MDOT Use Only

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SM No. CSP0250000011

PROPOSAL AND CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF

(STATE DELEGATED)

5
Intersection Improvements on Lakeland Drive from Curran Drive West 1000 ft., known as State Project No. SP-0250-00(001) / 106330301 in Hinds County.

Project Completion: November 16, 2012

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 and item totals have been entered in accordance with Subsection 102.06 of the Mississippi Standard Specifications for Road and Bridge Construction.

_____ If the bid sheets were prepared using the Electronic Bid System, proposal 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 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 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.

(04/2011)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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SECTION 905 - PROPOSAL,
PROPOSAL BID SHEETS,
COMBINATION BID PROPOSAL,
STATE BOARD OF CONTRACTORS REQUIREMENTS,
CERTIFICATION REGARDING NON-COLLUSION, DEBARMENT AND SUSPENSION,
SECTION 902 - CONTRACT FORM, AND SECTION 903 - CONTRACT BOND 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, March 27, 2012, and shortly thereafter publicly opened on the Sixth Floor for:

Intersection Improvements on Lakeland Drive from Curran Drive west 1000 ft., known as State Project No. SP-0250-00(001) / 106330301 in Hinds 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 acquired from the MDOT Contract Administration Division. These proposal are available at a cost of Ten Dollars ($10.00) per proposal. Specimen proposals are also available at the MDOT Contract Administration Division at a cost of Ten Dollars ($10.00) per proposal, or can be viewed or downloaded at no cost at www.gomdot.com.

Plans may be acquired on a cost per sheet basis from MDOT Plans Print Shop, MDOT Shop Complex, Building C, Room 114, 2567 North West Street, Jackson, Mississippi 39216, Telephone (601) 359-7460 or e-mail at plans@mdot.state.ms.us or FAX (601) 359-7461. Plans will be shipped upon receipt of payment.

Bid bond, signed or countersigned by a Mississippi Agent or Qualified Nonresident Agent, with Power of Attorney attached or on file with the Contract Administration Engineer of the Department, 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. 3 **CODE: (SP)**

DATE: 05/03/2004

SUBJECT: Final Clean-Up

Immediately prior to final inspection for release of maintenance, the Contractor shall pick up, load, transport and properly dispose of all litter from the entire highway right-of-way that is within the termini of the project.

Litter shall include, but not be limited to, solid wastes such a glass, paper products, tires, wood products, metal, synthetic materials and other miscellaneous debris.

Litter removal is considered incidental to other items of work and will not be measured for separate payment.

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. 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. 1808 **CODE: (IS)**

DATE: 09/09/2008

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".

You can access this final rule at the following link:

http://a257.g.akamaitech.net/7/257/2422/01jan20061800/edocket.access.gpo.gov/2006/pdf/E6-19910.pdf

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.

Department of Public Works

200 South President Street
Post Office Box 17
Jackson, Mississippi 39205-0017

Harvey Johnson, Jr.
Mayor of the City of Jackson

RIGHT-OF-WAY STATUS

SP-0250-00(001)
UMMC LAKELAND SIGNAL AND WIDENING PROJECT
City of Jackson, Hinds County, Mississippi

This is to certify that all necessary temporary construction easements have been acquired. The construction and improvements associated with the completion of the referenced project will take place in the existing right-of-way, easements or on property made available by University of Mississippi Medical Center.

This is to certify that there are no relocations (Families, Businesses, or Tenants) involved in this project.

There are no minor improvements (Buildings, Fences, Signs, etc.) that are required to be removed from the proposed temporary construction easements.

Sincerely,

Director of Public Works, City of Jackson

Department of Public Works

200 South President Street
Post Office Box 17
Jackson, Mississippi 39205-0017

Harvey Johnson, Jr.
Mayor of the City of Jackson

ASBESTOS ABATMENT STATUS

SP-0250-00(001)
UMMC LAKELAND SIGNAL AND WIDENING PROJECT
City of Jackson, Hinds County, Mississippi

This is to certify that the project components and limits do not contain any known asbestos containing material.

Sincerely,

Director of Public Works, City of Jackson

Department of Public Works

200 South President Street
Post Office Box 17
Jackson, Mississippi 39205-0017

Harvey Johnson, Jr.
Mayor of the City of Jackson

HAZARDOUS WASTE STATUS

SP-0250-00(001)
UMMC LAKELAND SIGNAL AND WIDENING PROJECT
City of Jackson, Hinds County, Mississippi

This is to certify a survey and physical review of the rights of way for the above captioned project reveals that there are no areas suspected of having any hazardous waste or underground storage tanks.

Sincerely,

Director of Public Works, City of Jackson

Department of Public Works

200 South President Street
Post Office Box 17
Jackson, Mississippi 39205-0017

Harvey Johnson, Jr.
Mayor of the City of Jackson

RIGHT-OF-WAY ENCROACHMENT STATUS

SP-0250-00(001)
UMMC LAKELAND SIGNAL AND WIDENING PROJECT
City of Jackson, Hinds County, Mississippi

This is to certify that the above captioned project has been inspected and the following encroachments to the right-of-way were found:

1. Atmos Energy line (encroachment to be satisfied prior to construction) (601-592-5329);
2. City of Jackson water lines (encroachment to be satisfied during construction phase) (601-960-2041);
3. A T & T underground utilities east of Jefferson Street (sufficient depth) (601-859-3162);
4. Entergy overhead power (encroachment to be satisfied prior to construction) (601-960-3823);
5. UMMC Underground communication lines (not in conflict) (601)-948-1006);
6. UMMC water line (encroachment to be satisfied during construction) (601-984-1410);
7. Mississippi Department of Information Technology Services, (encroachment to be satisfied during construction) (601-359-2381)

Sincerely,

Director of Public Works, City of Jackson

Department of Public Works

200 South President Street
Post Office Box 17
Jackson, Mississippi 39205-0017

Harvey Johnson, Jr.
Mayor of the City of Jackson

UTILITY STATUS

SP-0250-00(001)
UMMC LAKELAND SIGNAL AND WIDENING PROJECT
City of Jackson, Hinds County, Mississippi

CITY OF JACKSON WATER AND SEWER DEPARTMENT: All water line relocations are to be completed during construction of the project. Sanitary sewer lines are not in conflict.

ATMOS ENERGY: All gas lines and services will be relocated no later than March 22, 2012.

AT &T: Overhead telephone lines are not in conflict. Underground lines have sufficient depth to be clear of construction.

ENTERGY: One power pole is to be relocated no later than March 22, 2012.

MISSISSIPPI DEPARTMENT OF INFORMATION TECHNOLOGY SERVICES: Fiber optic lines will be relocated during construction.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION: Fiber optic lines are not in conflict.

INLINE SOLUTIONS: Fiber optic lines are not in conflict.

UNIVERSITY OF MISSISSIPPI MEDICAL CENTER: Water line will be relocated during construction. Communication lines are not in conflict.

Sincerely,

Director of Public Works, City of Jackson

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. 2858 **CODE: (SP)**

DATE: 12/02/2009

SUBJECT: Petroleum Products Base Prices

Bidders are advised that the Notice To Bidders entitled "Monthly Petroleum Products Base Prices" previously included in the proposal documents will no longer be a printed part of the proposal beginning with the January 2010 letting. 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://www.gomdot.com/Applications/BidSystem/Home.aspx

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. 3425 **CODE: (SP)**

DATE: 03/01/2011

SUBJECT: Questions Regarding Bidding

Bidders are advised that all questions that arise regarding the contract documents or plans on this project shall be directed to the Construction Division at 601-359-7301.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3585 **CODE: (SP)**

DATE: 06/22/2011

SUBJECT: Safety Edge

Bidders are hereby advised that the Shoulder Wedge (Safety Edge) specified in the Supplement to Special Provision 907-401-2 shall only apply to the top two (2) lifts of asphalt. Attached is a drawing showing the safety edge.

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. 3704 **CODE: (SP)**

DATE: 11/30/2011

SUBJECT: Use of Precast Drainage Units

Bidders attention is brought to the content of Subsection 601.02.3 regarding precast units. MDOT Drawing Sheet Nos. PCU-1 and PCU-2 address MDOT approved precast drainage units. The Contractor must make a request to the Project Engineer for approval to use precast units other than the ones shown on Drawing Sheet No. PCU-1 or PCU-2.

Bidders are advised that precast drainage unit tops are only allowed on units shown on Drawing Sheet No. PCU-1. Cast-In-Place drainage unit tops are required on units shown on Drawing Sheet No. PCU-2.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3793 **CODE: (SP)**

DATE: **02/27/2012**

SUBJECT: **Contract Time**

PROJECT: **SP-0250-00(001) 106330301 -- Hinds County**

The calendar date for completion of work to be performed by the Contractor for this project shall be **November 16, 2012** which date or extended date as provided in Subsection 108.06 shall be the end of contract time. It is anticipated that the Notice of Award will be issued no later than **April 10, 2012** and the effective date of the Notice to Proceed / Beginning of Contract Time will be **May 10, 2012**.

Should the Contractor request a Notice to Proceed earlier than **May 10, 2012** 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.

A progress schedule as referenced to in Subsection 108.03 will not be required for this contract.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3794

DATE: 02/24/2012

SUBJECT: Specialty Items

PROJECT: SP-0250-00(001) / 106330301 - Hinds 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
0410	616-A002	Concrete Median and/or Island Pavement, 6-inch
0420	616-A003	Concrete Median and/or Island Pavement, 10-inch

CATEGORY: EROSION CONTROL

Line No	Pay Item	Description
0150	211-B001	Topsoil for Slope Treatment, Contractor Furnished
0160	212-B001	Standard Ground Preparation
0170	213-B001	Combination Fertilizer, 13-13-13
0180	213-C001	Superphosphate
0190	215-A001	Vegetative Materials for Mulch
0200	216-B004	Solid Sodding, Bermuda
0210	219-A001	Watering
0220	220-A001	Insect Pest Control
0230	234-A001	Temporary Silt Fence
0240	235-A001	Temporary Erosion Checks
0910	907-213-A001	Agricultural Limestone
0920	907-226-A001	Temporary Grassing
0930	907-237-A002	Wattles, 12"
0940	907-237-A003	Wattles, 20"
0950	907-246-B002	Rockbags

CATEGORY: INTELLIGENT TRANSPORTATION SYSTEMS

Line No	Pay Item	Description
1430	907-659-A001	Traffic Management Center Modifications

CATEGORY: PAVEMENT STRIPING AND MARKING

Line No	Pay Item	Description
0610	627-K001	Red-Clear Reflective High Performance Raised Markers
0620	627-L001	Two-Way Yellow Reflective High Performance Raised Markers
1200	907-626-A004	6" Thermoplastic Traffic Stripe, Skip White
1210	907-626-C008	6" Thermoplastic Edge Stripe, Continuous White

CATEGORY: PAVEMENT STRIPING AND MARKING

Line No	Pay Item	Description
1220	907-626-E003	6" Thermoplastic Traffic Stripe, Continuous Yellow
1230	907-626-F008	6" Thermoplastic Edge Stripe, Continuous Yellow
1240	907-626-G004	Thermoplastic Detail Stripe, White
1250	907-626-G005	Thermoplastic Detail Stripe, Yellow
1260	907-626-H004	Thermoplastic Legend, White
1270	907-626-H005	Thermoplastic Legend, White

CATEGORY: SURVEY AND STAKING

Line No	Pay Item	Description
1190	907-617-A001	Right-of-Way Marker
1440	907-699-A002	Roadway Construction Stakes

CATEGORY: TRAFFIC CONTROL - PERMANENT

Line No	Pay Item	Description
0630	630-A001	Standard Roadside Signs, Sheet Aluminum, 0.080" Thickness
0640	630-A002	Standard Roadside Signs, Sheet Aluminum, 0.125" Thickness
0650	630-C004	Steel U-Section Posts, 3.0 to 3.5 lb/ft
0660	630-K001	Welded & Seamless Steel Pipe Posts, 3"
0800	666-B015	Electric Cable, Underground in Conduit, IMSA 20-1, AWG 14, 5 Conductor
0810	666-B016	Electric Cable, Underground in Conduit, IMSA 20-1, AWG 14, 7 Conductor
0820	666-B032	Electric Cable, Underground in Conduit, THHN, AWG #8, 2 Conductor
0830	666-D005	Electric Cable, Aerial Supported in Conduit, IMSA 20-1, AWG 14, 7 Conductor
0840	668-A016	Traffic Signal Conduit, Underground, Type 4, 1"
0850	668-A018	Traffic Signal Conduit, Underground, Type 4, 2"
0860	668-A020	Traffic Signal Conduit, Underground, Type 4, 3"
0870	668-B024	Traffic Signal Conduit, Underground Drilled or Jacked, Rolled Pipe, 2"
0880	668-B025	Traffic Signal Conduit, Underground Drilled or Jacked, Rolled Pipe, 3"
1280	907-630-PP015	Impact Resistent Object Marker Assembly
1320	907-639-A008	Traffic Signal Equipment Pole, Type II, 17' Shaft, 55' Arm
1330	907-639-A034	Traffic Signal Equipment Pole, Type VI, 8' Shaft
1340	907-639-A104	Traffic Signal Equipment Pole, Type II, 17' Shaft, 50' & 65' Arms
1350	907-639-C002	Pole Foundations, 36" Diameter
1360	907-639-C003	Pole Foundations, 24" Diameter
1370	907-639-C004	Pole Foundations, 30" Diameter
1380	907-649-A004	Video Detection System, 1 Sensor, Type 2
1390	907-650-A002	On Street Video Equipment, Fixed Type
1400	907-650-A003	On Street Video Equipment, PTZ Type
1410	907-653-A001	Traffic Sign, Internally Illuminated Sign
1420	907-657-B001	Fiber Optic Drop Cable, 12 SM

CATEGORY: TRAFFIC CONTROL - TEMPORARY

Line No	Pay Item	Description
0440	619-A1001	Temporary Traffic Stripe, Continuous White
0450	619-A2001	Temporary Traffic Stripe, Continuous Yellow
0460	619-A3001	Temporary Traffic Stripe, Skip White
0470	619-A5001	Temporary Traffic Stripe, Detail
0480	619-A6001	Temporary Traffic Stripe, Legend
0490	619-A6002	Temporary Traffic Stripe, Legend
0500	619-D1001	Standard Roadside Construction Signs, Less than 10 Square Feet
0510	619-D2001	Standard Roadside Construction Signs, 10 Square Feet or More
0520	619-E1001	Flashing Arrow Panel, Type C
0530	619-F1001	Concrete Median Barrier, Precast
0540	619-F2001	Remove and Reset Concrete Median Barrier, Precast
0550	619-G4001	Barricades, Type III, Single Faced
0560	619-G4002	Barricades, Type III, Single Faced, Permanent
0570	619-G5001	Free Standing Plastic Drums
0580	619-G7001	Warning Lights, Type "B"
0590	619-J1001	Impact Attenuator, 40 MPH

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3796 **CODE: (SP)**

DATE: 02/27/2012

SUBJECT: Subsurface Investigations

PROJECT: SP-0250-00(001) 106330301 -- Hinds County

A subsurface investigation of the project area was conducted by Burns Cooley Dennis, Inc. A copy of the report of that investigation is attached hereafter and is hereby made a part of these contract documents.

BURNS COOLEY DENNIS, INC.

GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

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March 3, 2011

Cooke Douglass Farr Lemons
3100 North State Street, Suite 200
Jackson, Mississippi 39216

Project No. 110020-1
Report No. 3

Attention: Gary Tree, P.E.

Re: **Geotechnical/Pavement Investigation**
UMMC Campus Roadway Improvements
Project A Intersection
Lakeland Drive and Proposed East Entrance
Jackson, Mississippi

Gentlemen:

Submitted here is the report of our geotechnical/pavement investigation for the above-captioned project. The Project A Intersection investigation is part of the University of Mississippi Medical Center (UMMC) campus roadway improvements study. This investigation was requested and authorized by Mr. Gary Tree of Cooke Douglass Farr Lemons on behalf of the University of Mississippi Medical Center.

We appreciate the opportunity to be of service and will be happy to discuss any questions you may have concerning this report. We look forward to serving you again on future projects.

Very Truly Yours,

BURNS COOLEY DENNIS, INC.

Kevin Williams

Kevin Williams, P.E.

R.C. Ahlrich

R.C. Ahlrich, Ph.D., P.E.

INTRODUCTION AND PURPOSE

We understand that plans are being made by the University of Mississippi Medical Center (UMMC) to improve campus roadways and intersections. These improvements include construction of a new intersection along Lakeland Drive at the proposed new East Entrance. The proposed intersection improvements at Lakeland Drive consist of reconstructing the existing median and turn lanes, placing a new curb and gutter and asphalt paving. The proposed area of Project A Intersection is shown in Figure 1.

The specific purposes of this investigation were:

1) to determine the thickness of the existing pavement structure within Lakeland Drive and to explore subgrade soil conditions underneath the existing pavement and proposed intersection location;

2) to evaluate pertinent physical properties of the subgrade soils encountered by means of visual examination and routine laboratory tests performed on selected representative subgrade samples obtained from the exploratory borings; and

3) after analysis of the pavement coring, soil boring and laboratory data, to provide recommendations for subgrade preparation, earthwork construction and asphalt pavement construction.

FIELD INVESTIGATION

Thickness of the existing pavement was evaluated at three (3) locations (A-3, A-4 and A-6). Subgrade soil conditions were explored and evaluated at five (5) locations (A-1, A-2, A-3, A-5 and A-7). Locations of the coreholes and borings were selected by representatives of Neel-Schaffer and Burns Cooley Dennis, Inc. to represent the typical existing pavement conditions and to obtain pertinent subgrade soil conditions for design purposes. The approximate test locations are illustrated on Figure 1. GPS coordinates for the borings are shown in the bottom center of the graphical boring logs and should be considered approximate. All soils were classified in general accordance with the Unified Soil Classification System (USCS). A synopsis of the Unified Soil Classification System (USCS) is presented on Figure 2 along with symbols and terminology which are typically utilized on graphical soil boring logs. Graphical logs of the borings made for this investigation are presented on Figures 3 through 7. The graphical logs illustrate the thickness of the pavement and/or granular layer and subgrade soil conditions encountered with the boring depth measured from the pavement or ground surface.

Determination of the thickness of the pavement was considered to be important for this investigation. Six inch diameter pavement cores were obtained at three selected test locations to determine the in-place thickness of the asphalt and concrete pavement. The thickness of the pavement at the core locations was determined by measuring each pavement core or the side wall of the core hole. The pavement thicknesses at the core locations are presented in Table 1 and are shown graphically on the boring log A-3.

Soil borings were drilled to a maximum depth of 7 ft with a truck mounted 4-in. diameter short-flight auger advanced by dry augering. Representative disturbed samples of subgrade soils were taken directly from the auger cuttings at approximately 1 ft intervals of depth. The depths at which auger cutting samples were obtained are illustrated as I-shaped symbols under the "Samples" column of the graphic boring logs. All soils encountered during drilling were examined and classified in the field by a geotechnical engineering technician. All samples obtained were placed in plastic jars and sealed to provide material for visual examination and testing in the laboratory.

Observations were made continuously during auger drilling to detect any groundwater seepage entering the open boreholes. Notes pertaining to observed groundwater conditions are included at the bottom right corner of the graphic boring logs. After completion of drilling and sampling, the boreholes were filled with soil cuttings and capped with asphalt where applicable.

LABORATORY INVESTIGATION

An evaluation of the classifications, strengths and the volume change properties of the subgrade soils encountered in the borings were considered to be of primary importance for this investigation. All of the soil samples were visually examined in the laboratory and routine tests were performed on selected representative samples from the borings to verify field classifications and to assist in evaluating the strengths, expansive properties and classifications of the subgrade soils encountered. The types of laboratory tests performed are described below.

