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18 -



SM No. CLWO9023250021

PROPOSAL AND CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF
(STATE DELEGATED)

18
Utility improvements and site work for the shop building at the MDOT Materials Laboratory, known as State Project No. LWO-9023-25(002)/ 502350303 in Hinds County.

Project Completion: August 23, 2013

NOTICE

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

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

**SECTION 900
OF THE CURRENT
2004 STANDARD SPECIFICATIONS
FOR ROAD AND BRIDGE CONSTRUCTION
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
JACKSON, MISSISSIPPI**

**BIDDER CHECK LIST
(FOR INFORMATION ONLY)**

- _____ All unit prices have been entered into Expedite Bid in accordance with Subsection 102.06 of the Mississippi Standard Specifications for Road and Bridge Construction.
- _____ Expedite bid sheets have been stapled and inserted into the proposal package.
- _____ First sheet of SECTION 905--PROPOSAL has been completed.
- _____ Second sheet of SECTION 905--PROPOSAL has been completed and signed.
- _____ Addenda, if any, have been acknowledged. Second sheet of Section 905 listing the addendum number has been substituted for the original second sheet of Section 905. Substituted second sheet of Section 905 has been properly completed, signed, and added to the proposal.
- _____ DBE/WBE percentage, when required by contract, has been entered on last sheet of the bid sheets of SECTION 905 - PROPOSAL.
- _____ Form OCR-485, when required by contract, has been completed and signed.
- _____ The last sheet of the Expedite bid sheets of SECTION 905--PROPOSAL has been signed.
- _____ Combination Bid Proposal of SECTION 905--PROPOSAL has been completed for each project which is to be considered in combination (See Subsection 102.11).
- _____ Equal Opportunity Clause Certification, when included in contract, has been completed and signed.
- _____ The Certification regarding Non-Collusion, Debarment and Suspension, etc. has been executed in duplicate.
- _____ A certified check, cashier's check or bid bond payable to the State of Mississippi in the principal amount of 5% of the bid has been included with project number identified on same. A bid bond has been signed by the bidder and has also been signed or countersigned by a Mississippi Agent or Qualified Nonresident Agent for the Surety with Power of Attorney attached.
- _____ ON FEDERAL FUNDED PROJECTS, the Notice To Bidders regarding DUNS Requirements has been completed and included in the contract documents.
- _____ Non-resident Bidders: ON STATE FUNDED PROJECTS ONLY, a copy of the current laws regarding any preference for local Contractors from State wherein domiciled has been included. See Subsection 103.01, Mississippi Standard Specifications for Road and Bridge Construction, and Section 31-7-47, MCA, 1972 regarding this matter.

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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- 907-714-6: Miscellaneous Materials
- 907-720-1: Pavement Marking Materials, w/Supplement
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SECTION 905 - PROPOSAL, PROPOSAL BID ITEMS

COMBINATION BID PROPOSAL

STATE BOARD OF CONTRACTORS REQUIREMENTS

STATE CERTIFICATION REGARDING NON-COLLUSION, DEBARMENT AND
SUSPENSION

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 901 - ADVERTISEMENT

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

Utility improvements and site work for the shop building at the MDOT Materials Laboratory, known as State Project No. LWO-9023-25(002)/ 502350303 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 purchased online at <https://shopmdot.ms.gov>. Specimen proposals may be viewed and downloaded online at no cost at <http://mdot.ms.gov> or purchased online. Proposals are available at a cost of Ten Dollars (\$10.00) per proposal plus a small convenience fee. Cash or checks will not be accepted as payment.

Plans 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, 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. 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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| **SECTION 904 - NOTICE TO BIDDERS NO. 1928**

CODE: (IS)

| **DATE: 04/14/2008**

SUBJECT: Federal Bridge Formula

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

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

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

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

or

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 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.

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2937

CODE: (SP)

DATE: 01/11/2010

SUBJECT: Reduced Speed Limit Signs

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3039

CODE: (SP)

DATE: 03/23/2010

SUBJECT: Alternate Asphalt Mixture Bid Items

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3067

CODE: (SP)

DATE: 04/14/2010

SUBJECT: Storm Water Discharge Associated with Construction Activity
(≥ 1 and < 5 Acres)

Construction Storm Water General NPDES Permit MSR 15 to discharge storm water associated with construction activity is required. This project is granted permission to discharge treated storm water into State waters. Copies of said permit and Storm Water Pollution Prevention Plan (SWPPP) are on file with the Department.

Prior to the execution of the contract, the successful bidder shall execute and deliver to the Executive Director an original signed copy of the completed Prime Contractor Certification (Form No. 1).

Failure of the bidder to execute and file the completed Prime Contractor Certification (Form No. 1) shall be just cause for the cancellation of the award.

The executed Prime Contractor Certification (Form No. 1) shall be prima facie evidence that the bidder has examined the permit, is satisfied as to the terms and conditions contained therein, and that the bidder has the primary responsibility for meeting all permit terms and conditions including, but not limited to, the inspection and reporting requirements of Part IV. For this project, the Contractor shall furnish, set up and read, as needed, an on-site rain gauge.

The Contractor must furnish the Project Engineer a completed copy of the Small Construction Notice of Intent (SCNOI) along with the Contractor's Erosion Control Plan.

The Contractor shall make inspections in accordance with [condition No. S-4, Page 13](#), and shall furnish the Project Engineer with the results of each weekly inspection as soon as possible following the date of inspection. The weekly inspections must be documented monthly on the Inspection and Certification Form, [a copy of which is provided](#). The Contractor's representative and the Project Engineer shall jointly review and discuss the results of the inspections so that corrective action can be taken. The Project Engineer shall retain copies of the inspection reports.

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 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. 3612

CODE: (SP)

DATE: 08/10/2011

SUBJECT: Additional Erosion Control Requirements

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3655

CODE: (SP)

DATE: 10/04/2011

SUBJECT: Type III Barricade Rails

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 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. 3893

CODE: (SP)

DATE: 04/10/2012

SUBJECT: Petroleum Products Base Prices

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

Monthly Petroleum Products Base Prices can be viewed at:

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3980

CODE: (SP)

DATE: 07/25/2012

SUBJECT: Questions Regarding Bidding

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4214

CODE: (IS)

DATE: 11/29/2012

SUBJECT: Safety Apparel

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4418

CODE: (SP)

DATE: 3/19/2013

SUBJECT: Contract Time

PROJECT: LWO-9023-25(002)/ 502350303 – Hinds County

The calendar date for completion of work to be performed by the Contractor for this project shall be **August 23, 2013** which date or extended date as provided in Subsection 907-108.06 shall be the end of contract time. It is anticipated that the Notice of Award will be issued no later than be **May 14, 2013**, and the effective date of the Notice to Proceed / Beginning of Contract Time will be **May 24, 2013**.

The contract time for this project was based on the Contractor having multiple crews working simultaneously for the duration of the project.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904- NOTICE TO BIDDERS NO. 4446

CODE: (SP)

DATE: 3/20/2013

SUBJECT: Erosion Control Plan Approval

PROJECT: LWO-9023-25(002)/ 502350303 – Hinds County

Bidders are hereby advised that the Contractor's Erosion Control Plan as described in Special Provision 907-107-10 **should be submitted with all other bid documents on letting day**. A period of 30 Calendar Days has been allotted for the submittal and concurrence of the Contractor's Erosion Control Plan, which includes the Department's review of the plan, and any revisions to the plan that may be necessary. The 30 Calendar Days is the time between the letting date and the Notice to Proceed/Beginning of Contract Time. If the Contractor fails to submit the Erosion Control Plan on the letting date, any associated time extension will not be granted unless delays are solely the responsibility of the Department.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-101-4

CODE: (IS)

DATE: 11/05/2008

SUBJECT: Definitions

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

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

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-102-8

DATE: 10/25/2012

SUBJECT: Bidding Requirements and Conditions

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-102-8

CODE: (IS)

| DATE: 01/20/2011

SUBJECT: Bidding Requirements and Conditions

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-103-8

CODE: (SP)

DATE: 12/15/2009

SUBJECT: Award and Execution of Contract

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

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

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

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

Delete Subsection 103.05 on page 23 and substitute the following:

907-103.05--Contract Bonds.

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-104-4

CODE: (SP)

DATE: 03/01/2011

SUBJECT: Disposal of Materials

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-105-6

DATE: 12/12/2011

SUBJECT: Control of Work

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-105-6

CODE: (IS)

| DATE: 01/20/2011

| SUBJECT: Control of Work

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-107-9

DATE: 08/23/2011

SUBJECT: Legal Relations and Responsibility to Public

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-107-9

CODE: (IS)

| DATE: 01/20/2011

SUBJECT: Legal Relations and Responsibility to Public

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

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

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

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

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

| **907-107.14--Damage Claims and Insurance.**

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

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

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

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

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

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

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

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

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

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

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

Coverage shall include:

- (1) death of or bodily injury to passengers of the railroad and employees of the railroad not covered by State workmen's compensation laws,
- (2) personal property owned by or in the care, custody or control of the railroads,
- (3) the Contractor, or any of the Contractor's agents or employees who suffer bodily injury or death as a result of acts of the railroad or its agents, regardless of the negligence of the railroads, and
- (4) negligence of only the following classes of railroad employees:
 - (i) any supervisory employee of the railroad at the job site
 - (ii) any employee of the railroad while operating, attached to, or engaged on, work trains or other railroad equipment at the job site which are assigned exclusively to the Contractor, or
 - (iii) any employee of the railroad not within (i) or (ii) above who is specifically loaned or assigned to the work of the Contractor for prevention of accidents or protection or property, the cost of whose services is borne specifically by the Contractor or Governmental authority.

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-107-10

DATE: 01/17/2013

SUBJECT: Contractor's Erosion Control Plan

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-107-10

CODE: (SP)

| DATE: 03/14/2011

SUBJECT: Contractor's Erosion Control Plan

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

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

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

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

As a minimum, the plan shall include the following:

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

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

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

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

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

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

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

SITE INFORMATION

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

SEDIMENT AND EROSION CONTROLS

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

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

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

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

IMPLEMENTATION SEQUENCE

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

MAINTENANCE PLAN

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

Prime Contractor's Signature

Date

Printed Name

Title

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-108-24

DATE: 11/13/2012

SUBJECT: Prosecution and Progress

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

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

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

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

Schedule of Deductions for Each Day of Overrun in Contract Time

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-108-24

CODE: (SP)

| DATE: 03/15/2011

SUBJECT: Prosecution and Progress

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

907-108.01--Subletting of Contract.

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

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

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

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

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

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

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

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

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

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

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

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

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

Delete the third paragraph of Subsection 108.03.2 on page 76.

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

907-108.06.1--Blank.

907-108.06.2--Based on Calendar Date Completion.

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

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

than is indicated by the money value.

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

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

TABLE OF ANTICIPATED PRODUCTIVE DAYS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-109-5

DATE: 05/15/2012

SUBJECT: Measurement and Payment

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-109-5

CODE: (IS)

| DATE: 1/20/2011

SUBJECT: Measurement and Payment

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

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

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

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

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

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

907-109.06--Partial Payment.

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-230-10

CODE: (SP)

DATE: 07/16/2009

SUBJECT: Tree and Shrub Planting

Section 230, Tree and Shrub Planting, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-230.2--Materials. Delete Subsection 230.02.14 on page 165 and substitute the following:

907-230.02.14--Mulch. Tree Bark Mulch shall meet the requirements of Subsection 907-233.02.

907-230.02.15--Bed Edging. Bed edging shall be steel edging, 3/16-inch by 4-inch in size, green in color with steel stakes, manufactured by Ryerson, an Inland Steel Company, St. Louis, Mo., or an approved equal.

907-230.03--Construction Requirements.

907-230.03.7--Planting, Backfilling, and Watering. After the first paragraph of Subsection 230.03.7 on page 166, add the following:

Plant pits are plant bed areas which are bound all around by bed edging and/or paving, or as noted on the drawings. Bed preparation shall be required within plant pits, which shall consist of stripping the proposed bed area of existing grass or plant material, unless designated to remain; removal and disposal of existing soil in order that finished grade of bed, not including surface mulch, is no higher than surrounding grades/pavement edges unless noted otherwise on the drawings; spreading a 4-inch layer of Tree Bark Mulch, Type III throughout the area, and tilling in the Tree Bark Mulch, Type III to a depth of six inches uniformly throughout the area; and excavating plant holes in accordance with this special provision. The entire bed area shall receive Tree Bark Mulch, Type V as a surface mulch.

Within plant pits, additional Tree Bark Mulch, Type III for each tree, shrub and groundcover plant hole is not necessary beyond the uniform layer of application tilled into the soil as noted on the vegetation schedule. Within each tree and shrub plant hole within a plant pit, backfill with a 50/50 mix of existing soil amended with Type III mulch and topsoil. Groundcover plant holes do not require any other backfill material other than the amended existing soil with Type III mulch incorporated.

Backfill for tree and shrub plant holes outside of plant pits shall be a 50/50 mix of existing soil and topsoil, after applying the 4-inch layer of Tree Bark Mulch, Type III.

907-230.04--Method of Measurement. After the sixth paragraph of Subsection 230.04 on page 169, add the following:

Bed edging, complete in place and accepted, will be measured per linear foot. Excavation, backfilling, and miscellaneous fittings will not be measured for separate payment.

Bed preparation within plant pits, complete in place and accepted, will be measured per square foot. Stripping of existing vegetation, excavation of existing soil, providing and incorporating the designated layer of Tree Bark Mulch Type III, Tree Bark Mulch Type V as a surface mulch, and weeding will not be measured for separate payment.

Tree Bark Mulch will be measured for payment in accordance with Subsection 907-233.04.

Delete the last five paragraphs of Subsection 230.04 on pages 169 & 170 regarding the sequence for measurement of payment and substitute the following:

Measurement for payment will be made in the following sequence:

When plants have been planted and are in a healthy condition in accordance with the contract, seventy-five percent (75%) of the bid price for that species of plant material meeting the requirements of the contract will be allowed.

When the inspection of plants at the end of the growing season has been conducted and the replacement of any dead or unsatisfactory plant material has been made, ninety percent (90%) of the bid price for that species of plant material meeting the requirements of the contract will be allowed.

When the final inspection of the project has been conducted and the replacement of any dead or unsatisfactory plant material has been made, and upon final release of maintenance, one-hundred percent (100%) of the bid price will be allowed for plant material meeting the requirements of the contract.

