
3120	907-639-A011		4	Each	Traffic Signal Equipment Pole, Type II, 17' Shaft, 35' Arm

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
3130	907-639-A012		1	Each	Traffic Signal Equipment Pole, Type II, 17' Shaft, 45' Arm
3140	907-639-A033		1	Each	Traffic Signal Equipment Pole, Type IV, 30' Shaft, 35' & 35' Arms
3150	907-639-A035		1	Each	Traffic Signal Equipment Pole, Type IV, 30' Shaft, 30' & 30' Arms
3160	907-639-A048		1	Each	Traffic Signal Equipment Pole, Type V, 18' Shaft
3170	907-639-A060		3	Each	Traffic Signal Equipment Pole, Type V, 8' Shaft
3180	907-639-C002		28	Cubic Yard	Pole Foundations, 36" Diameter
3190	907-639-C003		4	Cubic Yard	Pole Foundations, 24" Diameter
3200	907-639-D001		100	Linear Feet	Slip Casing, 36" Diameter
3210	907-639-D003		25	Linear Feet	Slip Casing, 24" Diameter
3220	907-649-A004		10	Each	Video Detection System, 1 Sensor, Type 2
3230	907-683-G1004		2	Each	Repair of High Mast Lighting Assembly, Type 130-4-S
3240	907-683-G1005		2	Each	Repair of High Mast Lighting Assembly, Type 130-5-S
3250	907-683-G1026		1	Each	Repair of High Mast Lighting Assembly, Type 130-6-S
3260	907-684-A002		19	Each	Pole Foundation, 36" Diameter
3270	907-684-A003		36	Each	Pole Foundation, 48" Diameter
3280	907-699-A002		1	Lump Sum	Roadway Construction Stakes
3290	907-825-A001	(S)	4,341	Square Feet	Soil Nail Retaining Walls
3300	907-825-B001	(S)	3	Each	Soil Nail Verification Tests
3310	907-825-C001	(S)	20	Each	Soil Nail Proof Tests
					ALTERNATE GROUP AA NUMBER 1
3320	907-403-A002	(BA1)	45,996	Ton	Hot Mix Asphalt, HT, 19-mm mixture
					ALTERNATE GROUP AA NUMBER 2
3330	907-403-M011	(BA1)	45,996	Ton	Warm Mix Asphalt, HT, 19-mm mixture
					ALTERNATE GROUP BB NUMBER 1
3340	907-403-A012	(BA1)	19,492	Ton	Hot Mix Asphalt, ST, 19-mm mixture
					ALTERNATE GROUP BB NUMBER 2
3350	907-403-M004	(BA1)	19,492	Ton	Warm Mix Asphalt, ST, 19-mm mixture
					ALTERNATE GROUP CC NUMBER 1
3360	907-403-B007	(BA1)	867	Ton	Hot Mix Asphalt, ST, 12.5-mm mixture, Leveling
					ALTERNATE GROUP CC NUMBER 2
3370	907-403-N002	(BA1)	867	Ton	Warm Mix Asphalt, ST, 12.5-mm mixture, Leveling
					ALTERNATE GROUP DD NUMBER 1
3380	907-403-D001	(BA1)	13,028	Ton	Hot Mix Asphalt, HT, 12.5-mm mixture, Polymer Modified
					ALTERNATE GROUP DD NUMBER 2
3390	907-403-P002	(BA1)	13,028	Ton	Warm Mix Asphalt, HT, 12.5-mm mixture, Polymer Modified
					ALTERNATE GROUP EE NUMBER 1