The classifications and volume change properties of the soils encountered in the borings were investigated by means of visual examination and four sets of Atterberg liquid and plastic limit tests. In accordance with the Unified Soil Classification System (USCS), fine-grained soils are classified as either clays or silts of either low or high plasticity based on the results of liquid and plastic limit tests. The numerical difference between the liquid limit and the plastic limit is defined as the plasticity index (PI). The magnitudes of the liquid limit and the plasticity index and the proximity of the natural water content to the plastic limit are indicators of the potential for a clay soil to shrink or swell upon changes in moisture content or to consolidate under loading. The proximity of the natural water content to the plastic limit is also an indicator of soil strength. The Atterberg limits also provide an indication of the California Bearing Ratio (CBR) of fine-grained soils. The results of the liquid and plastic limit tests are shown in the data section of the graphic logs.

To aid in the classifying of subgrade soils consisting predominantly of sand, a minus No. 200 sieve test was performed on a selected sample from A-1. The amount of minus No. 200 material is tabulated under the far right column of the graphic boring log.

Water content tests were performed on all twenty-six subgrade soil samples to corroborate field and laboratory estimates of consistency and to extend the usefulness of the plasticity data. The numerical results of the water content tests are shown in the data section of the graphic logs.

The results of the laboratory tests were utilized to verify field classifications by the Unified Soil Classification System (USCS) method and also to classify the soil samples by the AASHTO method (M 145-82). The classifications and the laboratory test results were then used to estimate the CBR for each of the soil types based on the Mississippi Department of Transportation (MDOT) recommended procedures for estimating CBR. A summary of the estimated CBRs for each soil type encountered is presented in Table 2 and are also presented on the logs in Figures 3 through 7. It should be understood that these CBR values are appropriate for design only if subgrade preparation and compaction are performed in accordance with recommendations provided and adequate surface drainage is provided.

GENERAL PAVEMENT AND SUBGRADE CONDITIONS

The pavement structure along Lakeland Drive consists of asphalt pavement layers placed directly on fill materials and/or native subgrade soils. A general description of the existing pavement structure and subgrade soil conditions revealed by the borings made for this investigation is included in the following paragraphs. The approximate test locations are illustrated on Figure 1. The graphical logs shown on Figures 3 through 7 should be referenced for specific pavement thickness and subgrade conditions encountered at each individual boring location.

Existing Pavement Structure. The existing pavement structure includes flexible pavement supported by fill materials and/or native subgrade soils. The thickness of the asphalt pavement layer was found to range between approximately 14.1 in. and 15.4 in. with an average thickness of about 15 in. Refer to Table 1for the pavement thicknesses at individual core locations.

Subgrade Conditions. Subgrade soil conditions revealed by the borings for this investigation are discussed in the following paragraphs. The graphical logs shown on Figures 3 through 7 should be referenced for specific subgrade soil conditions encountered at each individual boring location. In general, the subgrade soils encountered within the exploration depths of the borings made for this investigation were found to include natural and fill soils consisting of clayey sand (SC), silty and sandy clays (CL), clay (CH) and weathered Yazoo clays (CH). **The predominant subgrade soil type within the proposed intersection is highly expansive clay (CH) soil.**

The asphalt pavement and ground surface at Borings A-1, A-2 and A-3 were found to be directly underlain by low volume change (LVC) soils to a depth of only 2 to 3 ft below existing pavement or ground surface. The strength of these soils varied from high to very low. The in-situ moisture contents are generally above optimum and the wet soils could become weak when disturbed with construction equipment. **The remaining near surface fill soils are generally high volume change (HVC) soils that have high shrink/swell potential and are not acceptable pavement design subgrade soils. Weathered Yazoo clay (CH) soils were encountered at each boring location at depths ranging between 1 ft and 4 ft below the existing surface.** The weathered Yazoo clay (CH) soils were found to be stiff to very stiff with respect to consistency and are considered to have moderate strength and low compressibility at the in-situ moisture contents. **The weathered Yazoo clay (CH) soils are considered to be highly expansive with very high**

shrink/swell potential. Weathered Yazoo clays (CH) are considered to provide poor pavement subgrade support and can experience significant strength loss with an increase in moisture content and are not suitable for design subgrade soils (top 3 ft of pavement subgrade). The AASHTO classifications for the CH soils are A-7-6. **The CL and CH soils are susceptible to pumping when exposed and subjected to repeated passes of rubber-tired equipment if the soils are wet and significantly above optimum moisture.**

Groundwater. Free water was not encountered at the boring locations during auger drilling within the exploration depth. Groundwater conditions within the pavement areas will primarily be influenced by rainfall, surface drainage and subsurface drainage. **Subgrade soils that may be exposed after pavement removal are generally wet of optimum and can become unstable when disturbed by construction equipment.** These soils can also become saturated and weak to shallow depths during periods of prolonged and heavy rainfall.

Summary and Recommendations

General. Subgrade soils encountered within the exploration depths of the borings made for this investigation were found to include natural and fill soils consisting of clayey sand (SC), silty and sandy clays (CL) and highly expansive clays (CH). **The predominant soil type encountered within the intersection pavement area is CH soil.**

Pavements underlain at relatively shallow depths by expansive clays (CH) can be expected to experience differential vertical movements caused by swelling or heave of the clays (CH) and by shrinkage of the clays (CH) around the outer edges of the pavement. The expansive clays (CH) and weathered Yazoo clays (CH) can experience significant shrink/swell movements associated with seasonal moisture content fluctuations. Cover materials overlying expansive clay (CH) soils act as a buffer against seasonal moisture content changes caused by rainy weather, droughts, evaporation and transpiration. Thus, the potential magnitude of moisture content changes and associated shrink/swell movements within expansive clay (CH) soils is proportionate to the thickness of the overlying cover materials. Seasonal moisture content changes and shrink/swell movements within expansive clay (CH) soils decreases as the thickness of cover materials increases. There is a general trend for expansive clay (CH) soils under pavements to swell due to an increase in water content caused by capillary and vapor phase movement of moisture within the clays (CH). Trees growing adjacent to a roadway can extract a considerable amount of moisture from the ground resulting in localized shrinkage of expansive clay (CH) soils accompanied by vertical and lateral movements.

In addition to the shrink/swell movements associated with moisture content changes, overburden removal associated with the establishment of finished grades lower than existing ground surface elevations will cause stress relief in the expansive clay (CH) soils resulting in long-term rebound. As a rough approximation, rebound of the clays (CH) and weathered Yazoo clays (CH) could be on the order of ¼ in. to ½ in. for each foot of overburden removal. Rebound will occur despite the recommended undercutting and backfilling which removes a portion of the clays (CH) and/or weathered Yazoo clays (CH) that would have experienced rebound if left in place. Expansive clays (CH) will also experience long-term downhill creep movements, depending on slope steepness.

In areas where the expansive clays (CH) are encountered near final subgrade level, the preferred method for reducing the magnitude of expected differential vertical movements is by separating the pavement section from the expansive clays (CH) by some minimum thickness of select, relatively strong, nonexpansive clay (CL) soils. This thickness of select material will reduce potential future shrink/swell movements and will also provide better pavement subgrade support than the expansive clays (CH). The magnitude of the differential vertical movement reduction will be proportional to the thickness of this layer of select clayey materials; however, project economics usually limit the thickness of these materials. The practice most commonly used has been to provide a minimum 3-ft thickness of select nonexpansive material between the highly expansive clays (CH) and the bottom of the overlying pavement structure. **Therefore, we are recommending that undercutting and backfilling be performed as required within the Project A Intersection area to separate the asphalt pavement section from the highly expansive clays (CH) by a minimum 3-ft thick layer of select, relatively strong, nonexpansive clay (CL) materials. Undercutting and backfilling should extend a minimum of 2 ft beyond the proposed pavement edge (shoulder or curb). Undercutting and backfilling will be required throughout the intersection area to provide the minimum 3-ft thick buffer layer of nonexpansive soils above the highly expansive clays (CH). Special attention will be required to typical sections that have significant degrading along the outer edges of the proposed roadway. These areas may require undercutting and backfilling also to provide the 3 ft nonexpansive buffer. Also, excavation into expansive clays (CH) within back slopes could cause slides to occur if back slopes are not constructed with an adequate slope (minimum of 6H:1V). At the time of this report, finish grades were not made available for our evaluation to determine the specific areas that would require undercutting and backfilling to construct the 3 ft buffer.**

Asphalt Pavement. The existing asphalt pavement is functioning but reconstruction and repair will be necessary to construct the proposed intersection improvements. New asphalt pavement will be necessary to construct the new East Entrance portion of the intersection and widening of Lakeland Drive to accommodate proposed turn lanes. Based on the proposed site plans, field investigation and laboratory testing; it is our opinion that the following procedures be considered to construct or repair the asphalt pavement within Lakeland Drive at the proposed New East Entrance intersection to the UMMC campus.

Full-Depth Reconstruction

- Remove existing landscaped median, pavements and expansive (CH) soils
- Provide 3-ft minimum nonexpansive buffer of CL soils
- Place new asphalt pavement

Mill, Repair, and Overlay

- Mill existing asphalt surface to a minimum depth of 1.5 in.
- Repair structurally damaged pavement and potholes with full-depth asphalt patch place 1.5 in. asphalt surface layer (expect reflective cracks)

Full-Depth Reconstruction Sections. The initial step of pavement reconstruction is to remove the existing asphalt pavement and landscaped medians. After pavement and median removal, remove any weak and/or expansive subgrade soils. **Subgrade soils exposed after pavement removal will generally be wet of optimum and can become unstable when disturbed by construction equipment.** The actual depth and lateral extent of excavation required to remove weak and/or expansive subgrade soils must be determined in the field during earthwork construction. Removed subgrade soils should be replaced with select nonorganic, debris-free, silty clays (CL) or sandy clays (CL) having a liquid limit less than 45 and a plasticity index (PI) within the range of 10 to 24. **We do not recommend the use of sands (SP, SM or SC) as fill materials due to the presence of CH soils.** The soils exposed after landscape and pavement removal and excavation to remove weak subgrade soils should be scarified to a minimum depth of 12 in and compacted to not less than 98 percent of standard Proctor maximum dry density (ASTM D 698) with stability present. Stability is defined as the absence of significant pumping or yielding of soils under compaction or proofrolling. If stability is not evident in some areas, either additional excavation or in-place drying of the in-situ subgrade soils, or a combination of these approaches, might be required to achieve stable conditions.

It should be noted that exposed subgrade soils may be wet and could possibly become unstable after heavy rains. The construction techniques and types of equipment utilized and site drainage provided during construction will have a great effect on the performance of the subgrade soils throughout the project. The routing of heavy rubber-tired equipment should be controlled to minimize, as much as possible, traffic over the site. Rutting produced by rubber-tired traffic should be minimized. All traffic should be discouraged during periods of inclement weather. We recommend that construction be performed during the drier summer and fall months of the year because of the problems associated with frequent inclement weather during the other seasons.

After the subgrade soils are prepared according to the recommendations presented in the previous paragraphs, asphalt pavement should be constructed to complete the reconstruction. We recommend that paving be initiated as soon as possible after completion of subgrade preparation to minimize exposure of the subgrade soils to rainfall. Drainage should be maintained away from the exposed subgrade soils during construction to the extent possible. The subgrade materials should be inspected immediately prior to pavement construction. If the subgrade soils are found to be weak as a result of wetting or construction traffic disturbance, then over excavation and backfilling will be required to re-establish stable conditions.

The recommended asphalt pavement thicknesses for traffic consisting of light automobiles and pickup trucks and occasional heavy vehicles are presented in the table below. We recommend the asphalt concrete surface, binder and base courses conform to all applicable specifications for MT 9.5 mm, MT 12.5 mm and MT 19 mm, respectively, presented in the MDOT Specifications (2004 Edition).

Location	Traffic Type	Full-Depth Asphalt Pavement Section
Lakeland Drive	Light Automobiles and Occasional Heavy Vehicles	1.5 in. asphalt surface (MT 9.5 mm) 4.0 in. asphalt binder (MT 12.5 mm) 6.0 in. asphalt base (MT 19 mm)
Proposed East Entrance	Light Automobiles and Occasional Heavy Vehicles	1.5 in. asphalt surface (MT 9.5 mm) 2.0 in. asphalt binder (MT 12.5 mm) 3.5 in. asphalt base (MT 19 mm)

Mill, Repair and Overlay Sections. Mill the existing asphalt pavement to a minimum depth of 1.5 in. across full width of street and adjacent to curb and gutter to allow overlay to tie into existing curb and gutter. Exposed asphalt pavement areas after milling should not be allowed to take on water from rain or other sources. **We recommend that milling areas not exceed that which can be resurfaced before the next rain event in order to prevent water from entering the remaining pavement and subgrade material.**

The existing asphalt pavement surface should be carefully inspected to evaluate its integrity before and after milling and prior to overlaying. We do not recommend the placement of a new asphalt concrete overlay over any damaged or severely distressed pavement. Any existing damaged pavement should be completely removed as the initial step in pavement improvement and prior to overlaying. The preferred backfill for repair of random, isolated pavement failures generally consists of an asphalt base course mix. The asphalt base course should conform to applicable specifications for MT 19 mm presented in the Mississippi Department of Transportation (MDOT) Specifications (2004 Edition), respectively. The repair should range between 10 in. and 12 in. deep. **It should be noted that when the existing pavement is overlain with new asphalt concrete, reflective cracks could propagate upward through the new pavement including along the edges of the repair areas of the old pavement. We recommend that Burns Cooley Dennis assist Cooke Douglass Farr Lemons and Neel-Schaffer in selecting the repair areas prior to construction.**

After milling and patching are performed to improve the surface characteristics, structural integrity and smoothness of the surface, a 1.5 in. asphalt surface course overlay should be placed. We recommend that the asphalt overlay material be a surface course mixture that conforms to all applicable specifications for MT 9.5 mm presented in the Mississippi Department of Transportation (MDOT) Specifications (2004 Edition).

Report Limitations

The conclusions and recommendations discussed in this report are based on the conditions as they existed at the time of our field investigation and further on the assumption that the cores and borings were representative of the pavement and subgrade conditions along the roadway. It should be noted that actual pavement and subgrade conditions between and beyond the boring locations might differ from those encountered at the locations explored. If pavement or subgrade conditions are encountered during construction that vary from those discussed in this report, BCD should be notified immediately in order that we may evaluate the effects, if any, on design and construction.

Burns Cooley Dennis, Inc. should be retained for a general review of project plans and specifications. It is advised that we be retained to observe earthwork and pavement construction for the project in order to help confirm that our recommendations are valid or to modify them accordingly. Burns Cooley Dennis, Inc. cannot assume responsibility or liability for the adequacy of recommendations if we do not observe construction.

This report has been prepared for Cooke Douglass Farr Lemons for specific application to geotechnical related aspects of Project A Intersection improvements for Lakeland Drive at the proposed new UMMC East Entrance in Jackson, Mississippi. The only warranty made by us in connection with the services provided is we have used the degree of care and skill ordinarily exercised under similar conditions by reportable members of our profession practicing in the same or similar locality. No other warranty, expressed or implied, is made or intended.

TABLE 1
Existing Pavement Thickness
Project A Intersection
Lakeland Drive at Proposed East Entrance
Jackson, Mississippi

Core Number	Asphalt Thickness (in.)
A-3	15.4
A-4	14.1
A-6	14.5

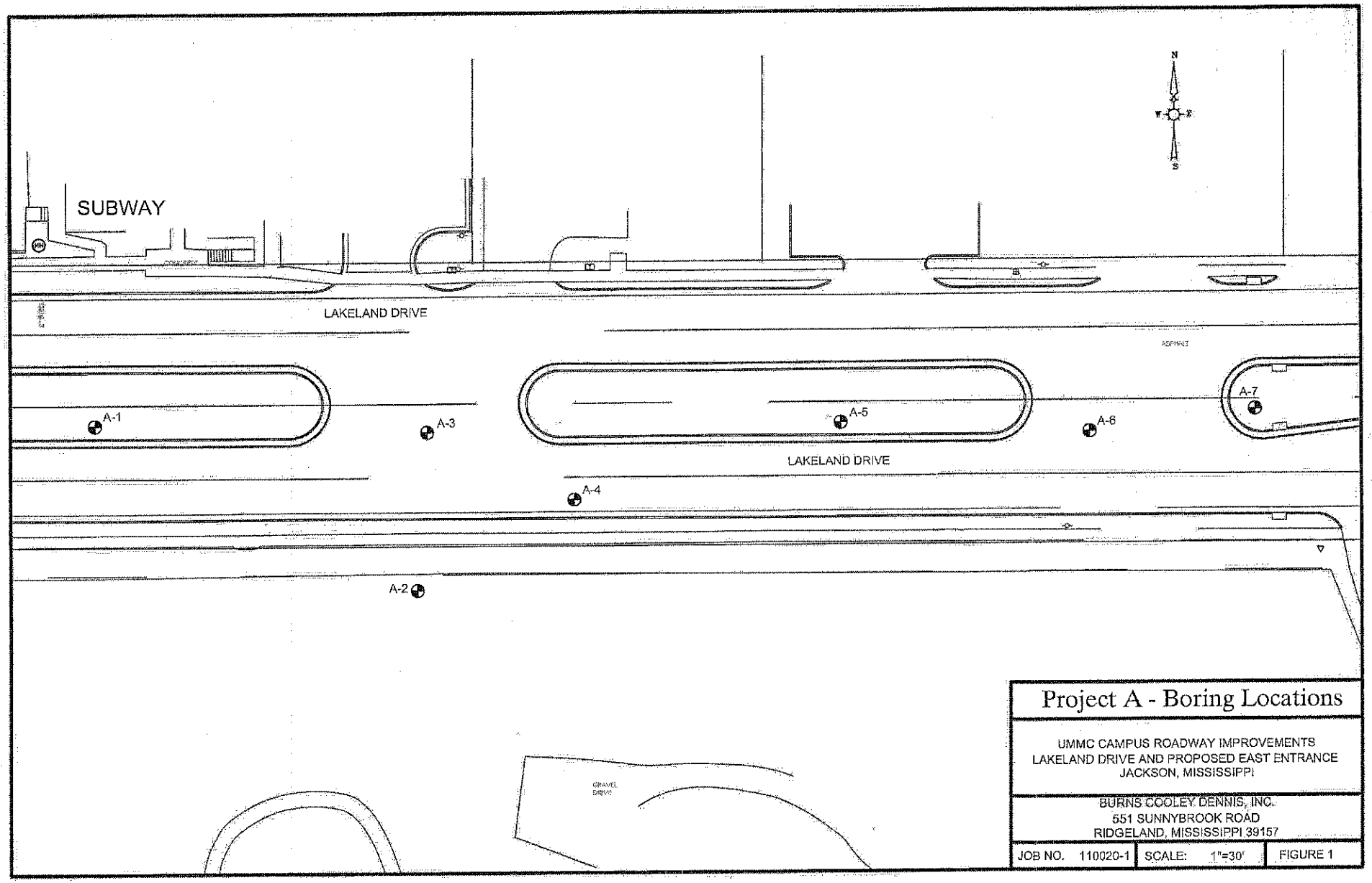
See Figure 1 for core locations

TABLE 2
Summary of Design CBR Values for Subgrade Soils
Project A Intersection
Lakeland Drive at Proposed East Entrance
Jackson, Mississippi

Soil Type	USCS Classification	AASHTO Classification	Estimated Design CBR Values
Clayey Sand	SC	A – 2- 4	24
Silty/Sandy Clay	CL	A – 6/A - 7 - 6	5
Clay	CH	A - 7 - 6	*

(*)Note: Highly expansive clays (CH) soils are not acceptable design soils (top 3 ft of subgrade).