The Plant Establishment Period shall begin upon the date that the Engineer determines plant material installation has been acceptably completed, including staking/guying and mulching, and continues through the dates noted below:

PLANT ESTABLISHMENT PERIOD

Date of Installation Completion, From and Including	Establishment Period Beyond Installation Completion, (Growing Season) To and Including
August 2 nd - November 1 st	240 calendar days
November 2 nd - January 1 st	180 calendar days
January 2 nd - May 1 st	120 calendar days
May 2 nd - August 1 st	90 calendar days

Where feasible in the opinion of the Engineer, the Contractor may install plant material well in advance of project completion, in order that the Plant Establishment Period may run concurrent with the Contract Time. However, no matter what date the Plant Establishment Period conclude, the Contractor will be required to maintain healthy plants until final inspection of the entire project.

No contract time or liquidated damages will be charged during the plant establishment period if, and only if, all items of work on the project have been completed.

907-230.05--Basis of Payment. After the first paragraph of Subsection 230.05 on page 170, add the following:

Accepted quantities for bed edging and bed preparation will be paid for at the contract unit price per linear foot and square foot, respectively. Prices paid shall be full compensation for completing the work.

Add the "907" prefix to the pay items numbers listed on page 170.

After the last pay item listed on page 170, add the following:

907-230-C: Bed Edging - per linear foot

907-230-D: Bed Preparation - per square foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-234-5

CODE: (SP)

| DATE: 09/23/2010

SUBJECT: Siltation Barriers

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

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

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

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

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

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

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

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

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

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

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

Super Silt Fence. Super silt fence shall be constructed in accordance with the plans and these specifications.

All posts shall be installed/driven so that at least 34 inches of the post will protrude above the ground. The chain link wire and geotextile shall be stretched taut and securely fastened to the posts as shown on the plans. The bottom edge of the fence and geotextile shall be buried at least eight inches below ground surface to prevent undermining. When splicing of the geotextile is necessary, the fabric shall be overlapped approximately 18 inches.

907-234.03.1.1--Placement of Inlet Siltation Guards and Turbidity Barriers. The inlet siltation guards and turbidity barriers shall be constructed at the locations shown on the erosion control plans. Inlet siltation guards and turbidity barriers shall be installed in accordance with the erosion control drawings in the plans. A copy of the manufacturer's instructions for placement of inlet siltation guards and turbidity barriers shall be provided to the Engineer prior to construction.

907-234.03.2--Maintenance and Removal. At the end of the first paragraph of Subsection 234.03.2 on page 178, add the following:

The Contractor shall maintain the inlet siltation guards. The geotextile shall be removed and replaced when deteriorated to such extent that it reduces the effectiveness of the guard. Replacement geotextile shall be the same type and manufacture as the original. Excessive accumulations against the guard shall be removed and disposed of at a location approved by the Engineer.

The Contractor shall maintain the turbidity barriers. Excessive accumulations against the turbidity barrier shall be removed and disposed of at a location approved by the Engineer.

Delete the second paragraph of Subsection 234.03.2 on page 178 and substitute the following:

Unless otherwise directed, all temporary silt fences, inlet guards and turbidity barriers shall be removed. Upon removal, the Contractor shall remove and dispose of any excess silt accumulations, shape the area to the line, grade, and cross section shown on the plans and vegetate all bare areas in accordance with the contract requirements. The temporary fence, inlet guard materials and turbidity barriers will remain the property of the Contractor and may be used at other locations provided the materials are acceptable to the Engineer.

After Subsection 234.03.2 on page 178, insert the following:

907-234.03.3--Resetting Inlet Siltation Guards and Turbidity Barriers. When inlet siltation guards and turbidity barriers are no longer needed at one location, they may be removed and reset at other needed locations. The Engineer may allow the resetting of siltation guards and turbidity barriers upon an inspection and determination that the siltation guards (frame and geotextile) and turbidity barriers are adequate for their intended purpose. When they have to be stored until needed at another location, payment for resetting will not be made until they are reset at their needed location.

907-234.04--Method of Measurement. Delete the sentence in Subsection 234.04 on page 178, add the following:

Silt fence and super silt fence will be measured by the linear foot.

Inlet siltation guard and resetting siltation guards will be measured per each. Turbidity barrier will be measured per linear foot.

907-234.05--Basis of Payment. Delete the sentence in Subsection 234.05 on page 178, add the following:

Silt fence and super silt fence, measured as prescribed above, will be paid for at the contract unit price per linear foot which shall be full compensation for completing the work.

Inlet siltation guard, resetting inlet siltation guards, and turbidity barrier, measured as prescribed above, will be paid for at the contract unit price per each or linear foot, which shall be full compensation for furnishing, constructing, and maintaining the work and for the removal and disposal of all items comprising the devices.

After the last pay item listed on page 178, add the following:

- 907-234-C: Super Silt Fence - per linear foot
- 907-234-D: Inlet Siltation Guard - per each
- 907-234-E: Reset Inlet Siltation Guard - per each
- 907-234-F: Turbidity Barrier - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-237-4

CODE: (SP)

| DATE: 03/13/2012

SUBJECT: Wattles

Section 907-237, Wattles, is hereby added to and made a part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

SECTION 907-237 - WATTLES

907-237.01--Description. This work consists of furnishing, constructing and maintaining wattles for the retention of soil around inlets, swale areas, small ditches, sediment basins and other areas as necessary. Also, the work includes removing and disposing of the wattles and silt accumulations.

Measurement and payment for wattles will be made only when a pay item is included in the bid schedule of the proposal. The quantity is estimated for bidding purposes only and will be dependent upon actual conditions which occur during construction of the project.

| **907-237.02--Materials.** Wattles used around inlets shall have a diameter of twelve inches (12") and a length adequate to meet field conditions. Wattles used at other locations shall have a diameter of twenty inches (20") and a length adequate to meet field conditions. **The minimum diameter for the above wattle sizes shall be one inch (1") less than the specified diameter.**

The stakes used in securing the wattles in place shall be placed approximately three feet (3') apart throughout the length of the wattle. Stakes shall be wooden and of adequate size to stabilize the wattles to the satisfaction of the Engineer.

In addition to the requirements of this specifications, wattles shall be listed on the Department's "Approved Sources of Materials".

907-237.03--Construction Requirements.

907-237.03.1--General. The wattles shall be constructed at the locations and according to the requirements shown on the erosion control plan.

907-237.03.2--Maintenance and Removal. The Contractor shall maintain the wattles and remove and dispose of silt accumulations.

When the wattles are no longer needed, they shall be removed and the Contractor shall dispose of silt accumulations and treat the disturbed areas in accordance with the contract requirements.

907-237.04--Method of Measurement. Wattles of the size specified will be measured per linear foot.

907-237.05--Basis of Payment. Wattles, measured as prescribed above, will be paid for at the contract unit price per linear foot, which price shall be full compensation for installation, maintaining and removal of the wattles, the removal and disposal of silt accumulations and any required restoration of the disturbed areas.

Payment will be made under:

907-237-A: Wattles, Size - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-242-32

CODE: (SP)

DATE: 02/27/2013

SUBJECT: Utility Improvements

PROJECT: LWO-9023-25(002) / 502350303 -- Hinds County

Section 907-242, Utility Improvements, is hereby added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-242-- UTILITY IMPROVEMENTS

The following specification is to be used ONLY for the Construction of the Utility Improvements and Site Work at the Materials Laboratory in Jackson. Measurement and payments will be made under pay item 907-242.

The 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction shall be used for all other items of work in the contract.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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PROJECT: CONSTRUCTION OF UTILITY IMPROVEMENTS AND SITE WORK AT THE MATERIALS LABORATORY IN JACKSON

PROJECT NUMBER: BWO-6208-24(001) 502085303

DATE: 02/27/2013

DESCRIPTION: This Work shall consist of all construction work necessary to install domestic water and sanitary sewer portions of this Contract and perform associated site work at the Materials Laboratory and adjacent site for Proposed Shop at Lab in Jackson, in accordance with these Specifications and conforming to the Drawings.

It is the intention of these Specifications to provide the necessary items and instruction for a complete product including all code compliance. Omission of items or instruction necessary or considered standard good practice for the proper installation and construction of the building shall not relieve the Contractor of furnishing and installing such items and conforming to the building codes having jurisdiction.

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END OF SECTION

SECTION 03 01 40.61

MONOLITHIC MANHOLE SURFACING SYSTEM

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This specification covers work, materials, equipment and tools including specially developed application equipment as required for installation and testing of the field applied monolithic manhole surfacing system. Surfacing shall be applied to precast manhole, 48-inch diameter.
- B. The use of specialized application equipment combined with rigorous surface preparation requirements shall be used to apply the monolithic manhole surfacing system without the use of solvents. The equipment adds high heat and pressure to the monolithic surfacing system resulting in a high build and quick set of the completed system.
- C. Product application requirements and procedures described include surface preparation, mixing, application, material handling and storage, qualification of applicator, and application quality control.
- D. In order to be considered as an equal a product will have the minimum characteristics as measured by the applicable ASTM standards as specified in this section.
- E. Equal products must be approved a minimum of three weeks prior to bid date.

1.02 QUALITY ASSURANCE

- A. The applicator shall initiate and enforce quality control procedures consistent with applicable ASTM and NACE standards together with the monolithic surfacing system manufacturer and the ENGINEER's recommendations.
- B. The applicator shall use an adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts. These workmen shall be completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. The applicator shall use approved specialty equipment adequate in size, capacity and number sufficient to accomplish the work of this Section in a timely manner.
- D. The product shall be manufactured at a facility that is certified as meeting ISO-9002 quality management standards.
- E. Reference Standards:
 - 1. ASTM D638 Tensile Properties of Plastics
 - 2. ASTM D790 Flexural Properties of Unreinforced and Reinforced Plastics
 - 3. ASTM D695 Compressive Properties of Rigid Plastics
 - 4. ASTM D4541 Pull-off Strength of Coatings Using a Portable Adhesion Tester
 - 5. ASTM D2584 Volatile Matter Content
 - 6. ASTM D2240 Durometer Hardness, Type D
 - 7. ASTM D543 Water Vapor Transmission of Organic Coating Films
 - 8. ASTM D543 Resistance of Plastics to Chemical Reagents
 - 9. ASTM C297 Flatwise Tensile Strength of Sandwich Constructions
 - 10. ASTM The published standards of the American Society for Testing and Materials, West Conshohocken, PA

11. NACE The published standards of National Association of Corrosion Engineers (NACE International), Houston, TX

1.03 SUBMITTALS

- A. Shop Drawings: The CONTRACTOR shall submit data on the monolithic surfacing system and application procedures.
- B. Qualification and Performance Responsibility of Applicator:
1. The applicator shall apply the system and be responsible for the complete performance of the system, including materials, application, and quality control.
 2. The applicator shall provide documentation that the applicator is an approved installer and licensed by the monolithic surfacing manufacturer and specialized equipment supplier.

1.04 DELIVER, STORAGE, AND HANDLING

- A. Materials are to be kept dry, protected from weather, stored under cover and stored between 50 degrees Fahrenheit and 100 degrees Fahrenheit. Do not store near flame, heat, or strong oxidants.
- B. Protective coating materials are to be handled according to their material safety data sheets.

PART 2 - PRODUCTS AND APPLICATION EQUIPMENT

2.01 EXISTING PRODUCTS

- A. Quick setting high strength concrete with latex or curing agent additives cannot be used unless successfully tested with the coating for compatibility or approved for use by the protective coating and concrete manufacturer. Proper surface preparation procedures must be followed to ensure adequate bond strength to any surface to be coated. New cement or concrete must cure at least 30 days prior to coating.
- B. Existing coatings shall be removed or thoroughly abraded to provide an adequate surface profile for mechanical bond by the surfacing system. The applicator is to maintain strict adherence to the monolithic surfacing system manufacturer's recommendations with regard to proper surface preparation and compatibility with existing coatings.

2.02 MANUFACTURER AND EQUIPMENT SUPPLIER

Warren Environmental, Inc., Raven 404, Poly Spec Corp, or approved equal.

2.03 REPAIR MATERIALS

Repair materials must be accepted and approved by the monolithic surfacing system manufacturer for compatibility with the specified monolithic surfacing system and shall only be used as determined necessary by the ENGINEER and applicator.

2.04 MONOLITHIC SURFACING SYSTEM

- A. Monolithic Surfacing System - a unique non-toxic, 100 percent solids, solventless epoxy resin laminar system as applied with a patent protected process and exhibiting the following characteristics.

Product type	Amine cured epoxy	
Color	White	
Solids Content (vol percent)	100	
Compressive Strength	ASTM D695	12,000 psi
Flatwise Tensile Strength of Sandwich Constructions	ASTM C297	2,608 psi
Tensile Strength	ASTM D638	7,200 psi
Tensile Elongation	ASTM D638	2 percent
Flexural Strength	ASTM D790	13,000 psi
Flexural Modulus	ASTM D790	548,000 psi
Bond Strength - Concrete	ASTM D4541	900 psi
Chemical Resistance to:		
Sulfuric Acid, 10 percent	ASTM D543	Immersion Service
Sodium Hydroxide, 20 percent	ASTM D543	Immersion Service

- B. The monolithic surfacing system shall be applied in the field after all other work to the manhole is complete. This will insure a monolithic coating across the joints and connections.
- C. The monolithic surfacing system shall be continuously bonded to all brick, mortar, concrete, chemical sealant, grout, pipe, and other surfaces inside the manhole and therefore shall be designed for hydrostatic loading.
- D. The finished system shall provide a minimum total thickness of 60 mils. The cured surfacing shall be monolithic with proper sealing connections to all unsurfaced areas and shall be placed and cured in three applications in conformance with the recommendations of the monolithic surfacing system manufacturer.
- E. When cured, the system shall form a continuous, tight-fitting, hard, impermeable surface that is suitable for sewer system service and chemically resistant to any chemicals, bacteria, or vapors normally found in domestic sewage.
- F. The system shall effectively seal the interior surfaces of the manhole and prevent any penetration or leakage of groundwater infiltration.
- G. The system shall be compatible with the thermal conditions of the existing sewer manhole surfaces.

2.05 PROTECTIVE COATING APPLICATION EQUIPMENT

The protective coating application equipment shall be heated, plural component equipment specially designed for use in the spray or spincast application of the specified system and shall be approved for use by the monolithic surfacing system manufacturer.