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
3400	907-403-D004	(BA1)	9,667	Ton	Hot Mix Asphalt, HT, 9.5-mm mixture, Polymer Modified
					ALTERNATE GROUP EE NUMBER 2
3410	907-403-P001	(BA1)	9,667	Ton	Warm Mix Asphalt, HT, 9.5-mm mixture, Polymer Modified
					ALTERNATE GROUP FF NUMBER 1
3420	907-403-A011	(BA1)	714	Ton	Hot Mix Asphalt, ST, 12.5-mm mixture
					ALTERNATE GROUP FF NUMBER 2
3430	907-403-M003	(BA1)	714	Ton	Warm Mix Asphalt, ST, 12.5-mm mixture
					ALTERNATE GROUP GG NUMBER 1
3440	907-403-A015	(BA1)	714	Ton	Hot Mix Asphalt, ST, 9.5-mm mixture
					ALTERNATE GROUP GG NUMBER 2
3450	907-403-M001	(BA1)	714	Ton	Warm Mix Asphalt, ST, 9.5-mm mixture
					Bridge Items
3460	501-K001		4,000	Square Yard	Transverse Grooving
3470	803-B002	(S)	2	Each	Conventional Static Pile Load Test [$5,000.00]
3480	803-C003	(S)	2,160	Linear Feet	16" x 16" Prestressed Concrete Piling
3490	803-I001	(S)	2	Each	PDA Test Pile
3500	803-J001	(S)	2	Each	Pile Restrike
3510	803-N001	(S)	82	Linear Feet	Exploration
3520	803-O009	(S)	720	Linear Feet	Temporary Casing, 54" Diameter
3530	805-A001	(S)	395,594	Pounds	Reinforcement
3540	813-A002	(S)	1,005	Linear Feet	Concrete Railing, 32"
3550	815-D001	(S)	140	Cubic Yard	Concrete Slope Paving
3560	907-803-K003	(S)	1,476	Linear Feet	Drilled Shaft, 54" Diameter
3570	907-803-L005	(S)	1	Each	Test Shaft, 54" Diameter
3580	907-803-M003	(S)	92	Linear Feet	Trial Shaft, 54" Diameter
3590	907-804-A001	(S)	1,736	Cubic Yard	Bridge Concrete, Class AA
3600	907-804-C010	(S)	5,470	Linear Feet	125' Prestressed Concrete Beam, Type BT-72

CONDITIONS FOR COMBINATION BID

If a bidder elects to submit a combined bid for two or more of the contracts listed for this month's letting, the bidder must complete and execute these sheets of the proposal in each of the individual proposals to constitute a combination bid. In addition to this requirement, each individual contract shall be completed, executed and submitted in the usual specified manner.

Failure to execute this Combination Bid Proposal in each of the contracts combined will be just cause for each proposal to be received and evaluated as a separate bid.

* *

COMBINATION BID PROPOSAL

I. This proposal is tendered as one part of a Combination Bid Proposal utilizing option ___* of Subsection 102.11 on the following contracts:

* Option to be shown as either (a), (b), or (c).

	Project No.	County		Project No.	County
1.	____________	____________	6.	____________	____________
2.	____________	____________	7.	____________	____________
3.	____________	____________	8.	____________	____________
4.	____________	____________	9.	____________	____________
5.	____________	____________	10.	____________	____________

A. If option (a) has been selected, then go to II, and sign Combination Bid Proposal.

B. If option (b) has been selected, then complete the following, go to II, and sign Combination Bid Proposal.

SECTION 905 - COMBINATION BID PROPOSAL (Continued)

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
1. _____	_____ _____	_____ _____	_____ _____	_____ _____	
2. _____	_____ _____	_____ _____	_____ _____	_____ _____	
3. _____	_____ _____	_____ _____	_____ _____	_____ _____	
4. _____	_____ _____	_____ _____	_____ _____	_____ _____	
5. _____	_____ _____	_____ _____	_____ _____	_____ _____	
6. _____	_____ _____	_____ _____	_____ _____	_____ _____	
7. _____	_____ _____	_____ _____	_____ _____	_____ _____	
8. _____	_____ _____	_____ _____	_____ _____	_____ _____	

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
9. _____	_____ _____	_____ _____	_____ _____	_____ _____	
10. _____	_____ _____	_____ _____	_____ _____	_____ _____	

C. If option (c) has been selected, then initial and complete one of the following, go to II. and sign Combination Bid Proposal.

_____ I (We) desire to be awarded work not to exceed a total monetary value of $ _____.

_____ I (We) desire to be awarded work not to exceed _____ number of contracts.

II. It is understood that the Mississippi Transportation Commission not only reserves the right to reject any and all proposals, but also the right to award contracts upon the basis of lowest separate bids or combination bids most advantageous to the State.

It is further understood and agreed that the Combination Bid Proposal is for comparison of bids only and that each contract shall operate in every respect as a separate contract in accordance with its proposal and contract documents.

I (We), the undersigned, agree to complete each contract on or before its specified completion date.

SIGNED _____

_____

_____

TO: EXECUTIVE DIRECTOR, MISSISSIPPI DEPARTMENT OF TRANSPORTATION
JACKSON, MISSISSIPPI

CERTIFICATE

If awarded this contract, I (we) contemplate that portions of the contract will be sublet. I (we) certify that those subcontracts which are equal to or in excess of fifty thousand dollars ($50,000.00) will be in accordance with regulations promulgated and adopted by the Mississippi State Board of Contractors on January 13, 1999.