FIGURES



Project A - Boring Locations

UMMC CAMPUS ROADWAY IMPROVEMENTS
LAKELAND DRIVE AND PROPOSED EAST ENTRANCE
JACKSON, MISSISSIPPI

BURNS COOLEY DENNIS, INC.
551 SUNNYBROOK ROAD
RIDGELAND, MISSISSIPPI 39157

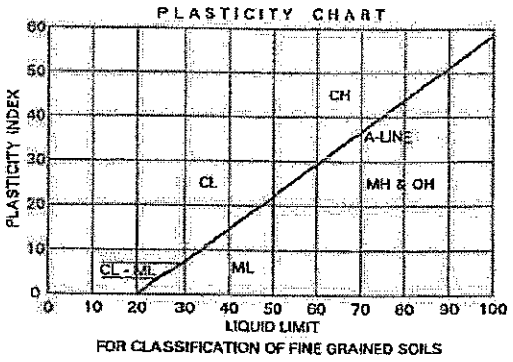
JOB NO. 110020-1	SCALE: 1"=30'	FIGURE 1

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOL & LETTER	DESCRIPTION
COARSE-GRAINED SOILS More than half of material larger than No. 200 sieve size	GRAVELS More than half of coarse fraction larger than No. 4 sieve size	Clean Gravels (Little or no fines)	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURE
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURE
		Gravels with fines (Appreciable amount of fines)	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURE
			GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURE
	SANDS More than half of coarse fraction smaller than No. 4 sieve size	Clean Sands (Little or no fines)	SW	WELL GRADED SAND, GRAVELLY SAND
			SP	POORLY GRADED SAND, GRAVELLY SAND
		Sands with fines (Appreciable amount of fines)	SM	SILTY SAND, SAND-SILT MIXTURE
			SC	CLAYEY SAND, SAND-CLAY MIXTURE
FINE-GRAINED SOILS More than half of material smaller than No. 200 sieve	SILTS AND CLAYS	Liquid limit less than 50	ML	SILT WITH LITTLE OR NO PLASTICITY
			ML	CLAYEY SILT, SILT WITH SLIGHT TO MEDIUM PLASTICITY
			CL	SILTY CLAY, LOW TO MEDIUM PLASTICITY
			CL	SANDY CLAY, LOW TO MEDIUM PLASTICITY (30% TO 50% SAND)
	SILTS AND CLAYS	Liquid limit greater than 50	MH	SILT, FINE SANDY OR SILTY SOIL WITH HIGH PLASTICITY
			CH	CLAY, HIGH PLASTICITY
			OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOIL

TERMS CHARACTERIZING SOIL STRUCTURE

Slickensided	- Clays with polished and striated planes created as a result of volume changes related to shrinking, swelling and/or changes in overburden pressure.
Fissured	- Clays with a blocky or jointed structure generally created by seasonal shrinking and swelling.
Laminated	- Composed of thin alternating layers of varying color and texture.
Calcareous	- Containing appreciable quantities of calcium carbonate.
Parting	- Paper thin (less than 1/8 inch).
Seam	- 1/8 inch to 3 inch thickness.
Layer	- Greater than 3 inches in thickness.



FOR CLASSIFICATION OF FINE GRAINED SOILS

DENSITY AND CONSISTENCY

COARSE-GRAINED SOILS		FINE-GRAINED SOILS		
DENSITY	PENETRATION RESISTANCE, N Blows per Foot	CONSISTENCY	COHESION Kips/Sq.Ft	PENETRATION RESISTANCE, N Blows per Foot
Very loose	0 - 4	Very Soft	<0.25	0 - 1
Loose	5 - 10	Soft	0.25 - 0.50	2 - 4
Medium Dense	11 - 30	Medium Stiff	0.50 - 1.00	5 - 8
Dense	31 - 50	Stiff	1.00 - 2.00	9 - 15
Very Dense	>50	Very Stiff	2.00 - 4.00	16 - 30
		Hard	>4.00	>30

PARTICLE SIZE IDENTIFICATION

Cobbles	- Greater than 3 inches
Gravel	- Coarse - 3/4 inch to 3 inches Fine - 4.76 mm to 3/4 inch
Sand	- Coarse - 2 mm to 4.76mm Medium - 0.42 mm to 2 mm Fine - 0.074 mm to 0.42 mm
Silt & Clay	- Less than 0.074 mm

RELATIVE COMPOSITION

Slightly	5 - 15%
With	16 - 29%
Sandy	30 - 50%

(or gravelly)

SAMPLE TYPES
(Shown in Sample Column)


Shelby Tube

Split Spoon

No Recovery

Auger

Dennison Barrell

CLASSIFICATION, SYMBOLS AND TERMS USED ON GRAPHICAL BORING LOGS

BURNS CODLEY DENNIS, INC.

FIGURE 2

LOG OF BORING NO. A-1

UMMC CAMPUS ROADWAY IMPROVEMENTS
LAKELAND DRIVE AT PROPOSED EAST ENTRANCE
JACKSON, MISSISSIPPI

LOCATION: See Figure 1

TYPE: 4" Short-flight auger

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FOOT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	COHESION, KSF	CBR (EST.)	% PASSING NO. 200 SIEVE
1			Loose red and tan clayey sand (SC) with gravel (FILL)	A-2-4			12						24	23.1
2			Medium stiff tan silty clay (CL), slightly sandy	A-7-6			25						5	
3			Very stiff tan and light gray clay (CH) (WEATHERED YAZOO)	A-7-6			34						1	
4							32							
5							31							
6														
7														
8														
9														
10														

BORING DEPTH: 5 ft

DATE:

COMMENTS:
GPS Coordinates
N 32° 20' 1.5"
W 90° 10' 8.77"

GROUNDWATER DATA: No free water encountered during auger drilling.

110020-1

BURNS COOLEY DENNIS, INC.
GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

FIGURE 3

LOG OF BORING NO. A-2

UMMC CAMPUS ROADWAY IMPROVEMENTS
LAKELAND DRIVE AT PROPOSED EAST ENTRANCE
JACKSON, MISSISSIPPI

LOCATION: See Figure 1

TYPE: 4" Short-flight auger

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FOOT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	COHESION, KSF	CBR (EST.)	% PASSING NO. 200 SIEVE
1			Soft tan silty clay (CL) with organics (FILL)	A-7-6			36						5	
2			Medium stiff tan sandy clay (CL)	A-6			21	30	16				6	
3			Stiff tan and light gray clay (CH) (WEATHERED YAZOO)	A-7-6			41						1	
4							44							
5							48							
6														
7														
8														
9														
10														

BORING DEPTH: 5 ft

DATE:

COMMENTS:

GROUNDWATER DATA: No free water encountered during auger drilling.

110020-1

BURNS COOLEY DENNIS, INC.
GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

FIGURE 4

LOG OF BORING NO. A-3

UMMC CAMPUS ROADWAY IMPROVEMENTS
LAKELAND DRIVE AT PROPOSED EAST ENTRANCE
JACKSON, MISSISSIPPI

LOCATION: See Figure 1

TYPE: 4" Short-flight auger

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FOOT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	COHESION, KSF	CBR (EST.)	% PASSING NO. 200 SIEVE
1			Asphalt Pavement (15.4")											
2			Stiff tan and light gray sandy clay (CL)	A-6			15	34	19				5	
3							17							
4			Very stiff tan and light gray silty clay (CL)	A-7-6			18						5	
5			Stiff tan and light gray clay (CH))	A-7-6			45						1	
6			(WEATHERED YAZOO)				41							
7							41							
8														
9														
10														

BORING DEPTH: 7.5 ft

DATE:

COMMENTS:
GPS Coordinates
N 32° 20' 1.46"
W 90° 10' 7.51"

GROUNDWATER DATA: No free water encountered during auger drilling.

110020-1

BURNS COOLEY DENNIS, INC.
GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

FIGURE 5

LOG OF BORING NO. A-5

UMMC CAMPUS ROADWAY IMPROVEMENTS
LAKELAND DRIVE AT PROPOSED EAST ENTRANCE
JACKSON, MISSISSIPPI

LOCATION: See Figure 1

TYPE: 4" Short-flight auger

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	AASHTO	BLOWS PER FOOT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	COHESION, KSF	CBR (EST.)	% PASSING NO. 200 SIEVE
			SURFACE EL: ±ft											
1			Medium stiff light gray and tan clay (CH), slightly silty - with organics to 1' (YAZOO FILL)	A-7-6			34						1	
2			Very stiff tan and light gray clay (CH)	A-7-5			33	118	93				1	
3			(WEATHERED YAZOO) - hard 3'- 4'				24							
4							19							
5							32							
6														
7														
8														
9														
10														

BORING DEPTH: 5 ft

DATE:

COMMENTS:
GPS Coordinates
N 32° 20' 1.46"
W 90° 10' 5.81"

GROUNDWATER DATA: No free water encountered during auger drilling.

110020-1

BURNS COOLEY DENNIS, INC.

FIGURE 6

LOG OF BORING NO. A-7

UMMC CAMPUS ROADWAY IMPROVEMENTS
LAKELAND DRIVE AT PROPOSED EAST ENTRANCE
JACKSON, MISSISSIPPI

LOCATION: See Figure 1

TYPE: 4" Short-flight auger

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FOOT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	COHESION, KSF	CBR (EST.)	% PASSING NO. 200 SIEVE
1			Medium stiff tan and light gray clay (CH) (YAZOO FILL)	A-7-6			27						1	
2			Stiff tan and light gray silty clay (CL) with clay pockets and asphalt (FILL)	A-7-6			15	45	33				4	
3			Stiff tan and light gray clay (CH)	A-7-6			24						3	
4			Very stiff tan and light gray clay (CH) (WEATHERED YAZOO)	A-7-6			30						1	
5							32							
6														
7														
8														
9														
10														

BORING DEPTH: 5 ft

DATE:

COMMENTS:
GPS Coordinates
N 32° 20' 1.54"
W 90° 10' 3.95"

GROUNDWATER DATA: No free water encountered during auger drilling.

110020-1

BURNS COOLEY DENNIS, INC.
GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

FIGURE 7

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

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

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 he 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

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. 907-213-2 **CODE: (IS)**

DATE: 01/25/2008

SUBJECT: Agricultural Limestone

Section 907-213, Fertilizing, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-213.05--Basis of Payment. Delete the first sentence of the first paragraph of Subsection 213.05 on page 136 and add the following as the first paragraph of this subsection.

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%.

Delete the first pay item listed on page 137 and substitute the following:

907-213-A: Agricultural Limestone - 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. 907-227-9 **CODE: (IS)**

DATE: 05/13/2011

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. Prior to placement of the hydroseeding, agricultural limestone shall be incorporated into the area in accordance with Section 213 of the Standard Specifications.

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.

907-227.02.4--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, earthballs, 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. 907-237-3 **CODE: (SP)**

DATE: 01/14/2010

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 minimum diameter of twelve inches (12") and a length adequate to meet field conditions. Wattles used at other locations shall have a minimum diameter of twenty inches (20") and a length adequate to meet field conditions. 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. 907-265-3 **CODE: (SP)**

DATE: 9/17/08

SUBJECT: Water Mains and Appurtenances

PROJECT: SP-0250-00(001) / 106330301 -- Hinds County

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 304 or "Borrow Excavation" of Section 203 of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction. Bedding material is required where directed by the City engineer or his authorized representative.

907-265.02.2--Concrete. Concrete for use in thrust blocks and valve boxes/DI 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, size 4 inches to 12 inches, shall be "Blue Brute" (blue in color), or an approved equal, Class 235, DR 18 polyvinyl chloride pipe manufactured in accordance with AWWA C-900 (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 1869 and 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 to 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" through 12" shall be of pressure Class 350 and pipe 16" and greater in diameter shall be of pressure Class 250. All ductile iron water pipes/joints shall be provided with a minimum asphaltic coating and cement lining.

907-265.02.5--Fire Hydrants. Hydrants shall be three-way Mueller Super Centurion 250, or approved equal with five and one-quarter inch (5 1/4") nominal size valve opening. The length of the lower barrel on each hydrant shall be appropriate for the depth of the water main. Provide confirmation all nozzle sizes and threads match Owner equipment. The color shall be white.

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 "Resilient-Seated Gate Valves for Water Supply Service" – 6 inch thru 12 inch or AWWA C515 "Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service" – 14 inch thru 48 inch. 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-900/905 PVC or ductile iron pipe and shall be furnished with MJ retainer glands.

Temporary line stops shall be by Furmanite or equal.

907-265.02.7--Valve Boxes. Valve boxes shall be of ductile iron. Covers shall be ductile iron with a designation of "WATER" embossed on the topside. Valve boxes shall be the three-piece type, adjustable in length and suitable for installation in roadway surfaces. Stack pipe for valve box adjustment shall be ductile iron pipe. Adjustment risers shall be approved prior to use by the City Engineer or his authorized representative. Resilient seat gate valves 18 inch and larger shall be mounted horizontally within a concrete box and installed with bevel gearing and grease case.

907-265.02.8--Fittings. Fittings for water mains of six inch (6") diameter and larger shall be seal coated/cement lined 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 PVC or ductile iron pipe and shall be furnished with MJ retainer glands. Fittings shall be manufactured in accordance with AWWA C110 or 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 City engineer or his authorized representative.

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 Type K soft copper complying with ASTM B 88, Seamless Copper Water Tube. Joints shall be flanged meeting ANSI B16.24 , 150 lb. class with red rubber gaskets complying with ASTM D 1330.

907-265.02.11--Water Meters. Only oscillating piston type water meters shall be acceptable, and all meters as bid must conform to the American Water Works Association (AWWA) C-700 as most recently revised. All meters must have a non-corrosive Water Works bronze outer case with a separate measuring chamber, which can be easily removed from the case. All meters shall have cast on them, in raised characters, the size and direction of flow through the meter. Bronze bottoms shall be provided on 5/8", ¾" and 1" meters. All external bolts and washer shall be of corrosive resistant material and be easily removed from the maincase. All threaded maincase bolt holes must be covered, to aid in removal of the bolts for repair.

The measuring chambers shall be of a suitable synthetic polymer and shall not be cast as part of the maincase. All piston assemblies shall be interchangeable in all measuring chamber assemblies of the same size. The measuring chamber piston shall operate against a replaceable control roller, allowing for repair to AWWA standards. The control roller shall rotate on a stainless pin, to provide added strength, wear resistance and corrosion resistance. There shall be an elastomeric seal or seals between measured and unmeasured water, preventing leakage around the measuring element.

The motion of the piston will be transmitted to the sealed register through the use of a magnetic coupling.

All meters must be supplied with a corrosion-resistant strainer with an effective straining area of at least twice the bore diameter which can be easily removed from the meter without the meter itself being disconnected from the pipeline.

Change gears will not be allowed to calibrate the meter. All registers of a particular registration and meter size shall be identical and completely interchangeable. Should meters arrive with registers containing more than one gear combination, the entire shipment will be rejected.

Meters shall conform to AWWA C-700, current revision, relative to test flows, head loss and accuracy standards.

Meters shall operate up to a working pressure of 150 pounds per square inch (psi), without leakage or damage to any parts. The accuracy shall not be affected by variation in pressure up to 150 psi.

In evaluating water meter submittals, warranty coverage will be considered. The Contractor shall be required to submit the most current nationally published warranty statements for water meter maincases, registers, and measuring chambers.

A statistically controlled sample of each meter shipment will be tested by the City to insure each shipment meets the utility performance and materials specifications.

Encoder Register and Remotes. The encoder register and remotes must conform to American Water Works Standard C-707 as most recently revised.

The Touchread ECR register must be of the straight reading type and have a full test dial on the face of the register that records one-one hundredth for 5/8" – 1" meters, and one-tenth on 1 ½" – 2" meters of the right-most odometer wheel. It shall read in cubic feet, and be capable of direct visual reading both at the meter and by remote reading utilizing a visual interrogation device that connects through to the water meter via a Touch Pad located external to the meter, and/or by a Meter Interface Unit (MIU) for remote based Automatic Meter Reading (AMR). The direct read numeral wheel assembly shall be locate din the middle of the dial face with reading obtained from left to right using standard notation (billions, millions, and thousands separators and decimal points). All reduction gearing shall be contained in a permanently hermetically sealed, tamper proof enclosure made of a corrosion resistant material.

The register shall be secured to the maincase by means of a tamper-resistant locking device located in the interior of the meter so that non-utility personnel cannot remove the register. The register must be field replaceable by utility personnel with the use of a manufacturer-supplied field tool. The field tool must not be commercially available. Seal wiring or a frangible head seal screw is not acceptable.

The meter register shall be provided with three terminal connections. The connection between the meter register and the MIU shall be accomplished with the use of all three terminal connections. The register shall transmit the meter reading and register data directly to the interrogation device through the MIU when interrogated by an AMR system.

When the meter is to be installed in a vault or pit set installation, the terminal connections shall be permanently factory sealed to three wire interconnecting cable with an environmentally approved epoxy to prevent moisture penetration and eliminate the need for field sealing requirements.

The register output data format shall be 7-bit ASCII (American Standard Code for Information Interchange) digital, plus an even parity bit. Upon interrogation with an AMR product, the register will transmit an odometer reading containing from 1 to 8 digits (field programmable). The odometer reading is to be obtained from the register by "magnetic field position-sensing" technology to determine the rotational position of each odometer wheel.

Encoders with a mechanical brush contact with the odometer wheel, or optic light will not be acceptable. The register can also be programmed to output a factory set, non-programmable identification number, customer Text of up to 20 alphanumeric characters (field programmable), a reading multiplier ranging from 10^{-99} to 10^{99} (field programmable), and/or a reading measurement unit indicator (for example, US Gallons – field programmable). Data is to be positive true. The register's ASCII digital output is to be capable of interfacing directly to an AMR transponder to transmit data via cable TV, telephone, radio signal, or power lines to an AMR system.

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. Cast iron used in the manufacturing of meter

boxes and lids must conform to the latest edition of ASTM Specification A-48 for Class 30 grey iron castings.

907-265.02.13 – Filter Fabric. Geotextile fabric shall be non-woven, needle punched, and weigh a minimum of four ounces (4 oz.) per square yard, as manufactured by Terratex Construction Fabrics, "NO4", or approved equal.

907-265.02.14 – Backflow Preventer Assemblies: 6 inches and larger

1. Type: Double Check.
2. Components:
   a. Two independently acting spring loaded toggle lever check valves.
   b. Two AWWA, non-rising stem gate valves for shutoff valves.
   c. Four test cocks.
3. Size and Total Pressure Loss:
   a. 6-inch: 3.7 psi at 1000 gpm.
   b. 8-inch: 3.2 psi at 1600 gpm.
   c. 10-inch: 4 psi at 2400 gpm.
4. Construction:
   a. Body and Cover: Cast Iron, ASTM 126.
   b. Check Valve Trim: Bronze, ASTM B-61.
5. Required Features:
   a. Maximum Working Pressure: 175 psig.
   b. Max Temperature: 110 degree F.
   c. Hydrostatic Test Pressure: 350 psig.
   d. End Connections: Flanged, conforming to ANSI B16.1, Class 125.
6. Manufacturer and Model:
   a. CLA-VAL Co., Model D-4
   b. Or equal.

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's excavation shall be confined 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 thirty inches (30").

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 City engineer or his authorized representative.

907-265.03.3--Sheeting and Shoring. The Contractor shall place such sheeting and shoring in the trenches as may be necessary to support properly the trench walls and any adjacent structures. The type and amount of sheeting 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 sheeting, shoring and bracing as may be required for the work.

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. Ensure that water level in trench is at least six inches below bottom of pipe. Do not lay pipe in water. Maintain dry trench until jointing and backfilling are complete. 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 City engineer or his authorized 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 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 copper 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 City engineer or his authorized representative. Additional lines shall be installed for future use as directed by the City engineer or his authorized representative 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 City engineer or his authorized representative.

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.

A minimum of three (3) City working days notice shall be given to the City 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 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.

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 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') 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 City Engineer or his authorized representative in non-paved areas.

The City Engineer or his 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 make 1 field density test for every 100 feet of pipe in the trench lines for each of the last 6 layers of backfill placed to assure that proper compaction has been achieved. Placement of tests will be as determined by City engineer or his authorized representative.

Where any sheeting 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--Hot Tap/Temporary Line Stops. Temporary line stops shall be installed at the locations shown on the plans. Line stops shall be made to prevent loss of service and pressure to the system while new fittings, valves and piping are installed and existing pipe designated to be decommissioned may be removed from the project. The final assembly shall provide complete shutoff of the flow of water. Permanent sleeve shall be capable of installation on cast iron, ductile iron, asbestos cement and C900/905 PVC pipe while providing a 360 degree seal around the pipe under all working pressures of the system. Assembly shall be capped for future following line stop operation.