PART 3 - EXECUTION

3.01 PRE-COAT INSPECTION

- A. All structures to be coated shall be readily accessible to the applicator.
- B. Appropriate actions shall be taken to comply with local, state, and federal regulatory and other applicable agencies with regard to the environment, health, and safety.

- C. All surfaces including benches, inverts, joints, lift holes and walls shall be made smooth and suitable for application of the interior surfacing system. All benches and inverts shall be in place and complete.
- D. Active flows shall be dammed, plugged, or diverted as required to ensure that the liquid flow is maintained below the surfaces to be coated.
- E. Installation of the protective coating shall not commence until the concrete substrate has properly cured in accordance with this Section.

3.02 SURFACE PREPARATION

- A. The applicator shall inspect all surfaces specified to receive the monolithic surfacing system prior to surface preparation. The applicator shall notify the ENGINEER of any noticeable disparity in the surfaces that may interfere with the proper preparation or application of the monolithic surfacing system.
- B. All concrete that is not sound or has been damaged by chemical exposure shall be removed to a sound concrete surface. All contaminants including: oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants shall be removed.
- C. Surface preparation method(s) shall be based upon the conditions of the substrate and the requirements of the monolithic surfacing system to be applied.
- D. Surfaces to receive protective coating shall be cleaned and abraded to produce a sound concrete surface with adequate profile and porosity to provide a strong bond between the monolithic surfacing system and the substrate.
- E. The applicator shall follow all regulations for contained space entry. The first procedure upon entering each structure will be to blast all specified surfaces by low pressure water cleaning as defined by NACE Standard 5. When all loose and/or contaminated debris has been removed, the surface shall be water blasted by the use of a held wand again. The wash water shall include a dilute solution of chlorine to diminish microbiological bacteria growth and to kill any bacteria residing on or in the surface. The surface will be tested at this point to ensure that the pH is within acceptable limits (not to exceed 8.5). These tests will be performed with litmus paper on various areas within the structure. All test results will be retained for review by the ENGINEER.
- F. Surfaces that require additional cleaning or profiling will be prepared by abrasive blast to rough the surface sufficient to obtain and ensure adequate bonding of the system. A minimum surface profile of 8-10 mils or 10 percent of the total recommended coating system thickness must be achieved to assure proper adhesion. Detergent water cleaning and hot water blasting may be necessary to remove oils and grease from the concrete. Whichever methods are used, they shall be performed in a manner that provides a uniform, sound clean surface that is not excessively damaged.
- G. Active water infiltration shall be stopped by using a cementitious water plug or hydroactive grout that is compatible and suitable for topcoating with the specified monolithic surfacing system.

3.03 APPLICATION OF REPAIR MATERIALS

- A. Application of repair materials shall be made by the applicator.

- B. Repair materials shall meet the specifications of this Section. The materials shall be trowel or spray applied utilizing proper equipment on the specified surfaces.
- C. When using approved cementitious repair materials, such shall be troweled to provide a smooth surface with an average profile equivalent to coarse sandpaper to optimally receive the protective coating. No bugholes or honeycomb surfaces should remain after the final trowel procedure of the repair mortar.
- D. The repair materials shall be permitted to cure according to manufacturer recommendations. Curing compounds may not be used unless approved by the monolithic surfacing system manufacturer for compatibility with the specified system.
- E. Areas to be coated must be prepared after receiving a cementitious repair mortar and prior to application of the monolithic surfacing system.
- F. All surfaces shall be inspected during and after preparation and prior to application of the monolithic surfacing system. Any evidence of remaining contamination or laitance shall be removed by additional water or abrasive blast, or other approved method before proceeding with the application of the monolithic surfacing system.
- G. All surfaces shall be sufficiently smooth and even, to ensure good flow handling characteristics when complete.

3.04 APPLICATION OF MONOLITHIC SURFACING SYSTEM

- A. Application procedures shall conform to the recommendations of the monolithic surfacing system manufacturer, including material handling, mixing, environmental controls during application, safety, and equipment.
- B. The equipment shall be specially designated to accurately ratio and apply the specified materials and shall be regularly maintained and in proper working order.
- C. The specified materials must be applied by an approved installer of the monolithic surfacing system.
- D. All specified surfaces will be lined with the monolithic surfacing system to provide a minimum total thickness of 60 mils. The cured surfacing shall be monolithic with proper sealing connections to all unsurfaced areas and shall be placed and cured in three applications in conformance with the recommendations of the monolithic surfacing system manufacturer.
- E. Specially designed spray and/or spincast application equipment shall be used to apply each coat of the system.

3.05 TESTING AND INSPECTION

- A. During application a wet film thickness gage, such as those available through Paul N. Gardner Company, Inc. meeting ASTM D4414 – Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages, shall be used to ensure a monolithic coating and uniform thickness during application.
- B. After the system has set hard to the touch it shall be inspected by the ENGINEER verifying the following:
 - 1. Groundwater infiltration of the system shall be zero.
 - 2. All pipe connections shall be open and clear.
 - 3. No cracks, voids, pinholes, uncured spots, dry spots, lifts, delamination, or other type defects shall be evident in the system.

- C. After a minimum of 24 hours following completion, the lining system shall be spark tested to assure a pinhole-free lining. Defects must be patched per the manufacturer's instructions. The test voltage shall be a minimum 6,000 volts. The holiday detector shall be a Tinker Razor Model AP/W or an approved equal. The applicator may enlist the services of an independent certified NACE inspector if desired.
- D. A final visual inspection shall be made by the ENGINEER and applicator. Any deficiencies in the finished system shall be marked and repaired according to the procedures set forth herein by the applicator.

3.06 CLEANING

Trash and loose debris shall not be permitted to accumulate at the project site. All items shall be regularly removed and disposed of at an approved site in accordance with applicable regulatory agencies.

END OF SECTION

SECTION 05 56 00

CASTINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to provide castings as shown and specified.
2. Castings include metal items which are not a part of the miscellaneous metal fabrications or metal systems in other Sections of these Specifications.

B. Castings shall be for the following types of construction:

1. Manholes.
2. Catch Basin Frames and Gratings.
3. Curb Inlet Frames and Gratings.
4. Trench Drain Frames and Gratings.

1.02 QUALITY ASSURANCE

A. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

1. ASTM A 48, Gray Iron Castings.
2. ASTM D 2146, Propylene Plastic Molding and Extrusion Materials.

B. Shop Assembly:

1. Preassemble items in the shop to the greatest extent possible, so as to minimize field splicing and assembly of units at the site.
2. Disassemble units only to the extent necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

1.03 SUBMITTALS

Shop Drawings: Submit for approval the following:

1. Shop Drawings for the fabrication and erection of all casting assemblies.
 - a. Include plans, elevations, and details of sections and connections. Show anchorage and accessory items.
 - b. Include setting drawings for location and installation of castings and anchorage devices.
2. Copies of manufacturer's specifications, load tables, dimension diagrams, anchor details and installation instructions.

1.04 DELIVERY, STORAGE AND HANDLING

A. Comply with the requirements of the Specifications.

B. Castings which are cracked, chipped, distorted or otherwise damaged will not be acceptable.

PART 2 - PRODUCTS

2.01 MATERIALS

Product and Manufacturer: Provide castings and frames for manholes, curb inlets, grate inlets, etc. as manufactured by one of the following:

EJIW (Vulcan), C. L. Dews, Neenah or equal.

2.02 DESIGN AND FABRICATION

- A. Fabricate castings true to pattern so that component parts fit together.
- B. Identification Markings:
 - 1. All markings shall be subject to review by the ENGINEER.
 - 2. Markings shall include "SANITARY SEWER", "WATER", and "ELECTRIC", or UTILITY OWNER'S STANDARD.

2.03 FINISH

Iron: Coat with asphaltic paint standard with the manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Follow manufacturer's printed instructions and approved Shop Drawings.
- B. Set castings accurately to required location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Brace temporarily or anchor temporarily in formwork.

END OF SECTION

SECTION 07 16 16

CRYSTALLINE CONCRETE WATERPROOFING

PART 1 - GENERAL

1.01 SUMMARY

This section covers the requirements for waterproofing precast concrete manholes. See Pay Item Number 907-604-C001, Precast Manhole, 48-Inch Diameter.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
- B. Army Corp. of Engineers (CRD)
- C. American Concrete Institute Reference 308
- D. Section 33 39 13 - Manholes

1.03 SYSTEM DESCRIPTION

- A. The concrete waterproofing admixture shall be of the cementitious crystalline type that chemically controls and permanently fixes a non-soluble crystalline structure throughout the capillary voids of the concrete.
- B. The design shall include the use of the crystalline waterproofing repair materials that generate a non-soluble crystalline formation in the concrete.

1.04 STORAGE, DELIVERY AND HANDLING

Store manufacturer's sealed and labeled material containers in dry, protected environment off the ground.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Xypex Chemical Corporation, Richmond, B.C., Canada
- B. Or Equal

2.02 MATERIALS

- A. Xypex Admix C-1000-T containing red dye to ensure detection in the concrete.
- B. Xypex Concentrate

2.03 MIXES

The dosage rate for Xypex Admix C-1000-T is 3.5 percent by weight of cement.

PART 3 - APPLICATION

3.01 MATERIALS PREPARATION

- A. Xypex Admix C-1000-T must be added to the concrete at the time of batching. It is recommended that the Admix powder be added first to the rock and sand and blended thoroughly for 2 - 3 minutes before adding cement and water.
- B. Blend total concrete mix using normal practices to ensure formation of homogeneous mixture.
- C. For precast concrete manufacturers this usually means adding the Xypex C-1000-T into their pan type mixers.
- D. For ready-mix batch plants the Xypex Admix C-1000-T can be evenly distributed on a plant conveyor belt carrying the rock and sand, or the dry powder Admix can be added to the truck first and then 30 - 50 percent of the required water for the concrete batch is dispensed along with 300 - 500 pounds of aggregate and mixed thoroughly for 2 - 3 minutes. The rest of the materials are then added to the truck and mixed for at least 5 minutes.

3.02 APPLICATION

- A. Placement of concrete shall be in accordance with the Mississippi Department of Transportation Standard Specifications for Road and Bridge Construction, 2004 Edition.
- B. Retardation of set may occur when using Xypex Admix C-1000-T. The amount of retardation will depend upon the concrete mix design and the dosage rate of the admix. Consult with the manufacturer regarding proper dosage rate.
- C. Concrete that contains Xypex Admix C-1000-T must be cured as per "Standard for Curing Concrete" (ACI 308).
- D. Normal backfilling procedures may be used after concrete has cured for at least 7 days.
- E. After the base and joints of the precast manhole have been grouted, apply two coats of Xypex Concentrate to all grouted surfaces at a rate of 1.5 lbs. per square yard to a properly prepared surface in accordance with manufacturer's written instructions.

END OF SECTION

SECTION 31 00 00 EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. The CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to perform all excavating, backfilling and disposing of earth materials as shown, specified, and required for the purpose of constructing conduits, pipelines, roads, ditches, grading, and other facilities required to complete the Work in every respect.
2. All necessary preparation of subgrade for slabs and pavements is included.
3. All temporary means needed to prevent discharge of sediment to water courses because of dewatering systems or erosion are included.
4. No classification of excavated materials will be made. Excavation includes all materials regardless of type, character, composition, moisture, or condition thereof.

B. Related Work Specified Elsewhere:

1. Section 00 31 32, Geotechnical Data
2. Section 31 23 33.01, Buried Piping Installation
3. Mississippi Department of Transportation Standard Specifications for Road and Bridge Construction, 2004 Edition.

1.02 QUALITY ASSURANCE

A. Tests:

1. The CONTRACTOR shall retain the services of a qualified testing laboratory to make tests and determine acceptability of the soil as listed below.
2. The CONTRACTOR shall give full cooperation to the testing lab personnel so that the required soil tests can be taken in an efficient and timely manner.
3. Required Tests:
 - a. Select Fill and Backfill Samples:
 - (1) Gradation, ASTM D 422
 - (2) Liquid Limit, ASTM D 423
 - (3) Plastic Limit and Plasticity Index, ASTM D 424
 - b. Compacted Select Fill: Compaction, ASTM D 698

B. Permits and Regulations:

1. The CONTRACTOR shall obtain all necessary permits for work in roads, rights-of-way, railroads, etc.
2. The CONTRACTOR shall obtain permits as required by local, state and federal agencies for discharging water from excavations to rivers and streams.
3. The CONTRACTOR shall perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

C. Reference Standards: The CONTRACTOR shall comply with applicable provisions and recommendations of the following except as otherwise shown or specified.

1. ASTM A 36 Structural Steel
2. ASTM A 328 Steel Sheet Piling
3. ASTM D 422 Particle-Size Analysis of Soils
4. ASTM D 423 Liquid Limit of Soils
5. ASTM D 424 Plastic Limit and Plasticity Index of Soils
6. ASTM D 448 Standard Sizes of Coarse Aggregate for Highway Construction

7. ASTM D 698 Moisture-Density Relations of Soils, Using 5.5 lb (2.5 kg) Rammer and 12-inch(304.8 mm) Drop
8. ASTM D 1556 Density of Soil in Place by the Sand-Cone Method
9. ASTM D 2487 Classification of Soils for Engineering Purposes
10. ASTM D 2922 Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

1.03 SUBMITTALS

The CONTRACTOR shall submit samples of all select backfill, fill, gravel, base, and pipe bedding materials required.

1.04 JOB CONDITIONS

A. Subsurface Information:

1. Refer to the Section 00 31 32, Geotechnical Data, for available subsurface investigation reports. Data on subsurface conditions is not intended as a representation or warranty of continuity of such conditions between soil borings. The ENGINEER will not be responsible for interpretations or conclusions drawn there from by the CONTRACTOR.
2. Additional test borings and other exploratory operations may be made by CONTRACTOR at no cost to OWNER.