I (we) agree that this notification of intent DOES NOT constitute APPROVAL of the subcontracts.

NOTE: Insert name and address of subcontractors. (Subcontracts equal to or in excess of fifty thousand dollars ($50,000.00) ONLY.)

(Individual or Firm)	(Address)
(Individual or Firm)	(Address)
(Individual or Firm)	(Address)
(Individual or Firm)	(Address)

NOTE: Failure to complete the above DOES NOT preclude subsequent subcontracts. Subsequent subcontracts, if any, equal to or in excess of fifty thousand dollars ($50,000.00) will be in accordance with regulations promulgated and adopted by the Mississippi State Board of Contractors on January 13, 1999.

Contractor _____

By _____

Title _____

CERTIFICATE MUST BE EXECUTED

REV. 2/99

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

CERTIFICATION
(Execute in duplicate)

I,_____,
(Name of person signing certification)

individually, and in my capacity as _____ of
(Title)

_____ do hereby certify under
(Name of Firm, Partnership, or Corporation)

penalty of perjury under the laws of the United States and the State of Mississippi that

_____, Bidder
(Name of Firm, Partnership, or Corporation)

on Project No. **NHS-0010-01(144) / 105281301**,

in **Harrison** County(ies), Mississippi, 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 this contract; nor have any of its corporate officers or principal owners.

Except as noted hereafter, it is further certified that said legal entity and its corporate officers, principal owners, managers, auditors and others in a position of administering federal funds are not currently under suspension, debarment, voluntary exclusion or determination of ineligibility; nor have a debarment pending; nor been suspended, debarred, voluntarily excluded or determined ineligible within the past three years by the Mississippi Transportation Commission, the State of Mississippi, any other State or a federal agency; nor been indicted, convicted or had a civil judgment rendered by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

Initial here "_____" if exceptions are attached and made a part thereof. Any exceptions shall address to whom it applies, initiating agency and dates of such action.

Note: Exceptions will not necessarily result in denial of award but will be considered in determining bidder responsibility. Providing false information may result in criminal prosecution or administrative sanctions.

All of the foregoing and attachments (when indicated) is true and correct.

Executed on _____ _____
Signature

(5/29/2008S)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

CERTIFICATION
(Execute in duplicate)

I,_____,
(Name of person signing certification)

individually, and in my capacity as _____ of
(Title)

_____ do hereby certify under
(Name of Firm, Partnership, or Corporation)

penalty of perjury under the laws of the United States and the State of Mississippi that

_____, Bidder
(Name of Firm, Partnership, or Corporation)

on Project No. **NHS-0010-01(144) / 105281301**,

in **Harrison** County(ies), Mississippi, 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 this contract; nor have any of its corporate officers or principal owners.

Except as noted hereafter, it is further certified that said legal entity and its corporate officers, principal owners, managers, auditors and others in a position of administering federal funds are not currently under suspension, debarment, voluntary exclusion or determination of ineligibility; nor have a debarment pending; nor been suspended, debarred, voluntarily excluded or determined ineligible within the past three years by the Mississippi Transportation Commission, the State of Mississippi, any other State or a federal agency; nor been indicted, convicted or had a civil judgment rendered by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

Initial here "_____" if exceptions are attached and made a part thereof. Any exceptions shall address to whom it applies, initiating agency and dates of such action.

Note: Exceptions will not necessarily result in denial of award but will be considered in determining bidder responsibility. Providing false information may result in criminal prosecution or administrative sanctions.

All of the foregoing and attachments (when indicated) is true and correct.

Executed on _____ _____
Signature

(5/29/2008S)

S E C T I O N 9 0 2

CONTRACT FOR **NHS-0010-01(144) / 105281301**

LOCATED IN THE COUNTY(IES) OF **Harrison**

STATE OF MISSISSIPPI,

COUNTY OF HINDS

This contract entered into by and between the Mississippi Transportation Commission on one hand, and the undersigned contractor, on the other witnesseth;

That, in consideration of the payment by the Mississippi Transportation Commission of the prices set out in the proposal hereto attached, to the undersigned contractor, such payment to be made in the manner and at the time of times specified in the specifications and the special provisions, if any, the undersigned contractor hereby agrees to accept the prices stated in the proposal in full compensation for the furnishing of all materials and equipment and the executing of all the work contemplated in this contract.

It is understood and agreed that the advertising according to law, the Advertisement, the instructions to bidders, the proposal for the contract, the specifications, the revisions of the specifications, the special provisions, and also the plans for the work herein contemplated, said plans showing more particularly the details of the work to be done, shall be held to be, and are hereby made a part of this contract by specific reference thereto and with like effect as if each and all of said instruments had been set out fully herein in words and figures.