907-265.03.12--Setting Hydrants. Hydrants shall be located as shown on the plans or as directed by the City engineer or his authorized representative 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.

After installation is complete and before acceptance of the project, all fire hydrants shall be cleaned and given one coat of suitable paint, 10-16 Rus-Kil White or approved equal, as directed by the City Engineer or his authorized representative.

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 ductile 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 City Engineer or his authorized representative 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 City Engineer or his authorized representative 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 sidewalk 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 the current version of AWWA Standard C-600, 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--Disinfection. After the water main has been completed and a satisfactory hydrostatic test has been made, the Contractor shall disinfect the water mains. The Contractor shall submit the method and/or individual who will provide the chlorination service for prior approval by the City engineer or his 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 disinfected using at least a 50 PPM free chlorine solution for twenty-four (24) hours or as described in the latest version of AWWA C651. 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 City or 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 water supply system's certified operator or a representative of the Mississippi State Department of Health. Water being collected for testing shall not have 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 from 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.

907-265.04--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 boxes and any other fittings required will not be measured for separate payment but shall be included in the cost of new water meter installation.

Aggregate bedding, if ordered by the City Engineer or his authorized representative, will be measured by volume in cubic yards.

Stamping service line and valve locations in the curb will not be measured for separate payment.

All pressure testing, flushing and disinfection 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.

"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 this Special Provision. Ductile iron fittings will be measured by the pound in accordance with 907-604-1 of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction.

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 temporary line stop valve connected thereto shall be measured by the specified size of the hot-tap and temporary line stop valve. Both tapping sleeve and temporary valve along with labor and other incidentals required to make the hot-tap/line stop 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. Filter fabric shall not be measured for separate payment. Concrete boxes utilized for larger valves shall be measured and paid per cubic yard of miscellaneous concrete (including reinforcing bar).

There shall be no 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 Special Provision 613, "Adjustment of Castings, Gratings, and Utility Appurtenances" of this project manual.

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 new hydrants will not be measured for separate payment but shall be included in the unit price bid for the new hydrant.

907-265.05--Basis of Payment. The prices thus bid 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-B: 6" Ductile Iron Water Main -per linear foot

907-265-C:	10" Ductile Iron Water Main	per linear foot
907-265-E:	12" Ductile Iron Water Main	-per linear foot
907-265-F:	10" C900 PVC Water Main	-per linear foot
907-265-I:	6" Gate Valve	-per each
907-265-J:	10" Gate Valve	-per each
907-265-K:	12" Gate Valve	-per each
907-265-X:	12" Line Stop	-per each
907-265-DD:	Water Service Connections	-per each
907-265-EE:	1" Diameter Water Service Line	-per linear foot
907-265-FF:	3/4" Diameter Water Service Line	-per linear foot
907-265-GG:	6" Water Meter	-per each
907-265-HH:	Ductile Iron Fittings	-per pound
907-265-JJ:	10" Backflow Preventer Assembly	per each
907-265-KK:	¾" Corporation Stop	per each
907-265-LL:	1" Corporation Stop	per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-304-12 **CODE: (IS)**

DATE: 06/01/2009

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:

When the contract includes pay item 907-304-E, Granular Material, LVM, RAP, it shall be milled recycled asphalt pavement and shall be visually inspected by the Engineer to insure it is free from chunks and deleterious materials.

Crushed concrete meeting the requirements of Subsection 907-703.04.4 may be used in lieu of other crushed courses specificed in the contract.

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

Before the last paragraph of Subsection 304.03.5 on page 186, add the following:

Unless otherwise specified, density for granular material, RAP, shall be achieved by two passes of an approved roller and density tests will not be required.

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: **07/19/2011**

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.

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

SUPPLEMENT TO SPECIAL PROVISION NO. 907-401-4

DATE: 10/05/2010

SUBJECT: Warm Mix Asphalt

Delete Subsection 907-401.03.8 on page 2 and substitute the following:

907-401.03.8--Preparation of Mixture. After the sentence in Subsection 401.03.8 on page 264, add the following:

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

SPECIAL PROVISION NO. 907-401-4 **CODE: (SP)**

DATE: 03/22/2010

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. Delete the first and second paragraphs of Subsection 401.01 on page 236, and substitute the following:

These specifications include general requirements for all types of WMA.

This work consists of the construction of one or more lifts of WMA in accordance with these specifications and the specific requirements for the mixture to be produced and 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. Delete Subsection 401.02.2 on page 239, and substitute the following:

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. Delete the second sentence of the first paragraph and the Temperature Limitation Table in Subsection 401.03.1.1 on page 258, and substitute the following:

The air and pavement temperature at the time of placement shall equal or exceed 40ºF, regardless of compacted lift thickness.

907-401.03.1.2--Tack Coat. Delete the first sentence of the first paragraph of Subsection 401.03.1.2 on page 259 and substitute the following:

Tack coat shall be applied to previously placed WMA and between lifts, unless otherwise directed by the Engineer.

907-401.03.8--Preparation of Mixture. Delete the sentence in Subsection 401.03.8 on page 264, and substitute the following:

The temperature of the WMA mixture, when discharged from the mixer, shall not exceed 280º F.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-403-4

DATE: **02/23/2012**

SUBJECT: **Hot Mix Asphalt (HMA)**

Before Subsection 907-403.05.2 on page 1, add the following:

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.

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

SUPPLEMENT TO SPECIAL PROVISION NO. 907-403-9

DATE: 10/26/2011

SUBJECT: Warm Mix Asphalt (WMA)

Delete Subsection 403.05 on page 1 and substitute the following.

907-403.04--Method of Measurement. WMA pavement, 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 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 & 403.03.2, warm mix asphalt pavement, complete-in-place, accepted, and 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.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-403-9 **CODE: (SP)**

DATE: 03/15/2010

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. Delete the first sentence of Subsection 403.01 on page 266, and substitute the following:

This work consists of constructing one or more lifts of WMA pavement meeting the requirements of Section 401 on a prepared surface in accordance with the requirements of this section and in reasonably close conformity with the lines, grade, thicknesses, and typical cross sections shown on the plans or established by the Engineer.

907-403.05--Basis of Payment.

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. 907-605-3 **CODE: (IS)**

DATE: 05/05/2008

SUBJECT: Underdrains

Section 605, Underdrains, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-605.03--Construction Requirements.

907-605.03.5--Edge Drain Installation. Delete the seventh paragraph of Subsection 605.03.5 on page 376 and substitute the following:

When corrugated polyethylene drainage tubing is used, joints shall be made with snap-on or split couplings, corrugated to engage the pipe corrugations, and shall engage a minimum of four corrugations, two on each side of the pipe joint.

907-605.05--Basis of Payment. Add the "907" prefix to pay item nos. 605-D thru 605-I and 605-M thru 605-V on pages 379 thru 381.

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. 907-618-4 **CODE: (SP)**

DATE: 12/12/2006

SUBJECT: Placement of Temporary Traffic Stripe

Section 618, Maintenance of Traffic and Traffic Control Plan, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-618.03.3--Safe Movement of Traffic. Delete subparagraphs (2) and (3) of Subsection 618.03.3 on pages 415 & 416, and substitute the following:

(2) Temporary edge lines on projects requiring shoulders constructed of granular material may be delayed for a period not to exceed three (3) days.

Temporary edge lines placed on the final pavement course of projects requiring paved shoulders with surface treatment may be placed on the adjacent shoulder in as near the permanent location as possible until the surface treatment is placed. When the edge lines are obliterated by the placement of the surface treatment, the edge lines shall be placed in the permanent stripe location. The replacement of edge lines may be delayed for a period not to exceed three (3) days for a two or three-lane roads.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-626-15 **CODE: (IS)**

DATE: 03/17/2008

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:

907-626.05--Basis of Payment. Add the "907" prefix to the pay items listed on page 446.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-632-1 **CODE: (SP)**

DATE: 02/28/2012

SUBJECT: Encased Pipe Crossings

PROJECT: SP-0250-00(001) / 106330301 -- Hinds County

Section 907-632, Encased Pipe Crossings, 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 907-632 -- ENCASED PIPE CROSSINGS

907-632.01--Description. This work consists of installing an encased pipe crossing at the location shown on the plans or as directed by the Engineer. The following specification is to set forth minimum design, functional, operational, and installation requirements for the encased pipe crossings.

907-632.02--Materials.

907-632.02.1--General. The Contractor shall furnish all materials, equipment, labor, tools and incidentals necessary to jack or bore by mechanical means a case crossing at the locations specified on the Plans, or as directed by the Engineer.

The work shall consist of all operations required to install the specified casement pipe to the line and grade established by the Engineer or as specified by a permit approved or issued by the railroad company, Mississippi Department of Transportation, or other public authority having jurisdiction over the work.

The Contractor shall provide and maintain the principal equipment necessary to prosecute the work in an orderly and safe manner. The equipment consists of approved units designed or selected to perform and expedite all of the work and incidental items of construction.

907-632.02.2--Casing Pipe. The casing pipe shall be spiral welded steel pipe or welded black steel line pipe or approved equal with joint ends beveled for welding. Steel pipe encasements shall be new and will conform to ASTM Specification Designation A-252 or A-l 39. Steel casing pipe shall be delivered with a protective coating inside and outside 20 mils thick of coal tar enamel meeting the requirements of the AWWA Specification C-203.

The steel casing pipe shall have a minimum yield strength of 35,000 psi and wall thickness shall conform to the following table.

Wall Thickness

Outside Diameter		Under Highway		Under Railroad*	
millimeters	**inches**	**millimeters**	**inches**	**millimeters**	**inches**
324	12-3/4 and Under	5.0	0.188	6.4	0.250
400	16	6.4	0.250	7.1	0.281
460	18	6.4	0.250	7.9	0.312
500	20	6.4	0.250	8.7	0.344
610	24	6.4	0.250	10.3	0.406
760	30	7.9	0.312	11.7	0.469
914	36	9.5	0.375	13.5	0.531

* Meets AREA "Specifications For Pipelines For Conveying Nonflammable Substances"

When the casing is installed without benefit of a protective coating and the casing is not cathodically protected, the wall thickness shown above shall be increased to the nearest standard size which is a minimum of 0.63 inches greater than the thickness shown except for diameters under 12¾ inches.

907-632.02.3--Carrier Pipe. All carrier pipe to be installed inside the casing pipe for the purpose of conveying liquids shall conform to the applicable Sections of these Specifications governing the construction of improvements that necessitate installation of case crossings.

907-632.03--Construction Requirements. As specified on the Plans or as set forth in the Bidder's Proposal, the Contractor shall install the specified casing pipe by means of jacking, dry boring or boring with drilling fluid.

907-632.03.1--Jacking. No casing or carrier pipe larger than 3½ inches in diameter will be pushed or jacked under a highway. All casing or carrier pipe shall be of strength sufficient to withstand the stress resulting from jacking pressures.

907-632.03.2--Dry Boring. The casing or carrier pipe shall be installed by drilling a hole of a size not larger than one inch (1") around the outside circumference of the casing pipe where the casing pipe is larger than eight inches (8") in diameter and not larger than one-half inch (½") around the outside circumference where the casing pipe is eight inches (8") or less in diameter.

Water-bearing sands and mucky soils shall be well-pointed as necessary prior to commencing the bore.

All bores shall be accomplished with the auger inside the casing pipe with the cutting edges positioned just ahead of the pipe except as follows.

Dry boring with the auger not inside the casing pipe may be permitted in bores eight inches (8") or less in diameter in dense consolidated soils.

Dry boring with the auger not inside the casing pipe may be permitted in bores three inches (3") or less in diameter in loose sandy soil or other soils which easily cave or spall.

Care shall be exercised at all times to keep the auger properly positioned with the casing pipe and to maintain forward pressure upon the encasement or carrier pipe to quickly run through any pockets of loose soil.

An acceptable fluid may be introduced by gravity flow approximately three feet (3') back of the forward end of the casing pipe to lubricate the cuttings in order to facilitate the removal thereof.

907-632.03.3--Boring with Drilling Fluid. The use of either a gel-forming drilling fluid or the use of a polymer-surfactant mixture in accordance with the following specifications is permitted.

The drilling fluid is used to lubricate the cutters or reamers, as a binder to bind the cuttings into plugs of appropriate length and to form a filter cake around the circumference of the bore in order to prevent cave-ins or spalling, to maintain the arch and also to lubricate the bore for easy removal of masses or plugs of cuttings from the bore by using compressed air. Liquids other than the drilling fluids described in Alternates 1 and 2 will be used in the bore. All bores accomplished with the use of a drilling fluid will be made as follows.

Alternate 1.
The casing or carrier pipe is to be installed by drilling a hole of a size not larger than one inch (1") around the outside circumference of the casing or carrier pipe where the casing or carrier pipe is larger than eight inches (8") in diameter and not larger than one-half inch (½") around the outside circumference where the casing or carrier pipe is eight inches (8") or less in diameter, with an open-type bit that leaves the cutting in place. A gel-forming colloidal drilling fluid consisting of at least 10% by weight of Aqua-gel, or the equivalent of other gel-forming types, when boring sandy subsoils, fine sands, water-bearing sands or any soils which easily spall or cave and consisting of at least 5% by weight of Aqua-gel, or the equivalent of other gel-forming types, when boring in dense consolidated soils will be used to consolidate the cuttings, seal the wall of the bore and furnish lubrication for subsequent removal of the cuttings and installation of the casing immediately thereafter. The percentage of gel-forming agent will be increased as required by solid conditions. When boring sandy subsoils, fine sands, water-bearing sands or any soil which easily spalls or caves the bore entrance will be plugged or dammed in order to retain the drilling fluid and the cuttings within the bore until immediately before the casing or carrier pipe is installed. Water-bearing sands and mucky soils will be well pointed as necessary prior to commencing the bore. When drilling through dense consolidated soils, the cutting may be partially removed from the hole in approximately three-foot plugs by use of compressed air or by retraction of the carrier or reamer. No cutter or reamer larger than three inches (3") in diameter shall have holes therein larger than 0.31" in diameter through which drilling fluid is forced during boring.

Alternate 2.
The casing or carrier pipe is to be installed by drilling a hole of a size not larger than one inch (1") around the outside circumference of the casing or carrier pipe where the casing or carrier

pipe is larger than eight inches (8") in diameter and not larger than one -half inch (½") around the outside circumference where the casing or carrier pipe is eight inches (8") or less in diameter, with an open type bit that leaves the cuttings in place. Drilling fluid composed of water and polymer-surfactant or approximately 61% diesel fuel, 15% sodium carboxyl methylcellulose of same quality as Drispac, 21.5% water and 2.5% antionic surfactant will be used to consolidate the cuttings, seal the wall of the bore and furnish the lubrication for subsequent removal of the cuttings and installation of the casing or carrier pipe immediately thereafter. When boring sandy subsoils, fine sands, water-bearing sands or any soil which easily spalls or caves, the bore entrance will be plugged or dammed in order to retain the drilling fluid and the cuttings within the bore until immediately before the casing or carrier pipe is installed. Water-bearing sands and mucky soils will be well-pointed as necessary prior to commencing the bore. When drilling through dense consolidated soils, the cuttings may be partially removed from the hole in approximately three-foot plugs by use of compressed air. The polymer-surfactant mixture or drilling fluid when used in dense consolidated soils will consist of not less than 2% of polymer-surfactant by volume and when used in sandy subsoils, fine sands or any soil which easily caves will consist of at least 4% of polymer surfactant by volume. The percentage of polymer-surfactant will be increased as required by soil conditions.

907-632.03.4--Maintenance. The Contractor shall be responsible for, at no additional costs to the City or State, the maintenance of improvements to the line and grades established for the construction, for the stability of all backfills and finished grades above the improvements and around the structures, and for the repair and replacement of all items which were damaged or removed during the construction.

907-632.04--Method of Measurement. Steel Casing Pipe of the type specified shall be measured per linear foot along the centerline of the pipe from end to end as approved or as directed. No measurement will be made of subsidiary items of work, such as excavation of pits, trenching, backfilling, clean-up, disposal for surplus materials, or other incidentals relating to performing the work.

907-632.05--Basis of Payment. Steel Casing Pipe, measured as prescribed above, will be paid for at the contract unit price per foot, which price shall be full compensation for furnishing all equipment, tools, labor, materials and incidentals necessary to complete the work and ready the pipe for its intended purpose.

Payment will be made under:

907-632 H: Steel Casing Pipe (Jacked or Bored) - per linear foot

907-632-J: Steel Casing Pipe (Trenched)(Size) - per linear foot

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. 907-650-4 **CODE: (SP)**

DATE: 02/24/2009

SUBJECT: On-Street Video Equipment

Section 650, On-Street Video Equipment, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in total Section 650 beginning on page 537, and substitute the following:

907-650.01--Description. This Section specifies the minimum requirements for CCTV Camera Systems furnished and installed on this project. The CCTV Camera System will provide TMC personnel with live streaming video of the roadway network via CCTV Camera Systems installed at locations shown in the Plans. The CCTV Camera System will include both fixed and PTZ Dome cameras as called for on the Plans.

907-650.02--Materials. All materials furnished, assembled, fabricated or installed shall be new, corrosion resistant and in strict accordance with all of the details shown in the Plans and described in this Special Provision.

Support equipment for the CCTV Camera Systems shall be provided in a Type B ITS Equipment Cabinet as described in Section 637 of these specifications.

The CCTV Camera System shall comply with the following minimum materials specifications:

907-650.02.1--General Capabilities and Performance Requirements. Overall CCTV Camera System capabilities and performance requirements include the following:

1) CCTV PTZ Dome Cameras shall be placed at fixed locations as shown on the Plans to provide full coverage within the project limits including mainline travel lanes and shoulders.
2) CCTV Fixed Cameras shall be placed at fixed locations as shown on the Plans to provide coverage of the mainline travel lanes. The cameras shall be provided with a varifocal lens which shall be adjusted by the Contractor for the desired view of the mainline. At major intersections additional fixed cameras shall be adjusted to the desired view of the surface streets. The Contractor shall record the adjusted views for five minutes and submit to the Engineer for approval. This recording shall be in a format playable with Windows Media Player.
3) The CCTV Camera System components shall be compatible with each other and be of rugged design and suitable for reliable operation when mounted in the configuration as specified in this TSP and the Plans.
4) The Dome PTZ cameras shall be Analog and the Fixed cameras shall be Ethernet IP-based.

5) The CCTV Camera System shall be capable of attended and unattended, continuous 24 hours per day operation at the sites as shown on the Plans.
6) The Contractor shall ensure that the installed equipment provides unobstructed video of the roadway, traffic, and other current conditions around a roadside CCTV field site; that it responds to camera control signals from an operator of the system; and that the video images can be transmitted to remote locations interfaced to the system for observation.
7) The CCTV PTZ Dome Cameras shall be capable of being remotely controlled and programmed.
8) The Dome camera shall be mounted together with the zoom lens and integrated into the pan and tilt device within the dome enclosure forming a totally integrated, easily removable assembly.
9) All cameras shall include a high quality integrated camera/lens combination.
10) The camera shall also be equipped with an auto-iris lens capability compatible with the zoom lens supplied.
11) Iris capability shall include a provision for manual override via software.
12) The Dome camera shall be capable of auto-focus during zoom-in or zoom-out, with provisions for override via software.
13) Overexposure protection shall be provided - the camera shall not be degraded or damaged under normal reasonable operating conditions.
14) The capability for local control of pan, tilt and zoom functions shall be provided at the roadside cabinet using vendor-supplied software installed on a laptop computer.
15) All CCTV cameras shall support the NTCIP 1205 v1.08 communication protocol.