B. Existing Structures and Utilities:

1. Shown on the Drawings are certain surface and underground structures adjacent to the Work. This information has been obtained from existing records. It is not guaranteed to be correct or complete and is shown for the convenience of the CONTRACTOR. CONTRACTOR shall explore ahead of the required excavation to determine the exact location of all structures. All structures shall be supported and protected from injury by the CONTRACTOR. If they are broken or injured, they shall be restored immediately by the CONTRACTOR at his expense.
2. The CONTRACTOR shall locate existing underground utilities in the areas of Work. If utilities are to remain in place, the CONTRACTOR shall provide adequate means of protection during earthwork operations. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult the ENGINEER immediately for directions as to procedure. Cooperate with the OWNER and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
3. Do not interrupt existing utilities serving facilities occupied and used by the OWNER or others, except when permitted in writing by the ENGINEER and then only after acceptable temporary utility services have been provided.

C. Use of Explosives: Not permitted on the job site.

D. Protection of Persons and Property:

1. Barricade open excavations occurring as part of this Work and post with warning lights.
2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

E. Dust Control: Conduct all operations and maintain the area of activities, including sweeping and sprinkling of roadways, so as to minimize creation and dispersion of dust. Use calcium chloride to control serious or prolonged dust problems.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. The select fill and backfill materials (MDOT Borrow Excavation Class B9-6) should consist of select, non-organic and debris-free silty clays (CL) having a liquid limit less than 40 and a plasticity index in the range of 6 to 20. Fill materials should be compacted to not less than 95 percent of the Standard Proctor dry density at a moisture content between optimum and plus 4 percent of optimum for a depth of 6 inches below the surface.
- B. General Backfill and Fill Material: Provide approved soil materials for backfill and fill that meet the following requirements.
 - 1. Free of clay, rock or gravel larger than 6 inches in any dimensions, debris, waste, frozen materials, vegetable and other deleterious matter.
 - 2. Fill shall consist of any non-organic soil, free of debris and capable of being placed and compacted to the specified densities.
- C. All costs associated with tests required by the ENGINEER to verify that material obtained either on-site or off-site meets the above requirements shall be borne by the CONTRACTOR.

PART 3 - EXECUTION

3.01 INSPECTION

The CONTRACTOR will examine the areas and conditions under which excavating, filling, and grading are to be performed and notify the ENGINEER of conditions the CONTRACTOR may find that are detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in an acceptable manner.

3.02 SITE PREPARATION

Subgrades for fills shall be cleaned and stripped of vegetation, sod, topsoil and organic matter.

3.03 TEST PITS

- A. Where ordered by the ENGINEER, the CONTRACTOR shall excavate and backfill, in advance of construction, test pits to determine conditions or location of existing facilities.
- B. The CONTRACTOR shall perform all work required in connection with excavating, stockpiling, maintaining, sheeting, shoring, backfilling and replacing pavement for the test pits.
- C. Payment for this work will be included in the lump sum price bid for the excavation work.
- D. Test pits made by the CONTRACTOR for his own use at his option shall not be paid for.

3.04 EXCAVATION

- A. General:
 - 1. Scope: Perform all excavation required to complete the Work as shown and specified.

2. Excavated Materials: Earth, sand, clay, gravel, hardpan, boulders not requiring drilling or jack-hammering to remove, decomposed rock, pavements, sediment, rubbish and all other materials within the excavation limits.
- B. Structures and Pipelines:
Excavations: Open excavations shall be constructed to prevent injury to workmen and to new and existing structures or pipelines. All open excavation shall comply with current OSHA requirements.
- C. Dewatering:
1. Placement Below Groundwater Table: Use well points, cofferdams or other acceptable methods to permit construction of said structure or pipeline under dry conditions.
 2. Pipelines: Maintain dry conditions until the pipelines are properly jointed and backfilled.
 3. Water Level: Maintain water level below trench bottom at all times.
 4. Under no conditions shall water be permitted to stand in the bottom of an excavation for more than 24 hours.
 5. The use of sanitary sewers for disposal of water from dewatering operations is prohibited.
- D. Pumping: Pump excavations in such a manner to prevent the carrying away of unconsolidated concrete materials and to prevent damage to the existing subgrade.
- E. Size of Excavations: Extend excavation sufficiently on each side of structures, footings, etc., to permit setting of forms, installation of sheeting, the safe sloping of banks, or etc.
- F. Subgrades:
1. Subgrade Requirements for Fill Areas, Roadways, and Trench Bottoms:
 - a. Strong, dense, and thoroughly compacted and consolidated.
 - b. Free from mud, muck and other soft or unsuitable materials.
 - c. Remain firm and intact under all construction operations.
 2. All subgrades shall be proof-rolled with a loaded dumptruck or other suitable equipment approved by the ENGINEER. Any area that "pump" is considered a soft subgrade and shall be corrected as specified in paragraph 3.04.F.3.
 3. Soft Subgrades: Subgrades which are otherwise solid, but which become soft or mucky on top due to construction operations, shall be removed and replaced or processed to establish a stable surface. Soft area shall be proof-rolled after corrective action has been taken.
 4. Finished Elevation of Stabilized Subgrades: Do not place finished elevation of stabilized subgrades above subgrade elevations shown on the Drawings.
- G. Pipe Trench Preparation:
1. No more than 200 feet of trench may be opened in advance of pipe laying.
 2. Trench width shall be minimized to greatest extent practical but shall conform to the following:
 - a. Sufficient to provide room for installing, jointing and inspecting piping, but in no case wider at top of pipe than pipe barrel O.D. plus 3 feet.
 - b. Enlargements at pipe joints may be made if required and approved by the ENGINEER.
 - c. Sufficient for sheeting, bracing, sloping, and dewatering.
 - d. Sufficient to allow thorough compacting of pipe bedding material.
 - e. Excavating equipment which requires the trench to be excavated to excessive width will not be used.
 3. Depth of trench shall be as shown on the Drawings.
- H. Material Storage:

1. Stockpile satisfactory excavated materials in approved areas, until required for backfill or fill.
 2. Place, grade and shape stockpiles for proper drainage.
 3. Locate and retain soil materials away from edge of excavation.
 4. Dispose of excess soil and waste materials as specified hereinafter.
- I. Unsuitable Material: Where the existing material beneath the subgrade is considered unsuitable by the ENGINEER, remove and replace it with select backfill material.
- 3.05 UNAUTHORIZED EXCAVATION
- A. Limits: All excavation outside the lines and grades shown on the Drawings.
- B. Responsibility: All unauthorized excavation together with the removal and disposal of the associated materials is at the CONTRACTOR'S expense.
- C. Backfill and compact the unauthorized excavation with select backfill and at the CONTRACTOR'S expense.
- 3.06 DRAINAGE AND DEWATERING
- A. General:
1. Prevent surface and subsurface water from flowing into excavations and from flooding adjacent areas.
 2. Remove water from excavation as fast as it collects.
 3. Maintain the ground water level below the bottom of the excavation to provide a stable surface for construction operations, a stable subgrade for the permanent work, and to prevent damage to the Work during all stages of construction.
 4. Provide and maintain pumps, sumps, suction and discharge lines and other dewatering system components necessary to convey water away from excavations.
 5. Obtain the ENGINEER'S approval before shutting down dewatering system for any reason.
- B. Standby Requirements for Dewatering: Provide standby equipment to ensure continuity of dewatering operations.
- C. Disposal of Water Removed by Dewatering System:
1. Dispose of all water removed from the excavation in such a manner as not to endanger public health, property, or any portion of the Work under construction or completed.
 2. Dispose of water in such a manner as to cause no inconvenience to the OWNER, or others involved in work about the site.
 3. Convey water from the construction site in a closed conduit. Do not use trench excavations as temporary drainage ditches.
- 3.07 GENERAL AND SELECT BACKFILL
- A. General: Furnish, place and compact all backfill required for excavations and trenches as required to provide the finished grades shown and as described herein.
- B. Restrictions: Backfill excavations as promptly as Work permits, but not until completion of the following:
1. Reviewed by ENGINEER of construction below finish grade including dampproofing, waterproofing, and perimeter insulation, where applicable.
 2. Inspection, testing, approval, and recording of locations of underground utilities.
 3. Removal of concrete formwork.

4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in manner to prevent settlement of the structure or utilities, or leave in place if required.
 5. Removal of trash and debris.
 6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
- C. Placement:
1. Keep excavation dry during backfilling operations. At no time shall water be permitted to stand in the bottom of an excavation for more than 24 hours.
 2. Bring up backfill evenly on all sides around structures and piping.
 3. It is intended that the elevations, lines, grades and typical sections (after settlement and compaction during construction) shall be those shown on the Drawings.
- D. Pipe Trenches and Utilities:
1. Place all select backfill in pipe trenches which are below structures, other pipes, roadway areas, or as shown on drawings, in horizontal compacted lifts not exceeding 5 inches in depth and thoroughly compacted before the next layer is placed.
 2. Place all backfill in other pipe trenches in horizontal loose lifts of 4 to 5 inches and compact as required.
- E. Rock Excavation:
1. Where pipe is laid in rock excavation, provide a minimum of 4 inches of sand under pipes smaller than 4 inches and a minimum of 6 inches of crushed stone or gravel under piping 4 inches and larger.
 2. After laying pipe, place the balance of the backfill as described herein.
- F. Moisture:
1. Perform all necessary work to adjust the water content of the material to within the range necessary to permit the compaction specified.
 2. Do not place backfill material when free water is standing on the surface of the area where the backfill is to be placed.
 3. No compaction of backfill will be permitted with free water on any portion of the backfill to be compacted.
- G. Unacceptable Material:
1. Do not place or compact backfill in a frozen condition or on top of frozen material.
 2. Remove backfill containing organic materials or other unacceptable material and replace with approved backfill material.
- H. Equipment:
1. Compact backfill with equipment suitable for the type of material placed and which is capable of providing the densities required.
 2. Select compaction equipment and submit it and proposed procedure to the ENGINEER for approval.
 3. All backfill within one foot horizontally from structural walls shall be compacted to the specified density using hand-operated mechanical tampers.
- I. Coverage:
1. Compact backfill by at least two coverages of all portions of the surface of each lift by compaction equipment.
 2. One coverage is defined as the condition obtained when all portions of the surface of the backfill material have been subjected to the direct contact of the compactor.

- J. Compaction:
The fill and backfill materials should be spread in loose lifts having a maximum thickness of 8 inches. Fill materials should be compacted to not less than 95 percent of the standard Proctor maximum dry density (ASTM 698) at a moisture content between optimum and plus 4 percent of optimum for a depth of 6 inches below surface. Stability must be evident during compacting of each lift before any subsequent lifts of backfill material are added. Stability will be indicated by proof rolling with a loaded dump truck in the presence of the Owner's representative.
- K. Inadequate Compaction:
1. If the specified densities are not obtained because of improper control of placement or compaction procedures, or because of inadequate or improperly functioning compaction equipment, perform whatever work is required to provide the required densities.
 2. This work includes complete removal of unacceptable backfill areas and replacement and re-compaction until acceptable backfill is provided.
- L. Settlement:
1. Repair any settlement that occurs, at CONTRACTOR'S expense.
 2. Make all repairs and replacements necessary within 30 days after notice from the ENGINEER or OWNER.

3.08 GENERAL AND SELECT FILL

- A. Locations:
1. Provide select fill in the following locations:
 - a. Support below and around piping and foundations.
 - b. Subgrade for roadway areas, driveways, and sidewalks.
 - c. Where shown on drawings or directed by the ENGINEER.
 2. Provide general fill material in all other places.
- B. Restrictions:
1. Make subgrade surface level, dry, firm and subject to the ENGINEER'S approval.
 2. Do not place fill if any water is on the surface of area to receive fill.
 3. Do not place or compact fill in a frozen condition or on top of frozen material.
- C. Thickness of Lifts:
1. Place select fill and general fill in horizontal loose lifts of 8 inches maximum thickness.
 2. Mix and spread in a manner to assure uniform lift thickness after placing.
 3. Compact each layer of fill before placement of the next lift.
- D. Unacceptable Material:
1. Do not place fill containing lumps, pockets or concentrations of silt or clay, rubble, debris, wood or other organic matter.
 2. Remove and dispose of fill containing unacceptable material.
- E. Moisture:
1. Wet or dry the fill materials during placement to achieve water contents needed for effective compaction.
 2. Do not place fill material when free water is standing on the surface of the area where the fill is to be placed.
 3. No compaction of fill will be permitted with free water on any portion of the fill to be compacted.
- F. Equipment:

1. Perform compaction of fill with equipment suitable for the type of fill material being placed.
 2. Select equipment which is capable of providing the densities required and submit the equipment to the ENGINEER for review.
 3. Vibratory rollers or vibratory plate compactors are suitable for compaction of structural fill.
 4. All fill within one foot horizontally from structural walls shall be compacted to the specified density using hand-operated mechanical tampers.
- G. Coverage:
1. Compact each layer of fill material by at least two complete coverages of all portions of the surface of each lift using suitable compaction equipment.
 2. One coverage is defined as the condition reached when all portions of the fill lift have been subjected to the direct contact of the compacting surface of the compactor.
- H. Compaction:
- The fill and backfill materials should be spread in loose lifts having a maximum thickness of 8 in. Fill materials should be compacted to not less than 95 percent of the standard Proctor maximum dry density (ASTM 698) at a moisture content between optimum and plus 4 percent of optimum for a depth of 6 inches below surface. Stability must be evident during compacting of each lift before any subsequent lifts of backfill material are added. Stability will be indicated by proof rolling with a loaded dump truck in the presence of the Owner's representative.
- I. Inadequate Compaction:
1. If the specified densities are not obtained because of improper control of placement or compaction procedures, or because of inadequate or improperly functioning compaction equipment, perform whatever work is required to provide the required densities.
 2. This work includes complete removal of unacceptable fill areas and replacement and re-compaction until acceptable fill is provided.
- J. Disturbed Materials:
1. Provide, place and compact select fill necessary to replace subgrade materials disturbed and softened as a result of the CONTRACTOR'S operations.
 2. Furnish additional fill at CONTRACTOR'S expense.
- K. Settlement:
1. Repair any settlement that occurs, at CONTRACTOR's expense.
 2. Make all repairs and replacement necessary within 30 days after notice from the ENGINEER or OWNER.
- 3.09 GRADING
- A. General:
1. Uniformly grade areas within limits of grading under this Section, including adjacent transition areas.
 2. Smooth subgrade surfaces within specified tolerances.
 3. Compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.
- B. Compaction: After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.
- C. Tolerances:

Cut and Fill Slopes: Grades shall be plus/minus five hundredths (0.05) foot of grades shown on plans.