It is further agreed that for the same consideration the undersigned contractor shall be responsible for all loss or damage arising out of the nature of the work aforesaid; or from the action of the elements and unforeseen obstructions or difficulties which may be encountered in the prosecution of the same and for all risks of every description connected with the work, exceptions being those specifically set out in the contract; and for faithfully completing the whole work in good and workmanlike manner according to the approved Plans, Specifications, Special Provisions, Notice(s) to Bidders and requirements of the Mississippi Department of Transportation.

It is further agreed that the work shall be done under the direct supervision and to the complete satisfaction of the Executive Director of the Mississippi Department of Transportation, or his authorized representatives, and when Federal Funds are involved subject to inspection at all times and approval by the Federal Highway Administration, or its agents as the case may be, or the agents of any other Agency whose funds are involved in accordance with those Acts of the Legislature of the State of Mississippi approved by the Governor and such rules and regulations issued pursuant thereto by the Mississippi Transportation Commission and the authorized Federal Agencies.

The Contractor agrees that all labor as outlined in the Special Provisions may be secured from list furnished by

It is agreed and understood that each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and this contract shall be read and enforced as though it were included herein, and, if through mere mistake or otherwise any such provision is not inserted, then upon the application of either party hereto, the contract shall forthwith be physically amended to make such insertion.

The Contractor agrees that he has read each and every clause of this Contract, and fully understands the meaning of same and that he will comply with all the terms, covenants and agreements therein set forth.

Witness our signatures this the _____ day of _____, _____.

_____
Contractor (s)

By _____ MISSISSIPPI TRANSPORTATION COMMISSION

Title _____ By _____
Signed and sealed in the presence of: Executive Director
(names and addresses of witnesses)

_____ _____
Secretary to the Commission

Award authorized by the Mississippi Transportation Commission in session on the ____ day of _____, _____, Minute Book No. _____, Page No. _____.

Revised 8/06/2003

S E C T I O N 9 0 3
PERFORMANCE AND PAYMENT BOND

CONTRACT BOND FOR: **NHS-0010-01(144) / 105281301**

LOCATED IN THE COUNTY(IES) OF: **Harrison**

STATE OF MISSISSIPPI,

COUNTY OF HINDS

Know all men by these presents: that we, _____
(Contractor)

_____ Principal, a _____

residing at _____ in the State of _____

and _____
(Surety)

residing at _____ in the State of _____,

authorized to do business in the State of Mississippi, under the laws thereof, as surety, are held and firmly bound unto the State of Mississippi in the sum of _____

_____

($_____) Dollars, lawful money of the United States of America, to be paid to it for which payment well and truly to be made, we bind ourselves, our heirs, administrators, successors, or assigns jointly and severally by these presents.

Signed and sealed this the _____ day of _____ A.D. _____.

The conditions of this bond are such, that whereas the said _____

_____

principal, has (have) entered into a contract with the Mississippi Transportation Commission, bearing the date of _____ day of _____ A.D. _____ hereto annexed, for the construction of certain projects(s) in the State of Mississippi as mentioned in said contract in accordance with the Contract Documents therefor, on file in the offices of the Mississippi Department of Transportation, Jackson, Mississippi.

Now therefore, if the above bounden _____

_____ in all things shall stand to and abide by and well and truly observe, do keep and perform all and singular the terms, covenants, conditions, guarantees and agreements in said contract, contained on his (their) part to be observed, done, kept and performed and each of them, at the time and in the manner and form and furnish all of the material and equipment specified in said contract in strict accordance with the terms of said contract which said plans, specifications and special provisions are included in and form a part of said contract and shall maintain the said work contemplated until its final completion and acceptance as specified in Subsection 109.11 of the approved specifications, and save harmless said Mississippi Transportation Commission from any loss or damage arising out of or occasioned by the negligence, wrongful or criminal act, overcharge, fraud, or any other loss or damage whatsoever, on the part of said principal (s), his (their) agents, servants, or employees in