907-650.02.2--Analog Camera Unit. The minimum Camera Unit requirements include:

1) The camera unit shall incorporate solid-state design and provide digital signal processing (DSP) capable of providing clear and low-bloom color video pictures during daylight hours and monochrome video at night when the roadway is illuminated with minimal roadway lighting.
2) The Analog Camera shall be fully compliant with all aspects of the National Television Standards Committee (NTSC) specification, and produce NTSC compatible video.
3) The Analog camera shall operate over wide dynamic light conditions ranging from low light/dusk to full sunlight having day (color)/night (monochrome) switchover and iris control, with user-selectable manual and automatic control capabilities.
4) The camera unit shall be equipped with a low light level sensor to automatically switch the camera to Black and White mode.
5) The camera unit shall be equipped with an override capability to allow the camera to be manually switched via software to turn off the automatic low light level sensor switch feature for Color or Monochrome operation.
6) Image sensor: 1/4 inch charge-coupled device (CCD) employing digital video signal processing (DSP) technology with a minimum Effective Picture Elements of 768 horizontal x 494 vertical pixels.
7) Sensitivity: The camera shall maintain usable video under both day and nighttime lighting conditions.
8) Video output synchronization shall be 2 to 1 interlace and will observe the NTSC (color) and EIA RS-170 (black and white) standards.

9) Resolution: 470 lines horizontal and 350 TV lines vertical, NTSC equivalent.
10) Signal-to-noise ratio: 48 dB, minimum with AGC off, un-weighted, and 4.5MHz filter.
11) Video Signal Format: National Television Standards Committee (NTSC) composite video output of 1 $Volt_{p-p}$ at 75 ohms, unbalanced.

907-650.02.3--Internet Protocol IP Camera Unit. IP cameras shall provide the same functionality as the analog camera units specified in subsection 907-650.02.2, in addition to the following minimum requirements:

1) Power over Ethernet (IEEE802.3af) or 24 VAC Power Input.
2) Open Architecture.
3) 3 Simultaneous Video Streams.
   a. Dual MPEG-4 (30 ips)
   b. Scaleable MJPEG
4) Internet Protocols: TCP, UDP (Unicast, Multicast IGMP), UPnP, DNS,
5) DHCP, RTP, NTP
6) Multilevel Password Protection.
7) EDR (Extended Dynamic Range).
8) C/CS Lens Mount.
9) Backlight Compensation.
10) Horizontal Resolution of 480 TV Lines.
11) Low Profile Top/Bottom Mount.
12) BNC Service Connector.
13) Resolution: 470 lines horizontal and 350 TV lines vertical, NTSC equivalent.

907-650.02.4--Dome Camera Lens. The minimum camera lens requirements include:

1) The camera lens shall have a minimum F-Stop of 1.4 to 1.6.
2) Optical and Digital Zoom: Shall provide an optical zoom of 23X and a digital zoom of 8X, minimum.
3) Zoom Control: The zoom magnification shall be fully controllable via the remote PTZ mechanism. The time to pass through the full range of movement of Iris, Zoom and Focus shall in no case exceed 10 seconds.
4) Iris and Focus: Support automatic iris and focus control with manual override capability. The iris shall be in a closed position when there is no power.
5) White or Color Balance: Support automatic or set to yield optical results under various outdoor lighting conditions.
6) Shutter Speed: Support automatic or set to yield optimal results under low lighting conditions without blooming or smearing, auto-iris on. Provide electronic shutter that is selectable in steps.
7) The lens shall be equipped for continuous remote control of zoom, focus and iris.
8) Mechanical or electrical means shall be provided to protect motors from overrunning in extreme positions.
9) The zoom lens shall be an integrated camera/lens combination.
10) Vibration or ambient temperature changes shall not affect the automatic iris function, focus mechanism and zoom mechanism.

11) The lens shall be optically clear, impact resistant and acrylic. The acrylic lens shall not yellow and shall not introduce appreciable light loss or geometric distortion over a 10-year service life when exposed to the environment.
12) The zoom mechanism shall be designed for maintenance-free operations. All gearing and bearings shall be self-lubricating with lubrication and gearing tolerances compatible with the environmental specifications contained herein.

907-650.02.5--Character Generator. The minimum character generator requirements include:

1) The capability of generating and superimposing lines of English language text on the video image/stream shall be provided.
2) A minimum of 20 characters per line that are between 10 and 30 horizontal TV lines in height shall be provided.
3) Control (enable, disable and edit) of this feature shall be available remotely and at the field site using a laptop computer.
4) The text messages shall be stored in non-volatile memory.
5) Characters shall be white with a black border to ensure legibility in varied scenes.
6) The following minimum text insertion requirements shall be provided with the ability to individually turn each one on or off:
   a. Camera ID
   b. Sector Message
   c. Alarm Messages
   d. Pan/Tilt Azimuth/Elevation
   e. Compass Direction in 8 discreet zones

907-650.02.6--Dome Enclosure. The minimum dome enclosure requirements include:

1) Sealed dome enclosure that provides complete protection for the camera and lens assembly from moisture and airborne contaminants.
2) Environmental resistant and tamper proof meeting NEMA 4X or IP-66 rating requirements.
3) The dome enclosure shall be constructed in such a way that unrestricted camera views can be obtained at all camera and lens positions.
4) The dome enclosure shall consist of a two-piece (upper and lower half) dome.
5) A harness and cables shall be provided with each enclosure to extend the video, power and data from the CCTV Camera System to the field cabinet. No harness shall be exposed. All entry points shall have gaskets to prevent moisture entry. A sealed connector shall be at the top of the dome.
6) The dome enclosure shall assist in preventing lens fogging and effectively reduce internal temperatures.
7) The enclosure shall minimize glare and provide overexposure protection for the camera when pointed directly at the sun.
8) The enclosure shall be equipped with a heater, a defroster and a thermostat.
9) The camera equipment inside the dome enclosure shall meet all its specified requirements when operating under the following conditions:

a. Ambient Temperatures: -34ºC to +50ºC (-30ºF to +122ºF). A heater/blower shall be used to maintain internal dome temperatures within the manufacturer required operating temperatures for their equipment.
b. Relative Humidity: 5% and 95%, non-condensing.

12) Total weight of CCTV cameras (including the housing, sunshield, and all internal components shall be less than 18 pounds.
13) Dome enclosure shall be secured with a mounting plate/attachment designed to withstand a 90mph sustained wind speed with a 30% gust factor.

907-650.02.7--Pan and Tilt Unit (PTU). The minimum pan and tilt unit requirements include:

1) The motorized, remotely controlled Pan/Tilt unit shall be mounted within the dome enclosure. The unit shall be integrated with the CCTV control system.
2) The unit shall provide continuous tilt (vertical) movement of 90 degrees from horizontal and continuous pan (horizontal) movement of 360 degrees.
3) Tilt speed shall be variable from zero up to 40 degrees per second, minimum, and the pan speed shall be variable from zero up to 80 degrees per second, minimum.
4) The unit shall be capable of simultaneous pan, tilt movements and zoom on one camera
5) Drive motors shall be capable of instantaneous reversing, be corrosion resistant, not require lubrication, and have overload protection.
6) Braking shall be provided in both pan and tilt movements to enable fast stop and reversal and to prevent drifting.
7) The viewing limits shall be set by a minimum of 8 discreet privacy zones that are software selectable.

907-650.02.8--Camera Control Receiver – Driver. The minimum camera control receiver-driver requirements include:

1) The camera control receiver shall provide a single point interface for control, power and video communications.
2) The camera control receiver-driver shall be included within the dome enclosure and control the camera, pan/tilt and lens functions at each CCTV site.
3) The unit shall provide alphanumeric generation for on-screen titles.
4) The unit shall provide the ability to display diagnostic information on the screen in response to user commands.
5) The diagnostic information shall include current pan, tilt, zoom and focus positions, and error codes for power, communication, position and memory problems.
6) The capability for programmed tours shall be provided.
7) The camera control receiver shall use non-volatile memory to store the required information for presets, camera ID and sector text.
8) Presets shall meet the following requirements:
   a. A minimum of 64 presets shall be supported. Each preset shall consist of pan, tilt, zoom and focus positions.
   b. The Contractor shall develop and install ten (10) presets for each camera. The Contractor shall submit the preset locations to the Department for review and approval.

9) Protocols: CCTV cameras shall support the NTCIP 1205 v1.08 communication protocol. No camera control receiver-driver shall use non-published protocols. The Contractor shall provide protocol documentation.
10) Communications Interface: The communications interface shall support communications compliant with RS-422 and/or 485 (user selectable).
11) The communications interface shall be compatible with the Video Encoder serial port as defined in Section 907-662 of these Specifications.
12) Connectors: Standard connectors compatible with communications and interface equipment/cables shall be provided.
13) The video input and output connections shall be the BNC type.
14) Connector(s) shall also be used for connecting the control outputs from the control receiver-driver unit to the camera, lens and pan/tilt mechanisms.

907-650.02.9--Fixed Camera Lens.

1)	Type:	Varifocal
2)	Format Size:	1/3 Inch
3)	Mount Type:	CS
4)	Focal Length:	5-50
5)	Zoom Ratio:	1.4 -360
6)	Relative Aperture (F):	1.6-360
7)	Iris:	Auto (Direct Drive)
8)	Focus:	Manual
9)	Zoom:	Manual
10)	Minimum Object Distance:	0.5 m
11)	Back Focal Length:	10.05 mm

12) The camera lens shall have a minimum F-Stop of 1.4 to 1.6.
13) Shall provide a varifocal zoom of 5-50 mm.
14) Iris: Support automatic iris control with manual override capability. The iris shall be in a closed position when there is no power.
15) White or Color Balance: Support automatic or set to yield optical results under various outdoor lighting conditions.
16) Shutter Speed: Support automatic or set to yield optimal results under low lighting conditions without blooming or smearing, auto-iris on. Provide electronic shutter that is selectable in steps.
17) Vibration or ambient temperature change shall not affect the automatic iris function, focus mechanism or zoom mechanism.
18) The lens shall be optically clear, impact resistant and acrylic. The acrylic lens shall not yellow and shall not introduce appreciable light loss or geometric distortion over a 10-year service life when exposed to the environment.

907-650.02.10--Fixed Camera Enclosure.

1) Designed for Outdoor Applications
2) Maintenance access for servicing
3) The minimum fixed enclosure requirements include:

4) Sealed enclosure that provides complete protection for the camera and lens assembly from moisture and airborne contaminants.
5) Environmental resistant and tamper proof meeting NEMA 4X or IP-66 rating requirements.
6) A harness and cables shall be provided with each enclosure to extend the video, power and data from the CCTV Camera System to the field cabinet. No harness shall be exposed. All entry points shall have gaskets to prevent moisture entry. A sealed connector shall be at the top of the dome.
7) The enclosure shall assist in preventing lens fogging and effectively reduce internal temperatures.
8) The enclosure shall minimize glare and provide overexposure protection for the camera when pointed directly at the sun.
9) The enclosure shall be equipped with a heater, a defroster and a thermostat.
10) The camera equipment inside the dome enclosure shall meet all its specified requirements when operating under the following conditions:
11) Ambient Temperatures: -34ºC to +50ºC (-30ºF to +122ºF). A heater/blower shall be used to maintain internal dome temperatures within the manufacturer required operating temperatures for their equipment.
12) Relative Humidity: 5% and 95%, non-condensing.
13) Total weight of CCTV cameras (including the housing, sunshield, and all internal components shall be less than 18 pounds.

The enclosure shall be secured with a mounting plate/attachment designed to withstand a 90mph sustained wind speed with a 30% gust factor.

907-650.02.11--Electrical. The minimum electrical requirements include:

1) The CCTV Camera System shall be furnished with any and all equipment required for a fully functional system, including all appropriate power and communications cables as defined by the manufacturer.
2) The power cables shall be sized to meet the applicable National Electrical Code (NEC) requirements.
3) Total power consumption shall not exceed 125 watts.
4) All devices supplied as system components shall accept, as a primary power source, 120 volts of alternating current (VAC) at an input of 60 hertz. Any device that requires source input other than 120 VAC at 60 hertz, such as cameras, PTUs, receiver/drives and dome heaters/blowers that operate at 24 volts or other, shall be furnished with the appropriate means of conversion.

907-650.02.12--Coaxial Cabling. The minimum coaxial interconnect cable requirements include:

1) The coaxial cable from the CCTV Camera System to the equipment cabinet shall be Belden 8281 or approved equivalent.
2) RG 59/U, 20AWG, bare copper conductor, polyethylene insulation.
3) 98% tinned copper, double braid shield, black polyethylene jacket.

4) Characteristic Impedance: 75 ohms (Ω), nominal.
5) Capacitance (conductor to shield): 21pF/ft; Inductance: 0.131uH/ft, nominal.

907-650.02.13--Surge Protection. All CCTV Camera System electrical interconnects shall be protected from voltage surges caused by lightning and external electromagnetic fields. The minimum surge protection requirements include:

1) Surge protectors shall be furnished for all non-dielectric cable and conductors (video, data/signal and device/assembly power) between the CCTV Camera System and the equipment cabinet.
2) The surge protectors shall have leads that are kept to a minimum length as recommended by the surge device manufacturer.
3) All surge protection devices shall be designed to meet the temperature and humidity requirements expected in this type of outdoor application.
4) All Surge protectors shall be U.L. listed (UL 1449, UL 497, 497A, 497B, etc., as appropriate) and bonded to the same single-point ground point.
5) Coaxial Cable Surge protectors for coaxial cable shall meet/provide the following functionality:
   a. Attenuation: 0.1dB @10 MHz, typical
   b. Input/Output Impedance: 75 ohms nominal
   c. Operating Voltage of the surge protector shall match characteristics of the ITS device/assembly
   d. Peak Surge Current: 5,000-amperes for an 8x20 microsecond waveform
   e. Response Time: 1 nanosecond or less
6) Low Voltage/Signal Cable Surge protectors for data/signal/control cable shall meet/provide the following functionality:
   a. Peak Surge Current: 10,000-amperes for an 8x20 microsecond waveform
   b. Response Time: 1 nanosecond or less
   c. Life Expectancy: Capable of surviving at a minimum of 25 occurrences at 2000-amperes
7) CCTV power surge protectors for power from equipment cabinet power distribution to the CCTV Camera System shall meet/provide the following functionality:
   a. Frequency: DC to 10MHz
   b. Clamping Voltage: < 30VAC (rms) or 42VDC
   c. Insertion Loss: < 0.2dB
   d. Input/Output Impedance: 75 ohms, typical
   e. Peak Surge Current: 3000-amperes
   f. Response Time: 1 nanosecond or less

907-650.03--Installation Requirements. All equipment shall be installed according to the manufacturer's recommendations, the Plans and as follows:

1) Materials and associated accessories/adapters shall not be applied contrary to the manufacturer's recommendations and standard practices.
2) Shall include all materials needed to permanently mount the CCTV camera to the support structure as indicated in the plans.

3) Furnish and install power, video, and data cables, and any and all ancillary equipment required to provide a complete and fully operational CCTV system site.
4) Verify all wiring meets NEC requirements where applicable.
5) All above requirements apply to both new CCTV sites as well as sites where an existing CCTV is being replaced under the contract.

907-650-03.1--CCTV Test Requirements. The Contractor shall conduct a Project Testing Program. All costs associated with the Project Testing Program shall be included in overall contract prices; no separate payment will be made for any testing.

a) The Contractor is responsible for planning, coordinating, conducting and documenting all aspects of the Project Testing Program. The Project Engineer and/or the Project Engineer's 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 the Project Engineer's representatives reserve the right to attend and observe all tests.

b) 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.

c) No testing shall be scheduled until approval of all project submittals and approval of the test procedures for the given test.

d) The Contractor shall provide all ancillary equipment and materials as required in the approved test procedures.

e) 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.

f) 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.

g) 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.

h) 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.

i) 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. An 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.

j) 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.

907-650.04--Method of Measurement. On-Street Video Equipment will be measured per each camera installation. Such measurement shall be inclusive of camera unit, housing, pan/tilt drive, receiver/driver, mounting hardware and any enclosures necessary. It shall also include any items necessary to mount the camera unit from a mast arm pole, steel strain pole, pole extension pipe, etc.

The On-Street Video System will be measured for payment per each as follows:

1) 50% of the contract unit price upon delivery of equipment and approval of any bench and/or pre-installation test results, as prescribed in Project Testing Program.

2) Additional 40% of the contract unit price upon approval of Stand Alone Acceptance Test results.

3) Final 10% of the contract unit price upon Final Project Acceptance.

907-650.05--Basis of Payment. On-Street Video Equipment, measured as prescribed above, will be paid for at the contract unit price bid per each, which price shall be full compensation for furnishing all materials, for all installing, connecting, cutting, pulling and testing and for all equipment, tools, labor and incidentals necessary to complete the work. Required cabinet facilities, including transformer and/or disconnects, will not be measured for separate payment.

Payment will be made under:

907-650-A: On-Street Video Equipment * - per each

* Type may be specified as an option

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-653-1 **CODE: (SP)**

DATE: 10/31/2008

SUBJECT: LED Internally Illuminated Signs

Section 907-653, Traffic and Street Name Signs, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby modified as follows:

907-653.01--Description. After the first paragraph of Subsection 653.01 on page 540, add the following:

This work also may consist of install illuminated traffic or street name signs as shown on the plans and set forth herein.

907-653.02--Materials. After Subsection 653.02.3 on page 540, add the following:

907-653.02.4--Illuminated Traffic Signs. This illuminated traffic sign shall be a LED edge-lit internally illuminated regulatory signs which has a single sided rigid mount.

The size of the signs shall be shown on the plans. The standard outer widths for these signs are 24" and 30". The maximum thickness of the sign shall be 1.60 inches. The maximum weight shall not exceed 50 pounds.

The long edges of the sign shall be made from a single section of 6000 series aluminum extrusion. The ends caps shall be made from a single section of aluminum and shall be affixed to the frame with stainless steel screws. The power supply shall be mounted internally in one of the end caps. The non-electrical end cap shall be removable to enable replacing panels and components.

The sign shall have a front panel that is UV, weather, abrasion and impact resistant. The front panel shall be replaceable so that maintaining agencies have the option to supply their own sheeting and electrocut film for the sign faces.

The sign must rigid mount directly to the signal mast arm or to a sign mast arm with no moving parts. Sign bracket must be able to be leveled to accommodate mast arms that are slightly off level. Sign bracket hardware must mount to Pelco Astro-Brac - AS-3009, SECO Mast-O-Bracket - CM-42, or approved equivalent.

The sign and power supply should be able to withstand and operate at temperature extremes of -22ºF to +140ºF.

Signs shall be tested and certified for the following environmental conditions:

- Exclusion of Water Test

- Strain Relief Test
- Temperature Test
- Dielectric Voltage - Withstand Test.

Sample signs, the sign's technical design, and the manufacturer's facilities must all be tested and routinely inspected in accordance with the Underwriters Laboratories' Standards for Electric Signs (UL 48).

The sign shall meet the following structural specifications:

Wind Loading
150 mph with 1.14 gust factor and ice loading as per AASHTO LTS-4 2001

Fatigue
Galloping, Natural Wind Gusts, Truck-Induced Gusts per AASHTO LTS-4 2001

Ice Loading
As per AASHTO LTS-4 2001.

Shock
ANSI C136.31
10 G inertial applied perpendicular and vertically to sign face

Vibration
Oscillations of 12 in. amplitude at 1 Hz over 20 years, including fatigue considerations per FHWA recommendations for signage

The entire surface of the sign panel must be evenly illuminated with a minimum average brightness reading at the letters of 400 lux and a variation of no more than 15% for any reading from the average (minimum of 50 readings). Each background reading measured must not vary by more than 15% (minimum of 50 readings) from the average of the background brightness readings. The light transmission factor of the sign panel must provide a letter to background ratio of a minimum of 4:1.

The light source for the sign shall be LEDs (light emitting diodes). LEDs shall be mounted along both the top and bottom edges of the sign. The LEDs shall evenly illuminate a light panel that is the same dimensions of the sign face. The LEDs shall have a minimum rated lumen maintenance of 70% at 50,000 hours. A maximum of four LEDs per square foot shall be used.

The average power consumption of the sign shall not exceed 25 watts.

The sign shall be an Energy Star Qualified Product.

Manufacturer must be ISO 9001:2000 certified.

The sign shall be listed and approved to UL 48 Standards by a Nationally Recognized Testing

Laboratory. The outside of the sign shall be marked with a certification mark for Electric Signs UL 48.