3.10 CLAY GRAVEL (NOT USED)

A. General:

1. Place material, in layers of specified thickness, over ground surface where indicated on Contract Drawings.
2. Comply with Mississippi Department of Transportation (MDOT) Standard Specification. Clay gravel shall be Class 5, Group C as outlined in Section 703.07 of the MDOT Specifications.

B. Grade Control: During construction, maintain lines and grades including crown and cross-slope.

C. Placing:

1. Place clay gravel material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness.
2. Maintain optimum moisture content for compacting clay gravel material during placement operations.
3. When a compacted clay gravel course is shown to be 6 inches thick or less, place material in a single layer.
4. When a compacted clay gravel course is shown to be more than 6 inches thick, place material in equal layers, except no single layer shall be more than 6 inches or less than 3 inches in thickness when compacted.

D. Compaction:

1. The minimum density for clay gravel shall be 99 percent of the maximum density obtained in the laboratory.
2. If the field and laboratory tests indicate unsatisfactory compaction, the CONTRACTOR shall provide the additional compaction necessary to obtain the specified degree of compaction.

3.11 DISPOSAL OF EXCAVATED MATERIALS

Excess or Unsuitable Material:

A. Haul away from the project site all material removed from the excavations which does not conform to the requirements for fill or backfill or is in excess of that required for backfill.

B. Dispose of excess or unsuitable material in compliance with municipal, county, state, federal or other applicable regulations at no additional cost to the OWNER.

3.12 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction:

1. Testing lab will inspect and approve subgrades and fill layers before further construction work is performed thereon.
2. Tests of subgrades, backfill and fill layers shall be taken as follows:
 - a. Select Fill and Backfill: One field density for every 2,500 square feet of fill or backfill installed for each of the lifts of select fill or backfill placed. One field moisture test for each compacted lift.
 - b. Pipeline Installation, Roadway and Driveway Crossings: Two field densities for each crossing. Placement of test will be as directed by ENGINEER.

- c. Pipeline Installation, Running in Roadways: Two field densities at different depths for every 200 feet of pipe installed. Depth placement will be as determined by ENGINEER.
- B. Unsuitable Compaction: If, based on reports of testing lab and inspection, subgrade, backfills or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense to the OWNER.

END OF SECTION

SECTION 31 23 33.01 BURIED PIPING INSTALLATION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope:
1. The CONTRACTOR shall furnish all labor, materials, equipment and incidentals as shown, specified and required to install all buried piping, fittings, and specials.
 2. The Work includes, but is not limited to, the following:
 - a. All types of buried piping unless specifically included under other Sections or the Mississippi Department of Transportation Standard Specifications for Road and Bridge Construction, 2004 Edition.
 - b. Pipe beneath structures.
 - c. Testing, cleaning, and disinfecting.
 - d. Installation of all jointing and gasketing materials, specials, couplings, and all other Work required to complete the piping installation.
 - e. All appurtenances and specials shown, specified or required shall be incorporated into the piping systems. Valves, specials and appurtenances shall be as specified in Section 33 12 16, Valves and Appurtenances.
- B. Coordination: Review installation procedures under other Sections and coordinate with the Work that is related to this Section.

1.02 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
1. Size, class and other details of pipe to be used.
 2. Information on typical joint and harnessing details.
- B. Tests: Submit description of proposed testing methods, procedures and apparatus. Submit copies of all test reports.
- C. Record Drawings: During progress of the Work, keep an up to date set of drawings showing field modifications. Submit drawings at a scale satisfactory to the ENGINEER that show the actual in-place installation of all piping and appurtenances installed under this Section. The drawings shall show all piping on plans with all reference dimensions and elevations required for complete record drawings of the piping systems. The drawings shall be furnished not later than 30 days after Substantial Completion of the Work.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery, storage and handling of pipe, fittings, and specials shall be in complete compliance with the manufacturer's instructions.
- B. Handle all pipe, fittings and accessories carefully with approved handling devices. Do not drop or roll pipe off trucks. Do not otherwise drop, roll or skid pipe. Materials cracked, gouged, chipped, dented or otherwise damaged will not be approved.
- C. Pipe, fittings and specials shall be unloaded opposite to or as close to the place where they are to be laid as is practicable to avoid unnecessary handling. Interiors shall be kept free from dirt and foreign matter.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Pipe materials are specified under each applicable pipe material sections of the Specifications.
- B. Pipe Marking:
 - 1. General:
 - a. Each piece of pipe or fitting shall be clearly marked with a designation which shall conform with designations shown on the Shop Drawings.
 - b. Class designation shall be cast or painted on each piece of pipe or fitting four inches in diameter and larger.
 - c. Piping, smaller than 4-inch diameter shall be clearly marked by manufacturer as to material, type and rating.
 - 2. Magnetic Underground Warning Tape:
 - a. The CONTRACTOR shall place magnetic warning tape approximately 12 to 18 inches below grade in all pressure pipe trenches.
 - b. Buried water piping warning tape:
 - (1) Message: "CAUTION – BURIED WATER LINE".
 - (2) Size and Color: 3-inch wide and blue background with black lettering.
 - c. Buried sewer force main warning tape:
 - (1) Message: "CAUTION – BURIED SEWER LINE".
 - (2) Size and Color: 3-inch wide and green background with black lettering.
- C. See Contract Drawings for required pipe materials.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General:
 - 1. Install piping as shown, specified and as recommended by the manufacturer.
 - 2. Request instructions from the ENGINEER before proceeding if there is a conflict between the manufacturer's recommendations and the Drawings or Specifications.
 - 3. Pipe, fittings and accessories that are cracked, damaged or in poor condition or with damaged linings will be rejected.
 - 4. Minimum cover over piping shall be three feet unless otherwise shown or approved by the ENGINEER.
 - 5. Earthwork required is in Section 31 00 00 of these specifications.
- B. Bedding Pipe:
 - 1. Select bedding material used around and under flexible pipes shall be crushed limestone conforming to the gradation set out below:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
1 inch	100
½ inch	60 - 82
No. 4	40 - 55

2. Select bedding material used around and under rigid pipes shall conform to Section 603.03.2, Bedding, of the Mississippi Department of Transportation Standard for Road and Bridge Construction, 2004 Edition.
 3. Select Backfill Material: Select material for backfilling pipe trenches shall be as specified in Section 31 00 00, Paragraph 2.01 A.
 4. Select Bedding and Backfill Installation: Promptly after the pipe is laid, all trenches and excavation shall be backfilled and compacted until it covers the pipe at least one foot. This backfill shall be brought up and tamped equally and thoroughly along each side of the pipe in such a manner as to avoid displacement of or damage to the pipe. The select bedding shall be dumped, spread out, and compacted to 70 percent relative density. Backfill material shall be thoroughly compacted to a density at least equal to 95 percent of the maximum density determined by the Standard Proctor in accordance with ASTM D 698 Method C including Note 2.
 5. No piping shall be laid until the ENGINEER approves the bedding condition.
 6. No pipe shall be brought into position until the preceding length has been bedded and secured in its final position.
 7. All ledge rocks, boulders, and large stones shall be removed during trench excavation to provide a minimum clearance of four to six inches below and a minimum clearance of 12 inches on each side of pipe.
- C. Laying Pipe:
1. Comply with manufacturer's instructions, technical specifications, and details on Contract Drawings.
 2. Install all pipe accurately to line and grade shown unless otherwise approved by ENGINEER. Remove and relay pipes that are not laid correctly.
 3. Slope piping uniformly between elevations given.
 4. 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.
 5. Start laying pipe at lowest point and proceed towards the higher elevations, unless otherwise approved by ENGINEER.
 6. Place bell and spigot pipe so that bells face the direction of laying, unless otherwise approved by ENGINEER.
 7. Excavate around joints in bedding and lay pipe so that only the barrel receives bearing pressure from the trench bottom.
 8. Permissible deflections at joints shall not exceed the amount allowed by manufacturer.
 9. Take every precaution to ensure that no foreign material enters the piping prior to and during installation.
 10. All pipe and fittings shall be carefully examined for cracks, damage, or other defects while suspended above the trench before installation. Defective materials shall be immediately removed from site.
 11. Interior of all pipe and fittings shall be inspected and all dirt, gravel, sand, debris or other foreign materials shall be completely removed from the pipe interior before it is moved into the trench.
 12. Bell and spigot mating surfaces shall be thoroughly wire brushed and wiped clean and dry immediately before pipe is laid.
 13. Every time that pipe laying is not actively in progress, the open ends of pipe shall be closed by a watertight plug.
 14. Field cutting pipe, where required, shall be made with a machine specially designed for cutting piping. Cuts shall be carefully done, without damage to pipe or lining, so as to leave a smooth end at right angles to the axis of pipe. Cut ends shall be tapered and sharp edges filed off smooth. Flame cutting will not be allowed.
 15. Blocking under piping shall be permitted only when accepted by ENGINEER for special conditions.

16. Touch up protective coatings in a satisfactory manner prior to backfilling.
 17. All piping shall be inspected by the ENGINEER prior to any backfilling operations. The CONTRACTOR shall notify the ENGINEER in advance of any backfilling operation.
 18. Sewers shall be laid at least ten feet horizontally from any existing or proposed water main and where the sewer line crosses a water main, the sewer line shall be laid to provide a minimum vertical separation of 18 inches between the outside of the water main and the outside of the sewer line.
 19. In addition to Paragraph 3.01.C.18, the CONTRACTOR shall protect water supplies in accordance with Section 28 of the Department of Environmental Quality guidance.
- D. Jointing Pipe:
1. Clean completely all jointing surfaces and adjacent areas immediately before mating joint.
 2. Lubricate and adjust gaskets as recommended by manufacturer.
 3. After gaskets are compressed and before pipe is brought fully home, each gasket shall be carefully checked for proper position around full circumference of the joint.
 4. Conform to manufacturers' recommendations pertaining to jointing pipe.
- E. Restraints, Supports and Thrust Blocks:
1. Install restrained joints as shown, specified, required, and as recommended by the manufacturer.
 2. Provide concrete and steel collars, thrust blocks, and cradles as shown or otherwise approved by ENGINEER.
- F. Transitions from One Type of Pipe to Another:
Provide all necessary adapters, specials and connection pieces required when connecting different types and sizes of pipe or when connecting pipe made by different manufacturers.
- G. Closures:
1. Provide all closure pieces shown or required to complete the Work.
 2. Locate closures in straight runs of pipe.
- H. Backfilling:
1. Conform to applicable requirements of the Section 31 00 00, Earthwork.
 2. Backfill by hand and use hand or pneumatic tamping until pipe is covered by at least one foot of backfill.
- I. Concrete Pipe Supplementary Requirements:
1. Conform to Paragraph 3.01.C above, unless otherwise specified and in accordance with applicable recommendations of the following:
 - a. AWWA Manual M9.
 - b. Concrete Pipe Handbook.
 2. Joints: Joints shall be made so that alignment and slope are in accordance with the Drawings. Joints shall be inspected and approved by the ENGINEER before backfilling.
- J. Movable Sheeting, Trench Boxes or Shields:
1. When using movable trench support, care should be exercised not to disturb the pipe location, jointing or embedment.
 2. Removal of any trench protection below the top of the pipe is prohibited after the pipe embedment has been compacted.

3. Movable trench supports shall only be used in either wide trench construction where supports extend below the top of the pipe, or on a shelf above the pipe with the pipe installed in a narrow, vertical-wall subditch.
4. Any voids left in the embedment material by support removal shall be carefully filled with granular material which is adequately compacted.
5. Removal of bracing between sheeting shall only be done where backfilling proceeds and bracing is removed in a manner that does not relax trench support.
6. When advancing trench boxes or shields, prevent longitudinal pipe movement or disjoints.
7. In those instances where the trench support must extend to the bottom of the ditch, a subditch is impractical or native soils are unstable, a simple alteration to the commonly used trench box may be the best alternative. A section one-half the length of the box, with a depth of approximately two feet, cut from the bottom of the box will allow the trench shield to ride on the bottom of a narrow trench, while allowing undisturbed pipe embedment in the back half. See Figure 10.20 in Uni-Bell PVC Pipe Association's *Handbook of PVC Pipe – Design and Construction*.

3.02 WORK AFFECTING EXISTING PIPING

- A. Location of Existing Piping:
 1. Locations of existing piping shown should be considered approximate.
 2. The CONTRACTOR is responsible for determining exact location of existing piping to which connections are to be made, or which may become disturbed during earth moving operations, or which may be affected by the work in anyway.
- B. Work on Existing Pipelines:
 1. Cut pipes as shown or required with machines specifically designed for this work.
 2. Install temporary plugs to keep out all mud, dirt, water and debris.
 3. Provide all necessary adapters, fittings, pipe and appurtenances required.

3.03 TESTING OF PIPING

- A. General:
 1. The CONTRACTOR shall conduct high-pressure leakage test for all filtered water, potable water, and sewer force main piping and installed low-pressure air test and deflection test for all gravity sewer piping.
 2. Notify ENGINEER 48 hours in advance of testing.
 3. Provide all testing apparatus.
 4. Pipelines which fail to hold specified test pressure or which exceed the allowable leakage rate shall be repaired and retested.
 5. Test pressures required are at the lowest elevation of the pipeline section being tested unless otherwise specified.
 6. Unless otherwise approved, conduct all tests in the presence of the ENGINEER.
- B. High-Pressure Leakage Test:
 1. After the pipe has been laid and backfilled, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of 50 psi unless shown to be different in piping schedule. The duration of each pressure test shall be at least 24 hours.
 2. Each valved section of pipe shall be slowly filled with water and the specified test pressure (based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge) shall be applied by means of a pump connected to the pipe in a manner satisfactory to the ENGINEER. The pump, pipe connection, gauges and all necessary apparatus shall be furnished by the CONTRACTOR. The CONTRACTOR shall furnish all necessary assistance for conducting the tests.