the performance of said work or in any manner connected therewith, and shall be liable and responsible in a civil action instituted by the State at the instance of the Mississippi Transportation Commission or any officer of the State authorized in such cases, for double any amount in money or property, the State may lose or be overcharged or otherwise defrauded of, by reason of wrongful or criminal act, if any, of the Contractor(s), his (their) agents or employees, and shall promptly pay the said agents, servants and employees and all persons furnishing labor, material, equipment or supplies therefor, including premiums incurred, for Surety Bonds, Liability Insurance, and Workmen's Compensation Insurance; with the additional obligation that such Contractor shall promptly make payment of all taxes, licenses, assessments, contributions, damages, any liquidated damages which may arise prior to any termination of said principal's contract, any liquidated damages which may arise after termination of the said principal's contract due to default on the part of said principal, penalties and interest thereon, when and as the same may be due this state, or any county, municipality, board, department, commission or political subdivision: in the course of the performance of said work and in accordance with Sections 31-5-51 et seq. Mississippi Code of 1972, and other State statutes applicable thereto, and shall carry out to the letter and to the satisfaction of the Executive Director of the Mississippi Department of Transportation, all, each and every one of the stipulations, obligations, conditions, covenants and agreements and terms of said contract in accordance with the terms thereof and all of the expense and cost and attorney's fee that may be incurred in the enforcement of the performance of said contract, or in the enforcement of the conditions and obligations of this bond, then this obligation shall be null and void, otherwise to be and remain in full force and virtue.

Witness our signatures and seals this the _____ day of _____ A.D. _____.

_____	_____
(Contractors) Principal	Surety
By _____	By _____
	(Signature) Attorney in Fact
	Address _____
	_____
Title _____	_____
(Contractor's Seal)	(Printed) MS Agent
	_____
	(Signature) MS Agent
	Address _____
	_____
	_____
	(Surety Seal)
	_____
	Mississippi Insurance ID Number

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____
Contractor

_____
Address

_____
City, State ZIP

as Principal, hereinafter called the Principal, and _____
Surety

a corporation duly organized under the laws of the state of _____

as Surety, hereinafter called the Surety, are held and firmly bound unto **State of Mississippi, Jackson, Mississippi**

As Obligee, hereinafter called Obligee, in the sum of **Five Per Cent (5%) of Amount Bid**

Dollars ($ _____)

for the payment of which sum will and truly to be made, the said Principal and said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for **Interchange Construction of the I-10 / I-110 Interchange Including - CD Roads, Leg Ramps, Loop Ramps and the D'lberville Road Interchange, known as State Project No. NHS-0010-01(144) / 105281301 in Harrison County.**

NOW THEREFORE, the condition of this obligation is such that if the aforesaid Principal shall be awarded the contract, the said Principal will, within the time required, enter into a formal contract and give a good and sufficient bond to secure the performance of the terms and conditions of the contract, then this obligation to be void; otherwise the Principal and Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee legally contracts with another party to perform the work if the latter amount be in excess of the former, but in no event shall liability hereunder exceed the penal sum hereof.

Signed and sealed this _____ day of _____ , 20___

_____
(Principal) (Seal)

_____ By: _____
(Witness) (Name) (Title)

_____
(Surety) (Seal)

_____ By: _____
(Witness) (Attorney-in-Fact)

_____
MS Agent

_____
Mississippi Insurance ID Number

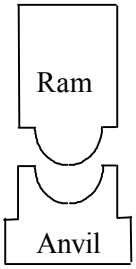
Rev. 6/98

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
PILE AND DRIVING EQUIPMENT DATA FORM

Project No.: _____ Bridge No.: _____

Termini: _____ Pile Driving Contractor: _____

County: _____



Hammer

Manufacture: _____ Model No.: _____

Hammer Type: _____ Serial No.: _____

Manufacturers Maximum Rated Energy: _____ (Kip-ft.)

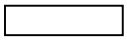
Stroke at Maximum Rated Energy: _____ (ft.)

Range in Operating Energy: _____ to _____ (Kip-ft.)

Range in Operating Stroke: _____ to _____ (ft.)

Modifications: _____

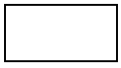
_____



Striker Plate

Weight: _____ (N) Diameter: _____ (in.)

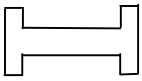
Thickness: _____ (mm)



Hammer Cushion

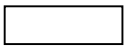
	Material #1	Material #2
Name:	_____	_____
Area:	_____ ($in.^2$)	_____ ($in.^2$)
Thickness/Plate:	_____ (in.)	_____ (in.)
No. of Plates:	_____	_____

Total Thickness of Hammer Cushion: _____ (in.)



Helmet (Drive Head)

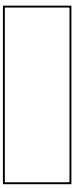
Weight: _____ (lbs.)



Pile Cushion

Material: _____

Area: _____ ($in.^2$) Total Thickness: _____ (in.)



Pile

Submitted By: _____ ***Date:*** _____

Telephone No.: _____