Sign must be guaranteed for a minimum of one year.

907-653.02.5--Illuminated Street Name Signs. The size of the signs shall be shown on the plans. The standard widths for these signs are 48 inches, 72 inches and 96 inches. The standard height is 19 inches and 24 inches. The signs can be single or double faced.

The body shall be aluminum with a minimum of three Light Emitting Diode (LED) light bars. The maximum allowable weight of the sign without hanging brackets shall be 124 pounds.

The body of the sign shall consist of an aluminum one-piece box type enclosure and separated hinged door assembly. The top of the sign shall body shall include drip rails to prevent water from entering the electrical housing. All seams shall be continuously welded for a watertight seal. A minimum of three .025-inch drain holes shall be located in the bottom of the sign body, a maximum of one foot from each side of the sign.

The color of the exterior of the sign assembly shall be glossy black. All exterior surfaces of the sign assembly shall be powder-coat painted in accordance with Military Standard MIL-C-24712. Finish will meet requirements of ASTM Designations: D 3359, D 3363 and D 552. A quality assurance program shall be in place, meeting MIL-1-45208A.

Sides shall have a removable face. The aluminum door shall be one-piece frame construction. The door shall open in a downward motion. The sign face shall be secured by attaching four frame plates (bottom, top and two sides) secured by studs and nuts to hold the sign face in place. Slide-in grooves will not be accepted. The door shall have a full-length stainless steel hinge on the bottom edge. The door shall be sealed with a UL listed foam gasket. The gaskets shall be installed continuously on the doorframe to seal the sign face to the doorframe. Another strip shall be installed on the sign body matching where the door seals. The door shall be secured from opening when the sign is flexed. The threaded portion of the thumb screw shall screw into captive nut assembly on the sign body. All hardware shall be Type 304 or 316 stainless steel.

Sign shall be UL listed and approved.

The sign face shall be constructed of 1/8-inch white polycarbonate.

The sign shall have UL foam approved gaskets to provide a watertight seal between the door and the housing and between the sign panel and the doorframe.

The sign shall also include a replaceable fuse at the electrical power wire entrance compartment.

The sign assembly including sign panel and mounting assemblies shall be designed, tested and constructed so that no permanent deformation, warping or failure will occur when subjected to 110 mph wind loads.

The sign shall include three (3) solid-state high flux/high output ultra brightness white LED light engine strips, utilizing state-of-the-art high power LED's and high efficient heat-dissipating metal carrier body. These strips shall be of length adequate to effectively light the sign face. Light strips shall be mounted horizontally within the interior of the sign of adequate distance from each side for double face signs, or from the single side in single face signs to allow for proper light distribution across the sign face so as there are no dark spots on the sign face. Lengths are 33 or 45 inches, with LED's on 6-inch centers. Power consumption shall be nine (9) watts at 33-inch length and 12 watts at the 45-inch length. Operating voltage shall be 12 VDC. View angles of the LEDs shall be 120 degrees with the color temperature of the pure white LEDs of 4500°K to 8000°K.

The LED sign shall emit a uniform average of 600 lux through the sign face.

State-of-the-art LED light engine shall have a DC current of 700 mA for the 33-inch length and 1050 mA for the 45-inch length. LED junction temperature shall be a maximum of 120°C with an operating ambient temperature of -25°C to 50°C. The operational life of the LED's shall be a minimum of 10 years at 50% duty cycle.

907-653.04--Method of Measurement. Delete the first paragraph of Subsection 653.04 on page 541 and substitute the following:

Traffic sign of the type specified will be measured by the square feet or each, which measurement being inclusive of aluminum sign blank, applied reflective sheeting, mounting brackets and banding materials and begin inclusive of all materials, work and services necessary for a properly constructed sign.

Street name sign of the type specified will be measured by the square feet or each, which measurement being inclusive of aluminum sign blank, applied reflective sheeting, mounting brackets and banding materials and begin inclusive of all materials, work and services necessary for a properly constructed sign.

907-653.05--Basis of Payment. Delete the first paragraph of Subsection 653.05 on page 541 and substitute the following:

Traffic sign and street name sign, measured as prescribed above, will be paid for at the contract unit price per square feet or each, which price shall be full compensation for furnishing the sign and mounting hardware and installing the same on the span wire, signal pole or mast arm, and for all equipment, tools, labor and incidentals necessary to complete the work.

Add the following to the list of pay items on page 541.

907-653-A: Traffic Sign, Type	- per square feet or each
907-653-B: Street Name Sign, Type	- per square feet or each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-657-4 **CODE: (SP)**

DATE: 04/22/2009

SUBJECT: Fiber Optic Cable (OSP)

Section 657, Fiber Optic Cable (OSP), of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in total Section 657 beginning on page 541, and substitute the following:

SECTION 907-657 -- FIBER OPTIC CABLE (OSP)

907-657.01--Description. The work shall consist of the construction of the infrastructure required to install fiber optic cable. The infrastructure shall include all necessary conduits, pull boxes, pole line hardware, building entries, risers and fiber cable to make a complete system.

907-657.02--Materials.

907-657.02.1--Single Mode Fiber Optic Cable (FO Cable). The Contractor shall provide 72-count fiber optic cable that meets the following requirements:

- All-dielectric, outside plant, loose tube cable with central strength/anti-buckling member
- Dry water blocking materials and construction
- Reverse oscillating “SZ” stranded buffer tube construction
- High tensile strength yarn
- Medium density polyethylene outer jacket
- 72-fiber cable with six (6) active buffer tubes and 12 individual stranded fibers per buffer tube
- Cable construction design that allows no more than six (6) buffer tube positions
- Maximum diameter 0.48 inches
- Maximum weight 0.07 pounds per foot.

The Contractor shall provide a Corning ALTOS All-Dielectric, Pirelli FlexLink, OFS MiDia, or approved equivalent cable. This cable shall be designated as a trunk cable.

The Contractor shall ensure that the cable can withstand a maximum pulling tension of 600 pounds (lbf) during installation and 180 pounds (lbf) installed long term (at rest).

The cable shall have a shipping, storage and operating temperature range of -30°C to +70°C and installation temperature range of -30°C to +60°C.

The Contractor shall provide cable with outer jacket marking using the following template:

Manufacturer's Name -"Optical Cable" - Month/Year of Manufacture -Telephone Handset Symbol - "MDOT" - "72F SM"

The Contractor shall include in the outer jacket marking the cable sequential length in accordance with the following:

- In English units every two (2) feet
- Within -0/+1% of the actual length of the cable
- In contrasting color to the cable jacket
- Marking font height no less than 0.10 inch
- On any single length of cable on a reel, the sequential length markings do not run through "00000"

907-657.02.2--Single Mode Fiber Optic Cable Indoor/Outdoor Riser Rated. The Contractor shall provide fiber optic plenum rated cable that meets the following requirements when called for on the Plans:

- All-dielectric, inside plant, loose tube central core cable
- High tensile strength yarn surrounding the central tube core
- Dry water blocking materials and construction
- 72-fiber cable with six (6) active buffer tubes and 12 individual stranded fibers per buffer tube
- Corning Freedm LST All-Dielectric, Pirelli CentraLink, or approved equivalent cables shall be provided. This cable shall be designated as the building entry cable.

The Contractor shall ensure that the cable can withstand a maximum pulling tension of 300 pounds (lbf) during installation.

The cable shall have a shipping, storage and operating temperature range of -30°C to +70°C and an installation temperature range of -10°C to +60°C shall be provided.

The Contractor shall provide cable with outer jacket marking using the following template:

Manufacturer's Name - "Optical Cable" - Month/Year of Manufacture - Telephone Handset Symbol - "MDOT" - "72F SM"

The Contractor shall include in the outer jacket marking the cable sequential length in accordance with the following:

- English units every two (2) feet.
- Within -0/+1% of the actual length of the cable
- Contrasting color to the cable jacket
- Marking font height no less than 0.10 inch
- The sequential length markings do not run through "00000" on any single length of cable on a reel

907-657.02.3--Single Mode Fiber Optic Drop Cable (FO Drop Cable). The Contractor shall provide 12-Fiber, Pre-Terminated Drop Cable Assemblies. These assemblies shall be employed when connecting a camera, traffic controller, DMS or other device to the main cable.

Assemblies shall be factory assembled and terminated on one end with ceramic ferrule, ST compatible, heat cured epoxy connectors with an operational temperature of -40°C to +70°C. Each connector shall have a minimum of a 1-inch strain relief boot.

Insertion loss for each connector shall not exceed 0.30 dB.

Return loss for single mode connectors shall be >-45 dB.

Each assembly shall be fully tested and those test results placed on a test tag for each assembly.

Each assembly shall be individually packaged within a box or reel, with the submitted manufacturer's part number marked on the outside of the package.

Individual 250-µm coated fibers shall be up-jacketed to 1/8-inch using fan-out tubing. This tubing shall contain a 900-µm Teflon inner tube, aramid yam strength members and an outer jacket.

The fan-out tubing shall be secured to the cable in a hard epoxy plug transition. Length of the individual legs shall be a minimum of three feet with the length difference between the shortest and longest legs of the assembly being no more than two inches.

The 12-Fiber, Pre-terminated Drop Cable Assemblies provided shall meet the following minimum requirements:

- All-dielectric, outside plant, loose tube central core cable shall be used
- High tensile strength yarn surrounding the central tube core
- Dry water blocking materials and construction
- Twelve (12) individual stranded fibers contained within the central tube core
- Corning Freedm LST All-Dielectric, Pirelli CentraLink, or approved equivalent cables shall be used. This cable shall be designated as the drop cable

The Contractor shall ensure that the cable can withstand a maximum pulling tension of 300 pounds (lbf) during installation.

The cable shall have a shipping, storage and operating temperature range of -30°C to +70°C and an installation temperature range of -10°C to +60°C.

The Contractor shall provide cable with outer jacket marking using the following template:

Manufacturer's Name - "Optical Cable" - Month/Year of Manufacture - Telephone Handset Symbol - "MDOT" - "12F SM"

The Contractor shall include in the outer jacket marking the cable sequential length in

accordance with the following:

- English units every two (2) feet
- Within -0/+1% of the actual length of the cable
- Contrasting color to the cable jacket
- Marking font height no less than 0.10 inch
- The sequential length markings do not run through "00000" on any single length of cable on a reel

907-657.02.4--Plenum Rated Nonmetallic Corrugated Raceway. The Contractor shall provide plenum rated nonmetallic corrugated raceway inside buildings when cable is not in rigid conduit when called for on the plans.

The installation shall conform to NEC articles 770 and 800.

Raceway shall meet UL Standards 910 and 2024.

The Contractor shall provide 2-inch diameter raceway unless larger is called for in the plans.

The Contractor shall provide Fiber Optic Fusion Splice (FO Splice Fusion) for splicing of all fibers with a fully automatic portable fusion splicer that provides consistent low loss (max 0.10 dB) splices.

Splicer shall provide three-axis fiber core alignment using light injection and loss measurement techniques.

The fusing process shall be automatically controlled.

The splicer shall provide splice loss measurements on an integral display, as well as a magnified image of the fiber alignment.

The Contractor shall retain ownership of the fusion splicer.

907-657.02.5--Fiber Optic Connectors. The Contractor shall provide fiber optic connectors for all fiber optic infrastructures including but not limited to fiber optic termination cabinets, fiber optic drop panels, and fiber optic patch cords.

The Contractor shall provide only factory-installed keyed ST compatible connectors for all fiber optic infrastructures.

The Contractor shall provide only factory-installed connectors of a type other than ST when required by the Network Switches.

Field-installed connectors shall not be used.

Adapter couplers shall not be used to change connector types.

Ceramic ferule connectors, factory-installed, with a thermal-set heat-cured epoxy and machine polished mating face shall be used.

Connectors shall be installed as per manufacturer application and recommendations, including proper termination to the outer-tubing (900-micron tubing, 3-mm fan out tubing, etc.) required for the application.

Connectors rated for an operating temperature of -40°C to +75 °C shall be used.

Simplex connectors for all male ST connectors shall be used and a latching cover for two male connectors being used in a duplex configuration shall be provided. Female couplers may be duplex but must allow simplex mating connectors.

Dust caps shall be provided for all exposed male connectors and female couplers at all times until permanent connector installation.

907-657.02.6--Fiber Optic Termination Cabinet (FO Termination Cabinet). Fiber optic termination cabinets shall be provided in communications hubs, field junctions, and the MDOT Traffic Management Center (TMC) as shown in the Plans for termination of 72-fiber outside plant (OSP) cable.

The Contractor shall provide wall/shelf mount 12-fiber distribution cabinet equipped with fiber optic connector modules in a 12-fiber configuration. These will be used in field equipment and communication cabinet locations.

Termination cabinets with cable management features included shall be provided.

The Contractor shall use termination cabinets that are fully compatible with all components of the fiber optic infrastructure as specified, including, but not limited to, fiber optic cable, fiber optic fusion splices and fiber optic connectors.

The Contractor shall provide rack-mount termination cabinets designed to fit standard 19-inch EIA equipment racks.

The Contractor shall provide all mounting hardware and supports to mount the termination cabinets in the locations shown in the Plans.

The Contractor shall provide fiber optic termination cabinets providing 72-fiber connectors and capable of storing 72 fusion splices in splice trays.

The Contractor shall provide termination cabinets that integrate the splice trays and connector modules into one compartment within one cabinet, or houses the splice trays and connector modules in separate compartments integrated into one cabinet.

The maximum dimensions of a complete termination cabinet shall be 7-rack units, 12.25 inches high by 16 inches deep.

Fiber optic termination cabinets shall be fully enclosed metallic construction with a protective hinged front cover for the connector ports.

The cabinet shall have cable access on all sides of the enclosed area behind the connector port panel.

The Contractor shall provide sufficient splice trays for storing 72 fusion splices in 12 or 24-splice increments.

The Contractor shall provide termination cabinets with fiber optic connector modules in a 12 fiber configuration of six (6) rows of one (1) duplex connector couplers. Connector modules shall mount vertically in the termination cabinet front panel.

Connector modules shall include clearly legible and permanent labeling of each of the 12 fiber connector couplers, and shall be labeled and identified as shown in the Plans.

The Contractor shall provide factory-assembled 12-fiber termination interconnect cables (pigtail cables) to be fusion spliced to the outside plant or indoor cable and connected to the rear of the connector modules.

Termination interconnect cables shall be all-dielectric, single jacketed cable with high tensile strength yarn surrounding 12 individual 900-micron fibers following EIA/TIA-598B color identification with factory-installed connectors.

The Contractor shall provide all incidental and ancillary materials including but not limited to grommets, cable strain relief and routing hardware, blank connector panels and labeling materials.

The cable shall be new (unused) and of current design and manufacture.

907-657.02.7--OSP Closures for Aerial, Pole Mount, Pedestal and Hand Hold Environments. OSP closures for aerial, pole mount, pedestal and hand hold shall be capable of accepting up to eight cables. The closures shall be capable of storing up to eight 90-inch lengths of expressed buffer tubes and up to 96 splices.

Assembly shall be accomplished without power supplies, torches, drill kits or any special tools. Re-entry shall require no additional materials.

Sealing shall be accomplished by enclosing the splices in a polypropylene case that is clamped together with a stainless steel latch and sealed with an O-ring.

Closure shall be capable of strand mounting with the addition of a strand mounting bracket.

Splice case shall be non-filled, non-encapsulate to prevent water intrusion, and shall allow re-entry without any special tools.

The closure shall be capable of preventing a 10-foot water head from intruding into the splice

compartment for a period of seven (7) days.

It is the responsibility of the Contractor to ensure that the water immersion test has been performed by the manufacturer or an independent testing laboratory, and the appropriate documentation has been submitted to the Engineer.

907-657.02.8--OSP Closures for Drop Cable Splice Points. OSP closures for aerial, pole mount, pedestal and hand hold shall be capable of accepting the trunk cable and two drop cables. The closures shall be capable of storing up to eight 90-inch lengths of expressed buffer tubes and up to 48 splices.

Assembly shall be accomplished without power supplies, torches, drill kits or any special tools. Re-entry shall require no additional materials.

Sealing shall be accomplished by enclosing the splices in a polypropylene case that is clamped together with a stainless steel latch and sealed with an O-ring.

Closure shall be capable of strand mounting with the addition of a strand mounting bracket.

Splice case shall be non-filled, non-encapsulate to prevent water intrusion, and shall allow re-entry without any special tools.

The closure shall be capable of preventing a 10-foot water head from intruding into the splice compartment for a period of seven days.

It is the responsibility of the Contractor to ensure that the water immersion test has been performed by the manufacturer or an independent testing laboratory, and the appropriate documentation has been submitted to the Engineer.

907-657.02.9--Patch Cords and Jumper Cables. Any patch cords or jumper cables required to connect the new fiber and equipment at existing locations shall be considered incidental and shall be included in the cost of pay items 907-657-A and 907-657-B.

Any patch cords used for system configuration shall be compatible with fiber types and connectors specified herein.

Single-mode patch cords shall be yellow in color.

Jacketing material shall conform to the appropriate NEC requirement for the environment in which installed.

All cordage shall incorporate a 900-µm buffered fiber, aramid yam strength members and an outer jacket.

Patch cords may be simplex or duplex, depending on the application.

Attenuation shall be less than 1.0 dB/km @ 1310 nm, 0.75 dB/kin @ 1550.

907-657.02.10 Cable Labels. The Contractor shall provide cable labels that meet the following requirements:

- Self-coiling wrap-around type
- PVC or equivalent plastic material with UV and fungus inhibitors
- Base materials and graphics/printing inks/materials designed for underground outside plant use including solvent resistance, abrasion resistance and water absorption
- Minimum size of 2.5 inches wide by 2.5 inches long
- Minimum thickness of 0.010 inches
- Orange label body with pre-printed text in bold black block-style font with minimum text height of 0.375 inches
- The Contractor shall pre-print the following text legibly on labels used for all fiber optic trunk cables:

  Caution Fiber Optic Cable Mississippi Department of Transportation (601) 359-1454

- The Contractor shall pre-print the following text legibly on labels used or all fiber optic drop cables (FO Drop Cable):

  Caution Fiber Optic Drop Cable Mississippi Department of Transportation (601) 359-1454

- On all cable labels, the Contractor shall print the text specified above twice on the label with the text of the second image inverted. The end result shall be text which "reads correctly" when the label is coiled onto a cable.

907-657.02.11--Cable Markers. The Contractor shall provide low profile soil cable markers which meet the following requirements:

- 3.5 inches in diameter
- UV stabilized for Maximum fade resistance
- Durable and abrasion resistant
- Lawn mower resistant
- Orange in color
- Printed Legend:

Fiber Optic Cable
Mississippi Department of Transportation
Traffic Engineering Division (601)359-1454

The Contractor shall install cable markers with a 13-inch nylon stake every 500 feet along the fiber run.

907-657.02.12--Conduit Detection Wire. Conduit detection wire shall be #10 AWG stranded

copper, orange-insulated, THHN -THWN conductor.

The Contractor shall furnish and install a detection wire surge protection system. The Contractor shall ensure that detection wires are attached to a surge protection system designed to dissipate high transient voltages or other electrical surges.

The Contractor shall ensure that the detection wire surge protection system is grounded to a driven rod within 10 feet of the system using AWG #6 single conductor wire. Grounding must be done through a stand alone system not connected to power or ITS device grounding.

The Contractor shall ensure that the surge protection system normally allows signals generated by locate system to pass through the protection system without going to ground.

907-657.02.13--Project Submittal Program Requirements. The Contractor shall provide project submittals for all fiber optic infrastructures. The project submittals for fiber optic infrastructure shall include all items in this provision and any additional requirements included in any Notice to Bidders.

The Contractor shall provide project submittals including manufacturer recommended operations, maintenance and calibration procedures for the following equipment:

- Fiber optic installation and testing tools
- Fusion splicers
- Cable pulling strain dynamometers and breakaway links
- Cable air jetting/blowing systems
- OTDRs
- Optical attenuation testers (light sources and power meters)

The Contractor shall submit documentation and proof of manufacturer recommended operator training and certification for the following equipment:

- Fusion splicers
- Cable air jetting/blowing systems
- OTDRs
- Optical attenuation testers (light sources and power meters)

907-657.03--Construction Requirements.