3. Before applying the specified test pressure, all air shall be expelled from the pipe. If permanent air vents are not located at all high points, the CONTRACTOR shall install corporation stops at such points, so that the air can be expelled as the line is filled with water. After all air has been expelled, the corporation chocks shall be closed and the test pressure applied.
 4. All exposed pipe, fittings, valves, hydrants and joints shall be carefully examined during the test. Any cracked or defective pipe, fittings, valves or hydrants discovered in consequence of this pressure test shall be removed and replaced by the CONTRACTOR with sound material. The test shall be repeated until satisfactory to the ENGINEER.
 5. A leakage test shall be conducted by the CONTRACTOR after the pressure test has been satisfactorily completed. The duration of each leakage test shall be six hours. During the test, the main shall be subjected to a pressure of 50 psi unless shown to be different in the piping schedule.
 6. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe or any valved section thereto to maintain the specified leakage test pressure after the air in the pipe line has been expelled and the pipe has been filled with water.
 7. No pipe installation will be accepted if the leakage is greater than that determined by the formula " $L=ND/302$ ".
 8. Where "L" is the allowable leakage in gallons per hour, "N" is the number of joints in the length of pipe line tested; and "D" is the nominal diameter of the pipe measured in inches.
- C. Installed Low Pressure Air Test: UNI-Bell's UNI-B-6.
1. Installed gravity sewer pipe shall be air-tested prior to acceptance.
 2. Specified pressure drop of 0.5 psig shall be used to determine the required time the pipe is tested.
 3. Sections of installed pipe shall be tested from manhole to manhole.
- D. Deflection Test:
1. Deflection tests shall be performed on all PVC and ductile iron gravity sewer pipe. The tests shall be conducted after the final backfill has been in place at least 30 days.
 2. No pipe shall exceed a deflection of 5 percent.
 3. If the deflection test is to be run using a rigid ball or mandrel, it shall have a diameter equal to 95 percent of the inside diameter of the pipe. The test shall be performed without mechanical pulling devices.
 4. The mandrel shall be drawn through the pipe by hand. Irregularities or obstructions encountered in the line shall be corrected by the CONTRACTOR.
 5. If a section of pipe with excessive deflection is found, the CONTRACTOR shall uncover the pipe for inspection. Damaged pipe will be replaced. If the pipe is undamaged, the CONTRACTOR may reinstall the bedding and backfill and retest the pipe. Retesting shall include mandrel and low-pressure air testing.
- E. Infiltration/Exfiltration Test:
1. The CONTRACTOR shall supply needed equipment and personnel to perform the infiltration/exfiltration test on installed gravity sewer pipe 30 inches and larger.
 2. Allowable infiltration/exfiltration shall not exceed 50 gallons per inch of nominal diameter per mile of sewer per day.
 3. An exfiltration test shall be performed where the crown of the entire reach of sewer being tested lies less than five feet under the existing water table. Minimum upstream testing head shall be five feet above the existing water table.
 4. An infiltration test shall be performed where the crown of the entire reach of sewer being tested lies five feet or more under the existing water table.
 5. Sections of installed piping shall be tested from manhole to manhole.

6. The CONTRACTOR shall install a calibrated weir at lower end of section being tested and shall measure leakage for a minimum of four hours if infiltration test is performed. Provide bulkhead at upper end of pipe section being tested.
7. The CONTRACTOR shall measure required water to maintain minimum upstream testing head if exfiltration test is performed.

3.04 CLEANING AND DISINFECTION

- A. All piping shall be thoroughly cleaned and flushed in a manner approved by ENGINEER prior to placing in service. Piping 48 inches diameter and larger shall be inspected from inside and all debris, dirt and foreign matter removed.
- B. Disinfection:
 1. Disinfect all filtered water piping and potable water piping.
 2. Completely clean interior of all piping and flush piping prior to disinfection with water at a minimum velocity of 2½ feet per second.
 3. Conform to procedures described in AWWA C651 unless otherwise approved by ENGINEER.
 4. Water for flushing, testing and chlorination shall be furnished and paid for by the CONTRACTOR. The CONTRACTOR shall provide all temporary piping, hose, valves, appurtenances, and services required.
 5. Chlorine will be supplied by the CONTRACTOR.
 6. Bacteriologic tests will be sampled by the ENGINEER or a certified water plant operator of the OWNER and analyzed by the Mississippi State Department of Health.
 7. Bacteriological samples will be taken from every dead-end line and every major looped line in the project when construction is completed.
 8. Chlorine concentration in the water entering the piping shall be between 50 and 100 parts per million, such that a minimum residual concentration of 25 mg/l will be left after a 24-hour retention period. The operation shall be repeated as necessary to provide complete disinfection. Water being collected for testing shall not have a chlorine residual higher than normally maintained in the water system. No chlorine will be present which is a result of line disinfection.
 9. Complete disinfection shall be defined as no confluent growth for samples taken on two consecutive days.
 10. Sewer force main and gravity sewer do not have to be disinfected.

END OF SECTION

SECTION 32 31 13 CHAIN LINK FENCE

PART 1 - GENERAL

1.01 SUMMARY

Provide all equipment and materials, and do all work necessary to construct the chain link fence as indicated on the Drawings and as specified.

1.02 RELATED REQUIREMENTS

- A. The Bidding Requirements, Contract Forms, and Conditions of the Contract and applicable parts of Division 1 - General Requirements, as listed in the Table of Contents, shall be included in and made a part of this Section.
- B. Carefully examine all of the Contract Documents for requirements affecting the work of this Section. Other specification sections directly related to the work of this section include, but are not limited to the following:
 - 1. Division 31, Earthwork
 - 2. Mississippi Department of Transportation Standard Specifications for Road and Bridge Construction, 2004 Edition

1.03 REFERENCES

Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.

- 1. American Society for Testing and Materials (ASTM):
 - A 53 Pipe, Steel, Black and Hot-Dipped Zinc-Coated Welded and Seamless
 - A 90 Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles
 - A 123 Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip
 - A 153 Zinc-Coating (Hot-Dip) on Iron and Steel Hardware
 - A 385 High-Quality Zinc Coatings (Hot-Dip)
 - A 392 Zinc-Coated Steel Chain-Link Fence Fabric
 - A 569 Steel, Carbon (0.15 Maximum Percent) Hot-Rolled Sheet and Strip, Commercial Quality
 - A 653 Steel Sheet, Zinc-Coated (galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process
 - A 924 General requirements for Sheet Steel Sheet, Metallic-Coated by the Hot-Dip Process
 - B 6 Zinc (Slab Zinc)

- D 412 Tests for Rubber Properties in Tension
- D 638 Tensile Properties of Plastics
- D 746 Brittleness Temperature of Plastics and Elastomers by Impact
- D 792 Specific Gravity and Density of Plastics by Displacement
- D 1499 Practice for operating Light- and Water-Exposure Apparatus (Carbon-Arc Type) for Exposure of Plastics
- D 2240 Rubber Property - Durometer Hardness
- D 3359 Measuring Adhesion by Tape Test
- F 567 Installation of Chain-Link Fence
- F 668 Poly (Vinyl Chloride)(PVC)-Coated Steel Chain-Link Fence Fabric
- F 1043 Strength and protective Coatings on Metal Industrial Chain Link Fence Framework

2. Chain Link Fence Manufacturers Institute (CLFMI):

Manual

Product Manual

1.04 QUALITY ASSURANCE

- A. Chain link fencing shall be manufactured in accordance with the requirements of the CLFMI Manual. Fence manufacturer shall be a CLFMI member.
- B. Fence manufacturer shall have at least ten years of experience in the manufacture of vinyl-coated galvanized steel chain link fencing.

1.05 SUBMITTALS

- A. Submit sample of fence fabric for Architect's review prior to installation.
- B. Shop Drawings shall be submitted for all fence materials for Architect's review.
- C. Submit manufacturer's certification that all fence materials conform to specification requirements.

PART 2 - PRODUCTS

2.01 REFERENCE TABLES

- A. Mesh:

Recommended Usage	Mesh Size	Gage Coated Wire	Nominal Diam Coated Wire
Standard Industrial	2 in.	9	0.148 in.

B. Components:

Height	End and Corner Posts	Intermediate Line Post
6 feet	2.875 in. O.D.	2.375 in. O.D.
Weight	5.79 lb./ft.	3.65 lb./ft.

2.02 PVC COATED FABRIC

- A. Fabric shall be PVC coated thermally fused and bonded to a primer which is thermally cured onto galvanized steel core wire conforming to ASTM F 668, Class 2b. Color of vinyl coating shall be black. Minimum coating thickness shall be 0.006 in. Color sample shall be submitted to the Architect for approval.
- B. Fabric shall be woven into a 2 in. mesh of 9 finished gauge (0.148 in.) galvanized wire with a minimum breaking strength of 1290 lb. in accordance with ASTM F 668, Class 2b.
- C. Zinc for galvanized coating shall conform to ASTM B 6, galvanized by hot dipped method AISI Type I, before vinyl coating; coating shall be smooth. Minimum weight of zinc coating shall be 1.2 oz. per sq. ft. for 6, 9 and 11 gage.
- D. Polyvinyl chloride coating shall meet the following requirements.
 - 1. Specific gravity shall be 1.30 maximum, tested in accordance with ASTM D 792.
 - 2. Hardness shall have a minimum Durometer reading of A 95 in accordance with ASTM D 2240. Ultimate elongation shall be 275 percent in accordance with ASTM D 412.
 - 3. Tensile strength shall have a test minimum of 3,300 psi in accordance with ASTM D 412.
 - 4. Vinyl shall be a dense and impervious covering free of voids, having a smooth, lustrous surface without pinholes, bubbles, voids, or rough or blistered surface.
- E. Thickness of fabric shall conform to the following:

Uncoated (PVC) wire dimensions for 2 in. mesh openings shall be 0.148 in. in diameter. Zinc coating shall be 1.2 ounces per square foot of wire surface. Vinyl coating shall be not less than 0.006 in.

2.03 METALLIC COATED FENCE FABRIC (Not Used)

- A. Fabric shall be a good commercial quality of steel wire of 2-in. mesh and 9 gage.
- B. Fabric shall be zinc-coated by the hot-dip process after fabrication in accordance with ASTM A 392. Weight of the zinc coating shall be not less than 1.2 oz. per square foot. Zinc used for coating shall conform to ASTM B 6.

2.04 FENCE POSTS, HARDWARE, AND FITTINGS – GENERAL

- A. Fittings shall be of best quality malleable iron casting, wrought iron forgings, or pressed steel and provided with pin connections. Equipment shall be designed to carry 100 percent overload.

1. Malleable iron castings shall be hot-dipped galvanized in accordance with ASTM A 153.
 2. Wrought iron forgings or pressed steel fitting and appurtenances shall be hot-dipped galvanized in accordance with ASTM A 123.
 3. Fence hardware coatings shall match fence fabric coating.
- B. Fittings for connections between top rails and line posts of 2.375 in. O.D., Schedule 40 pipe weighing 3.65 lb./ft. shall be 2-1/2 in. x 2-1/2 in. loop top fittings manufactured by Cox Fence Fittings, Mesquite, TX 75180; Tel. 972-288-7555, or approved equal.
- C. Piping shall, at the Contractor's option, be one of the following:
1. Piping shall be steel conforming to ASTM A 53 except that pipe shall be unthreaded and untested for water pressure.
 2. Piping shall be steel equal to SS-40 cold-formed galvanized/clear coated steel fence pipe product, with a minimum yield strength of 50,000 psi, manufactured by Allied Tube & Conduit Corporation, Harvey, IL, patented Flo-Coat process.
 - a. Steel strip used in the manufacture of the pipe shall conform to ASTM A 569.
 - b. Zinc used for coating shall conform to ASTM B 6. High Grade and Special High Grade Zinc. Weight of zinc shall be 1.0 oz./sq. ft., plus or minus 0.1 oz./sq. ft., determined by ASTM A 90.
 - c. Chromate conversion coating shall be 30 micrograms/sq. in., plus or minus 15 micrograms/sq. in.
 - d. Clear coating shall be clear organic coating, nominal thickness of 0.5 mils, plus or minus 0.2 mils.
 3. Piping shall be steel equal to "Sectra Pipe", industrial weight HYP-40 galvanized steel fence pipe product, with a minimum yield strength of 55,000 psi, manufactured by Reeves Southeastern Corp, Tampa, FL 33619.
 - a. Pipe shall meet strength requirements of ASTM F 1043, Group IC.
 - b. Pipe shall have a multi coating of zinc phosphate, and epoxy base and a TGIC no-mar polyester finish. Thickness of the base coat shall be 2 mils and finish coat shall be 3 mils. Combined finish shall meet the requirements of ASTM B 117 for minimum exposure of 3,500 hours; 1,000 hour exposure within a weather-ometer in accordance with ASTM D 1499 and acceptable adhesion when subjected to cross hatch test in accordance with ASTM D 3359, Method B.
- D. Galvanized items shall be galvanized in accordance with ASTM A 123, A 153, or A 385, as applicable.
- E. Bolts which are installed 6 ft. or less above grade shall not protrude more than 1/4 in. beyond the nut after tightening. Rough edges shall be filed smooth to the satisfaction of the Architect. Peen ends of all bolts after tightening.
- 2.05 POSTS
- A. Line post shall be 2.375 in. O.D., Schedule 40 pipe weighing 3.65 lb./ft.
 - B. End and corner posts shall be 2.875 in. O.D. Schedule 40 pipe weighing 5.79 lb./ft.
- 2.06 RAIL AND POST BARRIERS

- A. Top rail, bottom rail, mid-rail, and post braces shall be 1.66 in. O.D. Schedule 40 pipe weighing 2.27 lb./ft.
- B. Truss braces: Fence shall have a brace rail of 1-5/8 in. O.D. between each terminal post and the next adjacent line post. Each brace rail shall have attachments for a 5/16 in. vinyl coated truss rod and turnbuckle attachment.

2.07 GATES AND GATE FRAMES (NOT USED)

- A. Fabrication: Assemble gate frames by welding connections. Use same fabric as for fence, unless otherwise indicated. Install fabric with stretcher bars at edges, (and tie wire at top and bottom edges, if stretcher is not used). Attach stretcher bars to gate frame at not more than 15 inch o.c. Attach hardware with rivets or by other means which will provide security against removal or breakage.

1. Framing:

- a. 6 ft. high, up to 8 ft. wide: Fabricate perimeter frames of minimum 1.660 in. O.D. Schedule 40 pipe weighing 2.27 lb./ft., or SS-40 pipe weighing 1.84 lb./ft., or HYP- 40 pipe weighing 1.84 lb./ft., or 1.50 in. square steel tubing conforming to ASTM A 500, Grade B, hot-dip galvanized with a minimum 2.0 oz. zinc per sq. ft. of surface area.
- b. 6 ft. high, over 8 ft. wide: Fabricate perimeter frames of minimum 1.90 in. O.D. Schedule 40 pipe weighing 2.72 lb./ft., or SS-40 pipe weighing 2.28 lb./ft. or 2.00 in.; or HYP- 40 pipe weighing 2.28 lb./ft., or square steel tubing conforming to ASTM A 500, Grade B, hot-dip galvanized with a minimum 2.0 oz. zinc per sq. ft. of surface area.