907-657.03.1--General. The Contractor shall install all fiber optic infrastructures according to the manufacturer's recommended procedures and specifications.

The Contractor shall provide all necessary interconnections, services and adjustments required for a complete and operable data transmission system.

All pole attachments, service loops and conduit risers shall be placed to minimize the possibility of damage as well as to facilitate future expansion or modernization.

The cable shall be installed in continuous runs as indicated on the plans. Splices shall be allowed only at drop points or reel end points specified in the plans.

At drop locations only, those fibers necessary to complete the communication path shall be spliced. Other fibers in the cable(s) shall be left undisturbed, with a minimum of five feet of buffer tube coiled inside the closure.

Sufficient slack shall be left at each drop point to enable access of the cable components and splicing to occur on the ground. This is typical two times the pole height plus 15 feet.

For aerial installations, the following minimum slack requirements shall apply:

- For aerial slack storage at splice points, a radius controlling device, commonly referred to as a SNO-SHOE, shall be used for securing resulting cable slack at aerial splice points and shall be mounted directly to the strand.

- For aerial cable runs exceeding 6-pole spans between splice points as indicated on the plans, two opposing SNO-SHOES shall be placed on the span 50 feet apart to provide for a 100-foot service loop for future drops and for slack for repair and pole relocations.

Drop cable shall be routed to the controller cabinets via conduit risers as illustrated in the plans. The cable entrance shall be sealed with a duct plug designed for fiber optic cable to prevent water ingress.

The minimum requirement for fiber protection outside a fiber optic enclosure in ALL cases shall be 1/8-inch fan-out tubing, containing a hollow 900-µm tube, aramid strength members and an outer jacket, and shall be secured to the cable sheath.

The minimum requirement for fiber protection inside wall mount or rack mount fiber enclosure shall be 900-µm buffering, intrinsic to the cable in the case of tight buffered fibers, or in the case of 250-µm coated fibers, a fan-out body and 900-µm tubing secured to the buffer tube(s).

During installation, even if the tension specifications for the cable are not exceeded, the first ten feet shall be discarded.

Warning tape shall be placed 12 inches above the cable not to deviate $\pm$18 inches from the centerline of the optical cable. Warning tape shall be at least two inches wide and colored orange.

907-657.03.2--Cable Shipping and Delivery. The cable shall be packaged on reels for shipment. Each package shall contain only one continuous length of cable. The packaging shall be constructed as to prevent damage to the cable during shipping and handling.

Both ends of the cable shall be sealed to prevent the ingress of moisture.

A weatherproof reel tag shall be attached to each reel identifying the reel and cable so that it can

be used by the manufacturer to trace the manufacturing history of the cable and the fiber. A cable data sheet shall be included with each reel containing the following information:

- Manufacturer name
- Cable part number
- Factory order number
- Cable length.
- Factory measured attenuation of each fiber

The Contractor shall cover the cable with a protective and thermal wrap.

The outer end of the cable shall be securely fastened to the reel head so as to prevent the cable from becoming loose in transit. The inner end of the cable shall be projected a minimum of 6.5 feet into a slot in the side of the reel, or into housing on the inner slot of the drum, in such a manner as to make it available for testing.

Each reel shall be plainly marked to indicate the direction in which it is to be rolled to prevent loosening of the cable on the reel.

907-657.03.3--Cable Handling and Installation. The Contractor shall not exceed the maximum recommended pulling tension during installation as specified by the cable manufacturer.

The Contractor shall continuously monitor pulling tensions with calibrated measuring devices, such as a strain dynamometer.

All pulled installations shall be protected with calibrated breakaway links.

The Contractor shall ensure that the minimum recommended bend radius is not exceeded during installation as specified by the cable manufacturer. Unless the manufacturer's recommendations are more stringent, the following guidelines shall be used for minimum bend radius:

- 20 X Cable Diameter Short Term - During Installation
- 10 X Cable Diameter Long Term - Installed

Before cable installation, the cable reels and reel stands shall be carefully inspected for imperfections or faults such as nails that might cause damage to the cable as it is unreeled.

All necessary precautions shall be taken to protect reeled cable from vandals or other sources of possible damage while unattended. Any damage to reeled cable or the reel itself shall necessitate replacement of the entire cable section at no additional cost to the State.

Whenever unreeled cable is placed on the pavement or surface above a pull box, the Contractor shall provide means of preventing vehicular or pedestrian traffic through the area in accordance with the safe maintenance of traffic provisions.

The cable shall be kept continuous throughout the pull. Cable breaks and reel end splices are

permitted only in Type 5 Pull Boxes and occur at a minimum of 10,000 feet..

Where a cable ends in an underground fiber optic closure, all unused fibers and buffer tubes shall be secured and stored in splice trays in preparation for future reel end splicing and continuation.

907-657.03.4--Cable Storage. The Contractor shall properly store all cable to minimize susceptibility to damage. The proper bend radius shall be maintained, both short and long term, during cable storage.

Storage coils shall be neat in even length coils, with no cross over or tangling.

Storage coils of different cables shall be kept completely separate except when the cables terminate in the same splice closure.

Storage coils shall be secured to cable racking hardware with tie wraps, Velcro straps, or non-metallic cable straps with locking/buckling mechanism. No adhesive or self-adhering tapes, metal wires and straps, or rope/cord shall be used to secure coils.

Unless otherwise noted on the plans, the following are the requirements for cable storage for underground applications:

- Trunk cable in Type 4 pull box ..... 25 feet
- Trunk cable in Type 5 pull box ..... 200 feet
- Drop cable in Type 4 pull box ..... 10 feet
- Drop cable in Type 5 pull box, not terminated in a splice closure ..... 10 feet
- Drop cable in Type 5 pull box, terminated in a splice closure with the trunk cable ..... 100 feet
- Trunk cable end in Type 5 pull box ..... 200 feet
- Drop cable terminated in same splice closure as trunk cable end ..... 200 feet

The Contractor shall label each pull box with a numbered disk obtained from the traffic engineering department. The disk shall be installed in accordance with the manufactures specification on the lid of each pull box. Numbers shall be noted on the As-Built plans for each pull box.

No slack cable shall be stored inside the communications hub building or Control Center.

907-657.03.5--Cable Labels. Cable labels shall be installed on all trunk and drop fiber optic cables. The installed cable shall be cleaned of all dirt and grease before applying any label.

The Contractor shall label all cables in or at every location where the cable is exposed outside of a conduit, innerduct or pole using the cable IDs for trunk cables or the device number for drop cables.

As a minimum, cable labels shall be installed in the following locations:

- Within 12 inches of every cable entry to a pull box, equipment cabinet, communications hub, or the TMC
- Within 12 inches of the exterior entry point of every fiber optic splice closure, termination cabinet and drop panel
- Every 30 feet for the entire length of cable in any storage coil in pull boxes
- Within one (1) foot of every pole attachment
- On every riser
- On every splice enclosure

907-657.03.6--Conduit Detection Wire. The Contractor shall install one conduit detection wire in all conduit banks. Conduit detection wire is required in all conduit banks installed by any installation method, including trenching, directional boring or plowing.

Only one conduit detection wire is required per installed conduit bank regardless of the number of conduits installed in that segment. Conduit detection wire shall be installed inside the conduit.

Conduit detection wire is not required for structure mounted conduit, except where underground segments of structure mounted conduit are greater than 20 feet in length.

The conduit detection wire shall be continuous and unspliced between pull boxes and shall enter the pull boxes at the same location as the conduit with which it is installed, entering under the lower edge of the pull box.

Four (4) feet of conduit detection wire shall be coiled and secured in each pull box or vault.

When two or more detection wires are in any pull box, the Contractor shall mechanically splice all detection wire together.

Conduit detection wire is required in drop cable conduits.

A detection wire surge protection system shall be furnished and installed. Detection wires shall be attached to surge protection systems designed to dissipate high transient voltages or other electrical surges. The detection wire surge protection system shall be grounded to a driven rod within 10 feet of the system using AWG #6 single conductor wire. Grounding shall be done through a stand alone system not connected to power or ITS device grounding. The surge protection system shall normally allow signals generated by locate system to pass through the protection system without going to ground.

907-657.03.7--Splicing into Existing Fiber Optic Cable. At some locations, the Contractor may be required to splice new drop cable into existing fiber optic cable at existing pull boxes. The Contractor is responsible to protect all existing fiber during this work. No separate payment shall be made for splicing into the existing fiber. The cost for all fiber optic work and equipment shall be included in the bid price for pay items 907-657-A and 907-657-B.

907-657.03.8--Fiber Optic Connections at Existing Communication Nodes. In some locations, the Contractor shall be required to pull new fiber optic cable into an existing communications huts. No separate payment will be made for this work. The cost for pulling the

fiber into the hut, providing and installing the termination equipment, and terminating all the fibers shall be included in the cost of pay items 907-657-A and 907-657-B.

907-657.03.9--Drop and Insert Applications. The signal from the TMC to local controllers, cameras, and/or dynamic message signs will be conveyed via the backbone and branch cables.

The appropriate closure (Subsection 907-657.02.8) shall be used.

A 12-port fiber distribution cabinet and appropriate jumper shall be installed within the cabinet at locations approved by the Engineer.

At each device, the applicable fibers will be routed in and out of the equipment cabinet using a pre-terminated drop cable.

Only fibers required for the drop and insert shall be cut, no other fibers in the cable shall be cut without the approval of the Engineer.

The fibers shall be connected to the transmission equipment via ST/ST fiber optic patch cables.

The drop cable shall be routed in a position that will allow access to all installed components without movement of the cable.

In traffic signal control boxes the drop cable shall be routed up the left rear corner to a shelf mounted fiber optic termination cabinet.

In ITS equipment or communication cabinets the cable shall be routed neatly allowing for service of all installed components.

907-657.03.10--Testing Requirements.

907-657.03.10.1--General. The project testing program for fiber optic infrastructure shall include but is not limited to the specific requirements in this subsection.

All test results shall confirm physical and performance compliance with this TSP including but not limited to optical fibers and fusion splices. No event in any given fiber may exceed 0.10 dB. Any event measured above 0.10 dB shall be replaced or repaired at the event point.

The Contractor shall provide the tentative date, time and location of fiber optic infrastructure testing no less than seven (7) days in advance of the test. The Contractor shall provide confirmed date, time and location of fiber optic infrastructure testing no less than 48 hours before conducting the test.

The Contractor shall provide test results documentation in electronic format (3 copies) and printed format (3 copies). Electronic formats shall be readable in Microsoft Excel or other approved application. Printed copies shall be bound and organized by cable segment.

- Two sets are for the Traffic Engineering ITS Department

- One set are for the Engineer

All test results shall be provided in English units of measure of length.

All test results documentation shall be submitted to the Engineer within 14 days of completion of the tests.

907-657.03.10.2--Pre-Installation Test (PIT). The Contractor shall perform a PIT on all FO Cable prior to any cable removal from the shipping reels.

The Contractor shall perform a PIT on each cable reel delivered to the job site.

The PIT for FO Cable shall include but is not limited to:

- A visual inspection of each cable and reel
- An OTDR Test and documentation as required in the Standalone Acceptance Test (SAT) for three randomly selected fibers from each buffer tube

An Optical Attenuation Test is not required. However, if the Contractor decides to perform one of these tests for his or her own protection, it should be documented and provided to the Engineer.

907-657.03.10.3--Standalone Acceptance Test (SAT). The Contractor shall perform an SAT on all fiber optic infrastructures on this project after field installation is complete, including but not limited to all splicing and terminations. All fiber in pull boxes shall be in its final position mounted to the racks prior to the start of testing.

An SAT for each fiber in each cable shall include OTDR Tests and Optical Attenuation Tests.

For the Attenuation Tests, all fibers in all FO Cables and FO Drop Cables shall be tested from termination point to termination point, including:

- Fibers from FO Termination Cabinet to FO Termination Cabinet
- Fibers from FO Termination Cabinet to FO Drop Panel
- Fibers from FO Drop Panel to FO Drop Panel
- Fibers from FO Termination Cabinet to the end of the cable run in the last FO closure

All test results shall confirm compliance with this TSP including but not limited to optical fibers and fusion splices. No event in any given fiber may exceed 0.10 dB. Any event measured above 0.10 dB shall be replaced or repaired at the event point.

Test documentation shall include but is not limited to:

- Cable & fiber identification
- Cable & fiber ID and location - Physical location (device ID and station number of FO Termination Cabinet, FO Drop Panel, or cable end FO closure), fiber number, and truck

or drop cable ID for both the beginning and end point
- Operator name
- Engineer's representative
- Date & time
- Setup and test conditions parameters
- Wavelength
- Pulse width Optical Time Domain Reflectometer (OTDR)
- Refractory index (OTDR)
- Range (OTDR)
- Scale (OTDR)
- Ambient temperature
- Test results for OTDR test (each direction and averaged)
- Total fiber trace (miles)
- Splice loss/gain (dB)
- Events > 0.05 dB
- Measured length (cable marking)
- Total length (OTDR measurement)
- Test results for attenuation test (each direction and averaged)
- Measured cable length (cable marking)
- Total length (OTDR measurement from OTDR test)
- Number of splices (determined from as-builts)
- Total link attenuation

The OTDR Test shall be conducted using the standard operating procedure and recommended materials as defined by the manufacturer of the test equipment.

The Contractor shall use a factory patch cord ("launch cable") of a length equal to the "dead zone" of the OTDR to connect the OTDR and the fiber under test.

Bi-directional OTDR tests shall be conducted and bi-directional averages calculated for each fiber.

All tests shall be conducted at 1310 and 1550 nm for single mode cable.

The Contractor shall conduct the Optical Attenuation Test using the standard operating procedure and recommended materials as defined by the manufacturer of the test equipment.

Bi-directional Optical Attenuation tests shall be conducted and bi-directional averages calculated for each fiber.

A continuity or tone test shall be performed after installation to confirm that a continuous run of conduit detection wire was installed between pull boxes or vaults.

The Contractor shall prepare a test plan, supply equipment, conduct the test and document the results.

The test plan shall be submitted at least 15 working days prior to the desired testing date.

Testing shall not begin until the Engineer has approved the test plan, and all tests shall be conducted in the presence of the Engineer. The Traffic Engineering ITS Department representative shall be notified of the testing dates and invited to observe all testing.

The Traffic Engineering ITS Department may perform additional testing of any and all infrastructure using their own equipment. The Contractor may observe this testing.

The burn in period can not start until the Traffic Engineering ITS Department is satisfied with the installation.

907-657.03.11--Documentation - As-Built Plans. The Contractor shall provide GPS locations of all pull boxes, splices, termination equipment cabinets, DMS, CCTV, Detectors and all pole locations.

The Contractor shall record the sequential footage markers from the fiber optic trunk and drop cables for each GPS location.

The Contractor shall provide scanned PDF files of all plan sheets with pen and ink markups.

The Contractor shall also provide MDOT with an electronic file containing all of the data and test reports required above in a format that is compatible with Microsoft Excel.

A copy of all documentation shall be provided to the MDOT Traffic Engineering ITS Department and Project Office

The Contractor shall provide a site location inventory of ITS devices to include manufacturer model, serial numbers, and quantity. It shall also include the following:

- OTN Nodes and OTN Cards
- Fiber modems
- Video Encoders and Decoders
- Cameras
- Dome Camera housings
- DMS Signs
- Any other serial numbered devices installed

907-657.03.12--Training and Equipment. After the installation is complete, the Contractor shall provide formal classroom training and "hands-on" operations training for proper operation and maintenance of the fiber optic plant. The training shall be provided for up to six personnel designated by the Engineer and shall be a minimum of one day in duration. The training shall cover as a minimum preventive maintenance, troubleshooting techniques, fault isolation and OTDR trace analysis. All training materials shall be provided by the Contractor.

A Training Plan shall be submitted within 90 days of the Notice-to-Proceed. Approval of the Plan shall be obtained from the Engineer and the Traffic Engineering ITS Department. A

detailed explanation of the contents of the course and the time schedule of when the training shall be given shall be included in the Training Plan.

Prior to training, the Contractor shall submit resume and references of the training instructor(s) along with an outline of the training course in a Training Plan. Training instructor(s) shall be manufacturer-certified, experienced in the skill of training others. The training shall be conducted by a trainer with a minimum of four years of experience in training personnel on the operation and maintenance of fiber optic systems.

The Contractor shall furnish all handouts, manuals and product information for the training. The same models of equipment furnished for the project shall be used in the training. The Contractor shall furnish all media and test equipment needed to present the training. Training shall be conducted in the Jackson area.

907-657.04--Method of Measurement. Fiber optic cable of the type specified will be measured by the linear foot, measured horizontally along the conduit or aerially along the messenger cable. No differentiation will be made for cable installed underground or aerially.

Fiber optic drop cable and of the type specified will be measured by the linear foot from the trunk line to the controller cabinet.

The cost for all fiber optic work, equipment, and testing shall be included in the bid price for pay items 907-657-A and 907-657-B.

All required cabinet facilities shall not be measured for separate payment. All standard or special fiber optic modems, fan out boxes, connectors, termini nation cabinets, patch cords, raceways, splicing devices, splicing, detection wire, warning tape, above ground markers, backplane facilities, twisted pair communications cable interface devices, etc., and any other cabinet modifications required for the fiber optic system shall be included in the price bid for other items of work.

907-657.05--Basis of Payment. Fiber optic cable, fiber optic drop cable, and fiber optic video drop cable, measured as prescribed above, will be paid for at the contract unit price bid per linear foot, which price shall be full compensation for furnishing all materials, for all installing, connecting, cutting, pulling and testing and for all equipment, tools, labor and incidentals necessary to complete the work.

Payment will be made under:

907-657-A: Fiber Optic Cable, 72 SM - per linear foot

907-657-B: Fiber Optic Drop Cable, 12 SM - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-659-2 **CODE: (SP)**

DATE: 06/01/2007

SUBJECT: Traffic Management Center (TMC) Modifications

Section 907-659, Traffic Management Center (TMC) Modifications, is hereby added to and becomes part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-659 -- TRAFFIC MANAGEMENT CENTER (TMC) MODIFICATIONS

907-659.01--Description. The MDOT Central Traffic Management Center (TMC) is located in the Traffic Engineering Division in the MDOT Shop Complex at 2567 North West Street, Jackson, Mississippi. Regional and City Traffic Management Centers may be located statewide. The following is a list of existing/planned centers and their addresses:

City of Jackson TMC – 300 North State Street, Jackson, Mississippi (basement)
Southaven Combined TMC – 8791 Northwest Drive, Southaven, Mississippi (Police Department)
City of Ridgeland TMC – 304 Hwy 51, Ridgeland, Mississippi (City Hall)
Oxford Combined TMC – 715 Mollybarr Road, Oxford, Mississippi (Oxford Police Department)
Hattiesburg Regional TMC/EOC – 6356 Hwy 49N, Hattiesburg, Mississippi (MDOT District 6 Headquarters)
Batesville Regional TMC/EOC – 150 Hwy 51N, Batesville, Mississippi (MDOT District 2 Headquarters)
Natchez Combined TMC – 233 Devereaux Drive, Natchez, Mississippi (Police Department)
Gulf Coast TMC – 16499 Hwy 49, Saucier, Mississippi (MDOT Lyman Project Office)

Additional Traffic Management Centers may be added as needed.

907-659.02--Materials.

907-659.03--Construction and Operation Requirements.

907-659-03.1--TMC Modifications. The MDOT TMC modifications required to integrate and operate the traffic systems and devices shall be provided. These include, but are not limited to, expanding the central video management system, interconnecting the appropriate number of video interfaces to the TMC video management systems, expanding the MSTraffic backbone network through radio communications, wireless communications, T1 lines or fiber communications, expanding the Advanced Central Traffic Response Algorithm (ACTRA) signal system, expanding the Automated Traffic Management System (ATMS), and integrating all the existing computing facilities. All TMC modifications must meet U.S. Department of Transportation Intelligent Transportation System (ITS) Standards, Policies, and Architectures.

907-659.03.2--TMC Modifications - Monitor Systems. Roadway traffic monitor locations shall provide local control functions related to traffic slowdowns and other congestion monitors as defined by MDOT Traffic Engineering. Additionally, the traffic monitor systems shall provide on-line data for use by the existing MDOT ATMS for engineering, operations, planning, incident, and mstraffic.com purposes. This data shall include, but is not limited to, per vehicle data raw data which shall be transmitted to and stored and managed by the ATMS. The traffic monitor systems shall be capable of utilizing both or either loop, microloop, radar, and/or video detection information. The system shall provide a consistent communication and management system regardless of detection methods used. All Traffic Monitoring Systems must meet U.S. Department of Transportation Intelligent Transportation System (ITS) Standards, Policies, and Architectures.

907-659.03.3--TMC Modifications – Installation & Training. Installation of all equipment and software shall be included. The Contractor must provide the MDOT ITS Manager with an Installation Schedule. The Installation Schedule must be approved by the State Traffic Engineer. All equipment and software must be fully functional and pass a Final Inspection by the ITS Manager and Project Engineer before being accepted by MDOT.

Training shall be provided covering the system architecture, operations, and maintenance of the TMC systems. If training requirements include travel on the part of training participants then the cost of travel shall be included.

907-659.04--Method of Measurement. Traffic Management Center Modifications, Traffic Management Center Modifications – Monitor Systems, and Traffic Management Center Modifications – Training, complete in place, tested and accepted, will be measured on a lump sum basis.

907-659.05--Basis of Payment. Traffic Management Center Modifications, Traffic Management Center Modifications – Monitor Systems, and Traffic Management Center Modifications - Training, measured as prescribed above, will be paid for at the contract lump sum price, which price shall be full compensation for furnishing all materials for all installing, connecting, cutting, pulling and testing and for all equipment, tools, labor and incidentals necessary to complete the work.

Payment will be made under:

907-659-A:	Traffic Management Center Modifications	- lump sum
907-659-B:	Traffic Management Center Modifications – Monitor Systems	- lump sum
907-659-C:	Traffic Management Center Modifications – Training	- lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-699-3 **CODE: (SP)**

DATE: 12/20/2011

SUBJECT: Construction Staking

Section 699, Construction Stakes, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-699.03--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.

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

SUPPLEMENT TO SPECIAL PROVISION NO. 907-703-9

DATE: 12/12/2011

SUBJECT: Aggregates

After the last paragraph on page 3, add the following:

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. 907-703-9 **CODE: (IS)**

DATE: 11/09/2010

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 stone, slag, granite, shell, concrete, or combination thereof.

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 stone, slag, concrete, or combination thereof.

907-703.04.3--Gradation. Add the following to the "TABLE OF SIZES AND GRADATION OF CRUSHED STONE AGGREGATE" in Subsection 703.04.3 on page 613.

Sieve Size	Percent Passing By Weight	
	Size No. 825	Crushed Stone
2 inch	100	
1 1/2 inch	90 - 100	100
1 inch	75 - 98	90 - 100
3/4 inch		
1/2 inch	60 - 85	62 - 90
3/8 inch		
No. 4	40 - 65	30 - 65
No. 8	28 - 54	
No. 10		15 - 40
No. 16	19 - 42	
No. 40		
No. 50	9 - 27	
No. 200	4 - 18	3 - 16

After the "TABLE OF SIZES AND GRADATION OF CRUSHED STONE AGGREGATE" in Subsection 703.04.3 on page 613, add the following:

907-703.04.4--Crushed Concrete. Crushed reclaimed concrete shall also be allowed as a crushed aggregate course provided it meets the requirements of Subsection 703.04 and the following.

Crushed Concrete

Sieve Size	Percent Passing By Weight
2 inch	
1 1/2 inch	100
1 inch	90 - 100
3/4 inch	
1/2 inch	60 - 85
3/8 inch	
No. 4	40 - 65
No. 8	28 - 54
No. 10	
No. 16	19 - 42
No. 40	
No. 50	9 - 27
No. 200	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.

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

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 approvedand 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. 907-714-6 **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

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

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. 907-804-13 **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.

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.

Intersection Improvements on Lakeland Drive from Curran Drive west 1000 ft., known as State Project No. SP-0250-00(001) / 106330301 in Hinds County.

I (We) agree to complete the entire project within the specified contract time.

***** SPECIAL NOTICE TO BIDDERS *****
BIDS WILL NOT BE CONSIDERED UNLESS BOTH UNIT PRICES AND ITEM TOTALS ARE ENTERED.
BIDS WILL NOT BE CONSIDERED UNLESS THE BID CERTIFICATION LOCATED AT THE END OF THE BID SHEETS IS SIGNED

*****BID SCHEDULE*****

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Item Amount	
						Dollar	Ct	Dollar	Ct
Roadway Items									
0010	201-B001		1	Acre	Clearing and Grubbing				
0020	202-B005		436	Square Yard	Removal of Asphalt Pavement, All Depths				
0030	202-B030		240	Square Yard	Removal of Concrete Pavement, All Depths				
0040	202-B035		153	Square Yard	Removal of Concrete Sidewalk				
0050	202-B038		1,329	Linear Feet	Removal of Curb, All Types				
0060	202-B041		350	Linear Feet	Removal of Fence, All Types				
0070	202-B057		4	Each	Removal of Inlets, All Sizes				
0080	202-B064		570	Linear Feet	Removal of Pipe, 8" And Above				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0090	202-B290		1	Each	Removal of Power/Light Pole				
0100	202-B291		1	Each	Removal of Air Release Valve and Manhole				
0110	202-B293		1	Lump Sum	Removal of Sediment and Debris from Inlets and Pipes	XXXXXXXX	XXX		
0120	203-EX035	(E)	2,000	Cubic Yard	Borrow Excavation, AH, FME, Class B9-6				
0130	203-G003	(E)	4,500	Cubic Yard	Excess Excavation, FM, AH				
0140	206-A001	(S)	150	Cubic Yard	Structure Excavation				
0150	211-B001	(E)	325	Cubic Yard	Topsoil for Slope Treatment, Contractor Furnished				
0160	212-B001		2,950	Square Yard	Standard Ground Preparation				
0170	213-B001		1	Ton	Combination Fertilizer, 13-13-13				
0180	213-C001		1	Ton	Superphosphate				
0190	215-A001		2	Ton	Vegetative Materials for Mulch				
0200	216-B004		2,950	Square Yard	Solid Sodding, Bermuda				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0210	219-A001		60	Thousand Gallon	Watering	20.	00	1,200.	00
0220	220-A001		1	Acre	Insect Pest Control	30.	00	30.	00
0230	234-A001		250	Linear Feet	Temporary Silt Fence				
0240	235-A001		25	Bale	Temporary Erosion Checks				
0250	406-A001		5,500	Square Yard	Cold Milling of Bituminous Pavement, All Depths				
0260	503-C007		200	Linear Feet	Saw Cut, Full Depth				
0270	602-A001	(S)	2,000	Pounds	Reinforcing Steel				
0280	603-CA002	(S)	190	Linear Feet	18" Reinforced Concrete Pipe, Class III				
0290	604-A001		395	Pounds	Castings				
0300	605-AA004	(S)	25	Square Yard	Geotextile for Subsurface Drainage, Type V				
0310	605-W001	(GY)	50	Cubic Yard	Filter Material for Combination Storm Drain and/or Underdrains,Type A, FM				
0320	608-B001	(S)	505	Square Yard	Concrete Sidewalk, With Reinforcement				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0330	609-B001	(S)	80	Linear Feet	Concrete Curb, Header				
0340	609-D001	(S)	350	Linear Feet	Combination Concrete Curb and Gutter Type 1				
0350	609-D002	(S)	700	Linear Feet	Combination Concrete Curb and Gutter Type 2				
0360	609-D006	(S)	185	Linear Feet	Combination Concrete Curb and Gutter Type 1 Modified				
0370	609-D017	(S)	120	Linear Feet	Combination Concrete Curb and Gutter, Per Plans				
0380	613-A001		1	Lump Sum	Adjustment of Castings, Gratings & Utility Appurtenances	XXXXXXXX	XXX		
0390	613-A002		3	Each	Adjustment of Castings, Gratings & Utility Appurtenances				
0400	614-B001	(S)	200	Square Yard	Concrete Driveway, With Reinforcement				
0410	616-A002	(S)	45	Square Yard	Concrete Median and/or Island Pavement, 6-inch				
0420	616-A003	(S)	12	Square Yard	Concrete Median and/or Island Pavement, 10-inch				
0430	618-A001		1	Lump Sum	Maintenance of Traffic	XXXXXXXX	XXX		
0440	619-A1001		2,675	Linear Feet	Temporary Traffic Stripe, Continuous White				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0450	619-A2001		2,855	Linear Feet	Temporary Traffic Stripe, Continuous Yellow				
0460	619-A3001		1,820	Linear Feet	Temporary Traffic Stripe, Skip White				
0470	619-A5001		760	Linear Feet	Temporary Traffic Stripe, Detail				
0480	619-A6001		760	Linear Feet	Temporary Traffic Stripe, Legend				
0490	619-A6002		440	Square Feet	Temporary Traffic Stripe, Legend				
0500	619-D1001		75	Square Feet	Standard Roadside Construction Signs, Less than 10 Square Feet				
0510	619-D2001		544	Square Feet	Standard Roadside Construction Signs, 10 Square Feet or More				
0520	619-E1001		2	Each	Flashing Arrow Panel, Type C				
0530	619-F1001		2,080	Linear Feet	Concrete Median Barrier, Precast				
0540	619-F2001		450	Linear Feet	Remove and Reset Concrete Median Barrier, Precast				
0550	619-G4001		48	Linear Feet	Barricades, Type III, Single Faced				
0560	619-G4002		24	Linear Feet	Barricades, Type III, Single Faced, Permanent				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0570	619-G5001		102	Each	Free Standing Plastic Drums				
0580	619-G7001		10	Each	Warning Lights, Type "B"				
0590	619-J1001		4	Unit	Impact Attenuator, 40 MPH				
0600	620-A001		1	Lump Sum	Mobilization	XXXXXXXX	XXX		
0610	627-K001		95	Each	Red-Clear Reflective High Performance Raised Markers				
0620	627-L001		76	Each	Two-Way Yellow Reflective High Performance Raised Markers				
0630	630-A001		50	Square Feet	Standard Roadside Signs, Sheet Aluminum, 0.080" Thickness				
0640	630-A002		20	Square Feet	Standard Roadside Signs, Sheet Aluminum, 0.125" Thickness				
0650	630-C004		90	Linear Feet	Steel U-Section Posts, 3.0 to 3.5 lb/ft				
0660	630-K001		60	Linear Feet	Welded & Seamless Steel Pipe Posts, 3"				
0670	635-A001		738	Linear Feet	Vehicle Loop Assemblies				
0680	636-A001		750	Linear Feet	Shielded Cable, AWG #18, 4 Conductor				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0690	638-A005		1	Each	Loop Detector Amplifier, Card Rack Mounted, 4 Channel				
0700	640-A016		7	Each	Traffic Signal Heads, Type 1 LED				
0710	640-A017		3	Each	Traffic Signal Heads, Type 2 LED				
0720	640-A019		1	Each	Traffic Signal Heads, Type 5 LED				
0730	640-A021		8	Each	Traffic Signal Heads, Type 6 LED				
0740	642-A008		1	Each	Solid State Traffic Actuated Controllers, Type 8A				
0750	644-A001		4	Each	Optical Detector				
0760	644-B001		460	Linear Feet	Optical Detector Cable				
0770	644-C002		2	Each	Phase Selector, 4 Channel				
0780	647-A001		3	Each	Pullbox, Type 1				
0790	647-A002		4	Each	Pullbox, Type 3				
0800	666-B015		400	Linear Feet	Electric Cable, Underground in Conduit, IMSA 20-1, AWG 14, 5 Conductor				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0810	666-B016		325	Linear Feet	Electric Cable, Underground in Conduit, IMSA 20-1, AWG 14, 7 Conductor				
0820	666-B032		21	Linear Feet	Electric Cable, Underground in Conduit, THHN, AWG #8, 2 Conductor				
0830	666-D005		225	Linear Feet	Electric Cable, Aerial Supported in Conduit, IMSA 20-1, AWG 14, 7 Conductor				
0840	668-A016		21	Linear Feet	Traffic Signal Conduit, Underground, Type 4, 1"				
0850	668-A018		840	Linear Feet	Traffic Signal Conduit, Underground, Type 4, 2"				
0860	668-A020		40	Linear Feet	Traffic Signal Conduit, Underground, Type 4, 3"				
0870	668-B024		100	Linear Feet	Traffic Signal Conduit, Underground Drilled or Jacked, Rolled Pipe, 2"				
0880	668-B025		200	Linear Feet	Traffic Signal Conduit, Underground Drilled or Jacked, Rolled Pipe, 3"				
0890	815-A003	(S)	50	Square Yard	Loose Riprap, Size 200				
0900	815-E001	(S)	100	Square Yard	Geotextile under Riprap				
0910	907-213-A001		2	Ton	Agricultural Limestone				
0920	907-226-A001		1	Acre	Temporary Grassing				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0930	907-237-A002		200	Linear Feet	Wattles, 12"				
0940	907-237-A003		500	Linear Feet	Wattles, 20"				
0950	907-246-B002		50	Each	Rockbags				
0960	907-265-A005	(S)	460	Linear Feet	10" C900 PVC Water Main				
0970	907-265-B003	(S)	160	Linear Feet	6" Ductile Iron Water Main				
0980	907-265-B004	(S)	100	Linear Feet	10" Ductile Iron Water Main				
0990	907-265-B005	(S)	320	Linear Feet	12" Ductile Iron Water Main				
1000	907-265-C002		6,212	Pounds	Ductile Iron Fittings				
1010	907-265-D007		6	Each	6" Gate Valve				
1020	907-265-D008		4	Each	10" Gate Valve				
1030	907-265-D009		2	Each	12" Gate Valve				
1040	907-265-J004		5	Each	Water Service Connections				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
1050	907-265-K005		2	Each	12" Line Stop				
1060	907-265-L001	(S)	10	Linear Feet	1" Diameter Water Service Line				
1070	907-265-L002	(S)	30	Linear Feet	3/4" Diameter Water Service Line				
1080	907-265-M002		2	Each	6" Water Meter				
1090	907-265-MM001		2	Each	12" Insertable Valve				
1100	907-265-N001		1	Each	Backflow Preventer Assembly, 10"				
1110	907-265-NN001		220	Linear Feet	3/4" Water Service Tubing, Bored				
1120	907-265-PP001		110	Linear Feet	1" Water Service Tubing, Bored				
1130	907-304-F002	(GT)	250	Ton	Size 610 Crushed Stone Base				
1140	907-601-B003	(S)	25	Cubic Yard	Class "B" Structural Concrete, Minor Structures				
1150	907-604-PP003		1	Each	Modify Existing Inlet, Per Plans				
1160	907-607-PP013		260	Linear Feet	Reinstall Black Metal Fence, Per Plans				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
1170	907-607-PP014		2	Each	Masonry Column, Per Plans				
1180	907-611-PP003	(S)	96	Square Feet	Detectable Warning, Per Plans				
1190	907-617-A001		4	Each	Right-of-Way Marker				
1200	907-626-A004		1,848	Linear Feet	6" Thermoplastic Traffic Stripe, Skip White				
1210	907-626-C008		1,743	Linear Feet	6" Thermoplastic Edge Stripe, Continuous White				
1220	907-626-E003		1,056	Linear Feet	6" Thermoplastic Traffic Stripe, Continuous Yellow				
1230	907-626-F008		792	Linear Feet	6" Thermoplastic Edge Stripe, Continuous Yellow				
1240	907-626-G004		3,525	Linear Feet	Thermoplastic Detail Stripe, White				
1250	907-626-G005		200	Linear Feet	Thermoplastic Detail Stripe, Yellow				
1260	907-626-H004		180	Linear Feet	Thermoplastic Legend, White				
1270	907-626-H005		425	Square Feet	Thermoplastic Legend, White				
1280	907-630-PP015		4	Each	Impact Resistent Object Marker Assembly				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
1290	907-632-J001		98	Linear Feet	Steel Casing pipe, Trenched, 24"				
1300	907-632-PP001		1	Each	Air Release Valve, Per Plans				
1310	907-632-PP002		2	Each	Cut and Cap 12" Ductile Iron Pipe, Per Plans				
1320	907-639-A008		2	Each	Traffic Signal Equipment Pole, Type II, 17' Shaft, 55' Arm				
1330	907-639-A034		3	Each	Traffic Signal Equipment Pole, Type VI, 8' Shaft				
1340	907-639-A104		1	Each	Traffic Signal Equipment Pole, Type II, 17' Shaft, 50' & 65' Arms				
1350	907-639-C002		4	Cubic Yard	Pole Foundations, 36" Diameter				
1360	907-639-C003		6	Cubic Yard	Pole Foundations, 24" Diameter				
1370	907-639-C004		4	Cubic Yard	Pole Foundations, 30" Diameter				
1380	907-649-A004		4	Each	Video Detection System, 1 Sensor, Type 2				
1390	907-650-A002		2	Each	On Street Video Equipment, Fixed Type				
1400	907-650-A003		1	Each	On Street Video Equipment, PTZ Type				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
1410	907-653-A001		4	Each	Traffic Sign, Internally Illuminated Sign				
1420	907-657-B001		430	Linear Feet	Fiber Optic Drop Cable, 12 SM				
1430	907-659-A001		1	Lump Sum	Traffic Management Center Modifications	XXXXXXXX	XXX		
1440	907-699-A002		1	Lump Sum	Roadway Construction Stakes	XXXXXXXX	XXX		
1450	907-810-PP002		1	Each	Galvanized Steel Box Cover, Per Plans				
ALTERNATE GROUP AA NUMBER 1									
1460	907-403-A006	(BA1)	670	Ton	Hot Mix Asphalt, MT, 12.5-mm mixture				
1470	907-403-A007	(BA1)	1,075	Ton	Hot Mix Asphalt, MT, 19-mm mixture				
1480	907-403-A010	(BA1)	700	Ton	Hot Mix Asphalt, MT, 9.5-mm mixture				
1490	907-403-B004	(BA1)	255	Ton	Hot Mix Asphalt, MT, 12.5-mm mixture, Leveling				
ALTERNATE GROUP AA NUMBER 2									
1500	907-403-M002	(BA1)	670	Ton	Warm Mix Asphalt, MT, 12.5-mm mixture				
1510	907-403-M006	(BA1)	700	Ton	Warm Mix Asphalt, MT, 9.5-mm mixture				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
1520	907-403-M007	(BA1)	1,075	Ton	Warm Mix Asphalt, MT, 19-mm mixture				
1530	907-403-N006	(BA1)	255	Ton	Warm Mix Asphalt, MT, 12.5-mm mixture, Leveling				

*** BID CERTIFICATION ***

TOTAL BID.....$_____

*** SIGNATURE STATEMENT ***

BIDDER ACKNOWLEDGES THAT HE/SHE HAS CHECKED ALL ITEMS IN THIS PROPOSAL FOR ACCURACY AND CERTIFIED THAT THE FIGURES SHOWN THEREIN CONSTITUTE THEIR OFFICIAL BID.

_____

BIDDER'S SIGNATURE

_____

BIDDER'S COMPANY

_____

BIDDER'S FEDERAL TAX ID NUMBER

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. **SP-0250-00(001) / 106330301**,

in **Hinds** 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. **SP-0250-00(001) / 106330301**,

in **Hinds** 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 **SP-0250-00(001) / 106330301**

LOCATED IN THE COUNTY(IES) OF **Hinds**

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: **SP-0250-00(001) / 106330301**

LOCATED IN THE COUNTY(IES) OF: **Hinds**

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

SECTION 903 - CONTINUED

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 **Intersection Improvements on Lakeland Drive from Curran Drive west 1000 ft., known as State Project No. SP-0250-00(001) / 106330301 in Hinds 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