2. Bracing:

- a. Provide diagonal cross-bracing consisting of 3/8 in. diameter adjustable length truss rods on gates where four sided tension rods are not used. Provide frame rigidity without sag or twist.
- b. Provide 1.90 in. O.D. Schedule 40 pipe for vertical center stays on each gate leaf assembly for double gates where gate width is 16 ft. and greater.

- 3. Over 8 ft. high and 10 ft. wide, provide additional horizontal and vertical members to ensure proper gate operation and for attachment of fabric, hardware and accessories.

- B. Gate Hardware: Galvanize per ASTM A 153 (each gate)

- 1. Hinges: Pressed steel or malleable iron to suite gate size, non-lift-off type offset to permit 180 degree gate opening. Provide one pair of hinges for each leaf. (Up to 12 ft. ht.)
- 2. Latch: Forked type to permit operation from either side of gate: Provide padlock eye as integral part of latch.
- 3. Keeper: Provide keeper for gates, which automatically engages the gate leaf and holds it in the open position until manually released.
- 4. Double gates: Provide drop rod to hold inactive leaf. Provide pipe to engage the center drop rod. Provide locking device and padlock eyes as an integral part of the latch, requiring one padlock for locking both gate leaves.
- 5. Sliding gates: Provide manufacturer's standard heavy-duty inverted channel track, ball-bearing trollies, hanger, sheaves, overhead framing, supports, guides, stays, bracing, and accessories.

2.08 STRETCHER BARS

- A. Stretcher bars shall not be less than 3/16 in. x 3/4 in. and be full height of the fabric with which they are being used. Provide stretcher bars for each end, corner and pull post.
- B. Stretcher bar bands and clips shall be heavy pressed steel, or malleable iron. At square post provide special design clips.
- C. Attachment bolts for bands shall be 5/16 in. x 1-1/2 in. galvanized carriage bolts with nuts, field painted to match vinyl fence color.

2.09 CAPS

Posts shall have caps which shall be designed to exclude water from post. Caps shall have holes suitable for the through passage of the top rail where necessary.

2.10 TENSION AND TIE WIRE

- A. Tension wire shall be 6 gauge vinyl coated galvanized steel wire. Fabric shall be attached to the tension wire at intervals of 24 in. with vinyl coated hog rings.
- B. Tie wire shall be 9 gauge vinyl-coated galvanized steel wire spaced 24 in. apart on rails and 12 in. apart on posts; ends shall be wound in a telegraph twist two and one-half turns.

2.11 GALVANIZED PAINT

Cold galvanized paint shall be one of the following:

<u>Product</u>	<u>Manufacturer</u>
Galvicon Zinc Shield	Galvicon Corporation Stanley Chemical Division of the Stanley Works

2.12 VINYL COATING

Galvanized posts, rails, braces, and other frame components and fittings shall be vinyl coated to match the color of the vinyl coated fence fabric.

2.13 CONCRETE

Concrete: Provide concrete of portland cement complying with ASTM C 150, aggregates complying with ASTM C 33, and clean water. Mix materials to obtain concrete with a minimum 28-day compressive strength of 3,000 psi, using at least 4 sacks of cement per cu. yd., 3/4 in. maximum size aggregate, and maximum 3 in. slump. Prepare to conform to ASTM C94.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Chain link fence installation shall conform to ASTM F 567, except as modified below.
- B. Line posts shall be placed at not more than 10 ft. on center, or as indicated on Drawings.

- C. Fence shall be of height and dimension as shown on Drawings, from finish grade to top rail.
- D. Tension Wire: Provide tension line at bottom of fabric and at top (if top rail is not specified). Install tension wires before stretching fabric and tie to each post with ties or clips. Attach to fabric with hog rings 24 in. o.c.
- E. Stretcher Bars: Extend through fabric and secure to end, corner, and pull posts with bands or clips spaced not over 12 in. o.c.

3.02 GATES (NOT USED)

- A. Install gates plumb, level, and secure for full opening without interference.
- B. Gate dimension is the center to center spacing of gate posts.
- C. Gates shall work freely and shall have adequate clearance of the bottom. Adjust for smooth operation.

3.03 FOUNDATIONS

- A. Post hole footing shall not be smaller than 12 inches in diameter and 36 inches deep.
- B. Concrete shall be crowned at top to shed water.
- C. Post hole footings shall be allow to cured 72 hours prior to any additional work.

3.04 POSTS

- A. Layout:
 - 1. End, corner and pull post: Provide at each termination and change in horizontal or vertical direction of 30 degrees or more.
 - 2. Line Posts: Space uniformly at approximately 8 feet (10 feet) on center.
- B. Concrete Set Posts: (Corner, End and Pull Posts) Drill holes (after final grading) in firm, undisturbed or compacted soil. Holes shall have a diameter equal to four times the diameter of the post, and depths approximately 6 in. deeper than post bottom. Excavate deeper as required for adequate support in soft and loose soils, and for posts with heavy lateral loads.
 - 1. Set post not less than 35 in. below surface when in firm, undisturbed soil.
 - 2. Place concrete around posts in a continuous pour, tamp for consolidation. Trowel finish tops of footings, and slope or dome to direct water away from posts, except at tennis courts, backstops and walks.
- C. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.

3.05 BRACING AND FRAMING

Bracing: Install horizontal pipe brace at mid height for fences 6 ft. and over, on each side of corner posts and at end and pull posts. Firmly attach with proper fittings. Install diagonal tension rods at these points. Install braces so posts are plumb when diagonal rod is under proper tension.

3.06 TOUCH UP

- A. Following installation scratches and marred spots in galvanized surfaces shall be power wire brushed and painted with a cold-applied galvanized paint at a rate of 2 oz. zinc per sq. ft. of surface.
- B. Following installation scratches and marred spots in vinyl coated surfaces shall be field coated with a vinyl coating supplied by the fence manufacturer.

END OF SECTION

SECTION 33 10 00 WATER DISTRIBUTION SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

Furnish labor, materials, services, equipment, and other necessary items required for accompanying the construction of the water systems. This shall include, but not be limited to the following: pipe and fittings for site water line including domestic water line and fire water line, valves and fire hydrants, set lines, elevations, and grades for water distribution systems work and control system for duration of work including careful maintenance of benchmarks, property corners, monuments, or other reference points.

1.02 RELATED SECTIONS

- A. Section 31 00 00, Earthwork
- B. Section 31 23 33.01, Buried Piping Installation
- C. Section 33 11 13.13, Ductile-Iron Pipe And Fittings
- D. Section 33 30 00, Sanitary Sewer System
- E. Section 33 31 13, Plastic Pipe
- F. Local Governing Authority and Code Requirements
- G. All Necessary Construction Permits
- H. 2004 MDOT Standard Specifications for Road and Bridge Construction

1.03 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO): T180, Moisture-Density Relations of Soils Using a 10-lb (4.54 kg) Rammer and an 18-Inch (457 mm) Drop.
- B. ANSI/ASME B16.18, Cast Copper Alloy Solder Joint Pressure Fittings
- C. ANSI/ASME B16.22, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
- D. ANSI/ASTM D1557, Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18-Inch (457 mm) Drop
- E. ANSI/ASTM D2466, Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
- F. ANSI/AWS A5.8, Brazing Filler Metal
- G. ANSI/AWWA C104, Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
- H. ANSI/AWWA C105, Polyethylene Encasement for Ductile Iron Piping for Water and Other liquids
- I. ANSI/AWWA C11, Rubber-Gasket Joints for Ductile Iron and Grey-Iron Pressure Pipe and Fittings

- J. ANSI/AWWA C151, Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids
 - K. ANSI/AWWA C500, Gate Valves, 3 through 48 in NPS, for Water and Sewage Systems
 - L. ANSI/AWWA C502, Dry Barrel Fire Hydrants
 - M. ANSI/AWWA C504, Rubber Seated Butterfly Valves
 - N. ANSI/AWWA C508, Swing-Check Valves for Waterworks Service, 2 in through 24 in NPS
 - O. ANSI/AWWA C509, Resilient Seated Gate Valves 3 in through 12 in NPS, for Water and Sewage Systems
 - P. ANSI/AWWA C600, Installation of Ductile-Iron Water Mains and Appurtenances
 - Q. ANSI/AWWA C606, Grooved and Shouldered Type Joints
 - R. ANSI/AWWA C900, Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch, for Water
 - S. American Society for Testing Materials (ASTM):
 - 1. B88, Seamless Copper water Tube
 - 2. D1785, Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
 - 3. D2241, Poly (Vinyl Chloride) (PVC) Plastic Pipe(SDR-PR)
 - 4. D2855, Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings
 - 5. D2922, Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
 - 6. D3017, Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures
 - 7. D3139, Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals
 - 8. D3035, Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter
 - T. AWWA C901, Polyethylene (PE) Pressure Pipe, Tubing, and Fittings, 1/2-inch through 3-inch, for Water
 - U. UL 246, Hydrants for Fire-Protection Service
- 1.04 SUBMITTALS
- A. Product Data: Provide data on pipe materials, pipe fittings, hydrants, valves and accessories.
 - B. Manufacturer's Certificate: Certify that products meet or exceed state or local requirements.
- 1.05 PROJECT RECORD DOCUMENTS
- A. Accurately record actual locations of piping mains, valves, connections, and invert elevations.
 - B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with utility company and/or municipality requirements.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.

PART 2 - PRODUCTS

2.01 PIPE

- A. Pipe sizes less than 3 inches that are installed below grade and outside building shall comply with:
 - 1. Seamless Copper Tubing: Type "K", soft annealed temper, to comply with ASTM B88-62 and installed with wrought copper (95-5 Tin Antimony solder joint, ASTM B32, Sb5) fittings in accordance with ASTM B16.22.
- B. Pipe sizes 3 inches and larger that are installed below grade and outside building shall comply with:
 - 1. Ductile-Iron Water Pipe: See Section 33 11 13.13.

2.02 VALVES AND APPURTENANCES

See Section 33 12 16.

2.03 ACCESSORIES

- A. Manhole and Cover: (NOT USED).
- B. Joint Restraint Pieces: EBAA Iron Sales Megalug Series 1100. Install joint restraints on all fittings, specials, valves, and hydrants in accordance with manufacturer's recommended spacing.
- C. Meter Box: AS REQUIRED BY UTILITY OWNER.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions.
- B. Verify that building service connection and municipal utility water main size, location and invert are as indicated.

3.02 PREPARATION

- A. Ream pipe and tube ends and remove burrs.
- B. Remove scale and dirt, both inside and outside, before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

3.03 BEDDING

- A. Excavate pipe trench in accordance with Section 31 00 00, Earthwork, for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding 8 inches compacted depth, compact to 95 percent.
- C. Backfill around sides and to top of pipe with fill, tamped in place and compacted to 95 percent.
- D. Maintain optimum moisture content of bedding material to attain required compaction density.

3.04 INSTALLATION – PIPE

See Section 31 23 33.01.

- A. Maintain separation of water main from sanitary and storm sewer piping in accordance with state or local code. Water mains shall be laid at least 10 feet horizontally **and** 18 inches vertically from any sanitary sewer or manhole. The bottom of the water line should be at least 18 inches from the top of the sewer line. (Sewer lines should always be below water lines.)
- B. Install pipe to indicated elevation to within tolerance of 1 inch.
- C. Install ductile iron piping and fittings to ANSI/AWWA C600.
- D. Route pipe in straight line.
- E. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- F. Install locate wire on all pipes 2 inch or larger, No. 12 Solid Copper with Splices as all valves. (Not Used)
- G. Install access fittings to permit disinfection of water system performed under this Section.
- H. Slope water pipe and position drain at low points.
- I. Connections with Existing Pipelines: Where connections are made between new work and existing piping, make connection using suitable fittings for conditions encountered. Make each connection with existing pipe at time and under conditions which least interfere with operation of existing pipeline.
- J. Form and place concrete for thrust blocks at each elbow or change of direction of pipe main.
- K. Establish elevations of buried piping to ensure not less than 36 inches of cover over the top of pipe: In northern climates, establish elevations of buried piping to ensure 6 inches between top of pipe and frost line.
- L. Backfill trench in accordance with Section 31 00 00, Earthwork.

3.05 INSTALLATION – VALVES AND HYDRANTS

See Section 33 12 16.

- A. Install gate valves as indicated on Drawings and supported on concrete pads with valve stem vertical and plumb. Install valve boxes in a manner that will not transmit loads, stress, or shock to valve body. Center valve box over operating nut of valve vertical and plumb. Securely fit valve box together leaving cover flush with finished surface.
- B. Set hydrants plumb and locate pumper nozzle perpendicular to roadway.
- C. Install fire hydrant assemblies as indicated on Drawings in vertical and plum position with steamer nozzle pointed toward building unless otherwise directed by local authorities. Support hydrant assembly on concrete pad and firmly braced on side opposite inlet pipe against undisturbed soil and concrete blocking. Place minimum of 6 cu. ft. of crushed stone or gravel around hydrant base and barrel after thrust blocking has cured at least 24 hours. Exercise care when backfilling and compacting so proper vertical position will not be altered.

3.06 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

See Section 31 23 33.01.

3.07 SERVICE CONNECTIONS

Provide water service to utility company requirements with reduced pressure backflow preventer if required and water meter with by-pass valves and sand strainer if required.

All costs for installation of service connection(s) to be absorbed by contractor.

3.08 FIELD QUALITY CONTROL

Test water distribution system pipe sized installed below grade and outside building in accordance with following procedures:

1. All pipework shall be tested at the pressure and leakage tests equal to the design working pressure of the pipe and maintain said pressure for not less than two hours.
2. Furnish, install, and operate the necessary connections, pump, meter, and gauges. Leakage shall not exceed that permitted by AWWA C600-64 for mechanical joint and push-on joint pipe. Prior to running any filed test, meter shall be tested, sealed, and approved by applicable governing authority at CONTRACTOR's expense.
3. Locate and repair all leaks and repeat tests until test results are satisfactory and in compliance with this section.
4. Furnish copy of results of meter test and hydrostatic pressure test to GOVERNING AUTHORITIES upon completion of water distribution backfilling operations.

END OF SECTION

SECTION 33 11 13.13

DUCTILE-IRON PIPE AND FITTINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. Furnish all labor, materials, equipment and incidentals required for ductile-iron pipe systems and ductile-iron pipe fittings and specials.
2. The extent of ductile iron piping is shown on the Drawings.

B. Related Work Specified Elsewhere:

1. Section 31 00 00, Earthwork
2. Section 31 23 33.01, Buried Piping Installation
3. 2004 MDOT Standard Specifications for Road and Bridge Construction

1.02 QUALITY ASSURANCE

A. Source Quality Control: Obtain pipe and fittings from no more than one manufacturer.

B. Reference Standards: Comply with the latest editions of the following:

1. AWWA C104 (ANSI A21.4), Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
2. AWWA C105 (ANSI A21.5), Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids
3. AWWA C110 (ANSI A21.10), Gray-Iron and Ductile-Iron Fittings, 3 in. through 48 in., for Water and Other Liquids
4. AWWA C111 (ANSI A21.11), Rubber Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings
5. AWWA C150 (ANSI A21.50), Thickness Design of Ductile-Iron Pipe
6. AWWA C151 (ANSI 21.51), Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids
7. ASTM A 48, Gray Iron Castings
8. ASTM A 123, Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
9. ASTM A 307, Carbon Steel Externally Threaded Standard Fasteners
10. ASTM A 354, Quenched and Tempered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners

1.03 SUBMITTALS

Shop Drawings and Product Data: Comply with the general requirements of Section 01 33 00, Submittal Procedures. Submit detailed drawings and data on pipe, fittings, gaskets and appurtenances in conjunction with Shop Drawings required under Section 31 23 33.01, Buried Piping Installation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Joints: Comply with Schedules in Section 31 23 33.01, Buried Piping Installation. Use push-on or mechanical joints for buried piping.

B. Ductile-Iron Pipe and Fittings:

1. Pipe:
 - a. Flanged:

- (1) Standard: AWWA C115 (ANSI A21.15)
- (2) Thickness: Comply with Schedule in Section 31 23 33.01, Buried Piping Installation. If not shown, use Pressure Class 350.
- b. Non-Flanged:
 - (1) Standard: AWWA C115 (ANSI A21.15)
 - (2) Thickness: Comply with Schedule in Section 31 23 33.01, Buried Piping Installation. If not shown, use Pressure Class 250. Piping with grooved joints shall have adequate wall thickness to maintain the pressure rating specified for fittings and for the associated pipe class specified.
- 2. Joints:
 - a. Flanged:
 - (1) Standard: AWWA C110 (ANSI A21.10)
 - (2) Gaskets: 1/8-inch thick red rubber, full face
 - (3) Bolts and Nuts:
 - (a) Standard: ANSI B18.2.1 and ANSI B18.2.2, respectively
 - (b) Material, Exposed Service: ASTM A 307, Grade B, cadmium plated or hot dipped galvanized
 - (c) Material, Buried or Submerged Service: Type 304 stainless steel
 - b. Mechanical Joint:
 - (1) Standard: AWWA C111 (ANSI A21.11)
 - (2) Gaskets: Plain rubber gaskets
 - (3) Bolts and Nuts: High strength low alloy steel
 - c. Push-On: Comply with AWWA C111 (ANSI A21.11)
- 3. Fittings:
 - a. Standard: ANSI/AWWA C153/A21.53
 - b. Pressure Rating: 350 psi
 - c. Material: Ductile iron or cast-iron
 - d. Gaskets: Comply with specifications for joints
 - e. Bolts and Nuts: Comply with specifications for joints
- 4. Coatings and Linings:
 - a. Inside Wall of Pipe and Fittings (Except Sewer Pipe):
 - (1) Standard: AWWA C104 (ANSI A21.4)
 - (2) Cement-Mortar Lining Thickness: Standard
 - (3) Seal Coat: Asphaltic
 - b. Inside Wall of Pipe and Fittings (Sewer Pipe):
 - (1) Coating Required: Factory-applied ceramic epoxy
 - (2) Thickness: 40 dry mils
 - (3) Surface Preparation: Per coating manufacturer recommendations
 - c. Outside Wall of Pipe and Fittings:
 - (1) Buried:
 - (a) Coating: Bituminous
 - (b) Thickness: 1 mil approximate
 - (2) Exposed:
 - (a) Surface Preparation: SSPC-SP 6 Commercial Blast Cleaning as specified in 3.0C
 - (b) Product and Manufacturer: Provide one of the following:
 - 1) Carboline/Kop-Coat:
 - a) Shop Primer: 340 Gold epoxy – 2 coats, 1.5-2.0 mils per coat, 525-700 square feet per gallon per coat.
 - b) Field Primer or Field Touchup: 340 Gold Epoxy – 1 coat, 1.5-2.0 dry mils per coat, 525-700 square feet per gallon.
 - c) Finish: Hi-Gard – 2 coats, 2.0-3.0 dry mils per coat, 250-370 square feet per

- gallon per coat.
- 2) Tnemec:
 - a) Shop Primer; 66-1211 Epoxy – 2 coats, 1.5-2.5 dry mils per coat, 270-469 square feet per gallon per coat.
 - b) Field Primer or Field Touchup: 66-1211 Epoxy – 1 coat, 1.5-2.5 dry mils per coat, 270-460 square feet per gallon.
 - c) Finish: 14 H.S. Epoxy – 2 coats, 2.0-3.0 dry mils per coat, 240-360 square feet per gallon per coat.
 - 3) Or equal.
- C. Restrained Joints:
1. Megalug by EBAA Iron Sales, Inc.
 2. Or equal.
- D. Specials:
1. Transition Pieces:
 - a. Furnish suitable transition pieces for connections to existing piping.
 - b. Expose existing piping to determine material, dimensions and other data required for transition pieces unless details are shown on Drawings.
 2. Pipe Adapters: Provide necessary adapters to join pipe of different types. Comply with specifications for respective joints.
- E. Polyethylene Encasement:
1. Provide polyethylene encasement on all buried ductile iron pipe, fittings and accessories.
 - a. For Potable Water: Blue
 - b. For Pressure Sewer: Green
 2. Thickness: 8 mils
 3. In accordance with ANSI/AWWA C105 (ANSI A21.5).

PART 3 - EXECUTION

3.01 INSTALLATION

Comply with Section 31 23 33.01, Buried Piping Installation.

END OF SECTION

SECTION 33 12 16

VALVES AND APPURTENANCES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope: The CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to provide all valves and appurtenances as shown and specified.
- B. Related Work Specified Elsewhere:
2004 MDOT Standard Specifications for Road and Bridge Construction

1.02 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Valves and appurtenances provided under this Section shall be the standard product in regular production by manufacturers whose products have proven reliable in similar service for at least two years.
 - 2. Insofar as possible all valves of the same specific type shall be the product of one manufacturer.
- B. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
 - 1. AWWA C500, Gate Valves - 3 Inch through 48 Inch - For Water and Other Liquids
 - 2. AWWA C502, Dry Barrel Fire Hydrants
 - 3. AWWA C504, Rubber-Seated Butterfly Valves
 - 4. AWWA C506, Backflow Prevention Devices – Reduced Pressure Principle and Double Check Valve Types
 - 5. AWWA C507, Ball Valves, Shaft or Trunnion-Mounted, 6-Inch Through 48-Inch, For Water Pressure up to 300 PSIG
 - 6. AWWA C508, Swing Check Valves for Ordinary Waterworks Service
 - 7. ANSI B16.1, Cast-Iron Pipe Flanges and Flanged Fittings
 - 8. ANSI B16.4, Cast-Iron Screwed Fittings
 - 9. ASTM A 307, Carbon Steel Externally and Internally Threaded Standard Fasteners
 - 10. ASTM D 1784, Rigid Polyvinyl Chloride Compounds and Chlorinated Polyvinyl Chloride Compounds
 - 11. ASTM D 2464, Threaded-Type Schedule 80 PVC Pressure Fittings
 - 12. ASTM D 2467, Socket-Type Schedule 80 PVC Pressure Fittings
 - 13. MSS SP-80, Bronze Gate, Globe, Angle and Check Valves
 - 14. Standards of National Electrical Manufacturer's Association

1.03 SUBMITTALS

- A. Shop Drawings:
 - 1. Comply with the requirements the Specifications.
 - 2. Submit for approval detailed drawings, data, and descriptive literature on all valves and appurtenances, including:
 - a. Dimensions
 - b. Size
 - c. Materials of construction
 - d. Weight
 - e. Protective coating
 - f. Wiring diagram including:
 - (1) Ladder diagrams
 - (2) Point-to-point wiring.

- B. Manufacturer's Certificates:
 1. Comply with the requirements of the Specifications.
 2. Submit manufacturer's certificates of compliance with ANSI, AWWA and other Standards listed herein.
- C. Manufacturer's Service Report:
 1. Comply with the requirements of the Specifications.
 2. Certify that valves are properly installed except as noted.
 3. Recommend corrective action for any deficiencies noted.
- D. Operation and Maintenance Data:
 1. Comply with the requirements of the Specifications.
 2. Submit a detailed operation and maintenance manual for all valves and appurtenances provided under this Section including the following information:
 - a. Product name and number
 - b. Name, address and telephone number of manufacturer and local distributor
 - c. Instruction bulletins for operation, maintenance and recalibration
 - d. Complete parts and recommended spare parts lists.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Comply with the requirements in the Specifications.
- B. Handle all valves and appurtenances with care.
- C. Valves and appurtenances which are cracked, chipped, distorted or otherwise damaged or dropped will not be acceptable.
- D. Store all valves and appurtenances off the ground in enclosed shelter.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General:
 1. All valves shall have manufacturer's name and working pressure cast in raised letters on valve body.
 2. All manual valve operators shall turn right to close unless otherwise specified. Valves shall indicate the direction of operation.
 3. Unless otherwise specified all flanged valves shall have ends conforming to ANSI B16.1, Class 125.
 4. All buried valves shall be provided with adjustable three piece valve boxes, extension stems, operating nuts, and covers unless otherwise shown or specified.
 5. All bolts, nuts and studs on or required to connect buried or submerged valves shall be stainless steel.
 6. Bolts and nuts shall have hexagon heads and nuts.
 7. Gasket material and installation shall conform to manufacturer's recommendations.
- B. Water Air Release Valves: (Not Used)
 1. Type: Float with compound lever.
 2. Size: As shown on the Drawings.
 3. Construction:
 - a. Body and cover: Semi-steel or cast iron

- b. Float: Stainless steel
 - c. Seat: BUNA-N
 - d. Lever Arms: Bronze or stainless steel
 - 4. Manufacturer and Model:
 - a. Valve and Primer Corp., APCO Model No. 200A
 - b. Val-Matic Model No. 38
 - c. G-A Industries, Fig. No. 2-AR
 - d. Or equal
- C. Ball Valves: (Not Used)
 - 1. Type: Standard circular port ball.
 - 2. Construction:
 - a. Body and Ball: Bronze
 - b. Stem: Bronze or composition alloy
 - c. Seat, Stem Seal and Body Seal: TFE
 - 3. End Connections: Threaded unless otherwise shown.
 - 4. Manufacturer and Model:
 - a. Jenkins, Fig. 32-A
 - b. Or equal
- D. Corporation Stops:
 - 1. Standard: AWWA C800
 - 2. Material: Red brass: 85-5-5-5
 - 3. End Connections: Male Taper Thread and Grip Joint
 - 4. Manufacturer and Model:
 - a. Mueller H-1500
 - b. Hans No. 5200
 - c. Or equal
- E. Curb Stops:
 - 1. Standard: AWWA C800.
 - 2. Material: Red brass: 85-5-5-5
 - 3. End Connections: Grip Joints
 - 4. Manufacturer and Model:
 - a. Mueller H-15175
 - b. Ford Meter Box Company, Inc., Catalog No. B66 - 444G.
 - c. Or equal
- F. Tapping Saddles: (Not Used)
 - 1. Study: AWWA Manual M23.
 - 2. Material: Red Brass: 85-5-5-5 with Stainless Steel Straps
 - 3. Connection: Saddle thread shall match the threads of the corporation stop.
 - 4. Manufacturer and Model:
 - a. Ford Meter Box Company, Inc., Model 101BS
 - b. Or equal
- G. Fire Hydrants:
 - 1. Standard: AWWA C502, except as modified herein.
 - 2. Main Valve:
 - a. Nominal Size: 5¼ inches
 - b. Type: Compression type closing with water pressure for positive sealing.
 - c. Direction of Opening: Left
 - 3. Nozzle Connections (Verify with Owner)
 - a. Number and Size: Two 2½ (3.09 inches O.D.) inch hose nozzles with National Standard threads and one steamer nozzle with 4½ inch I.D. with 6 threads per inch.

- b. Threads: All threads are to be 6 threads per inch to match Owner equipment.
 - c. Field replaceable
 - 4. Inlet Connection: Shoe inlet with six inch mechanical joint hub inlet, complete with accessories with hydrant bury being suitable for three to eight foot depth.
 - 5. Operating Assembly:
 - a. 1½ inch (point to flat) pentagon operating nut.
 - b. Operating threads sealed from water in an oil reservoir by two O-ring seals; one sealing the oil and one sealing the water.
 - c. Protect by use of weather shield or nut.
 - 6. Cover:
 - a. Three foot minimum.
 - b. Provide barrel and stem extension where cover exceeds 3 feet.
 - 7. Materials of Construction:
 - a. Hydrant barrels, bonnet, and shoe: ASTM A126, Class B.
 - 8. Required Features:
 - a. Provide ground line breakable component that will shear off upon impact at the ground line without damage to the barrel.
 - b. Provide cast iron safety stem coupling that will separate upon impact.
 - c. Drain assembly: Two drain valves and at least two drain openings to insure quick and complete drainage.
 - d. Hydrants shall incorporate no parts which require field adjustments.
 - e. Hydrant design shall place nozzles at least 18 inches from ground line when measured not more than two inches below the mating of ground flange complying with NFPA handbook.
 - f. Friction losses through the hydrant not to exceed the following:
 - (1) 2.5 psi at 1000 gpm through the pumper nozzle.
 - (2) 1.25 psi at 1000 gpm through two hose nozzles simultaneously.
 - g. Hydrant repair kits and extensions shall interchange with existing city of Jackson equipment.
 - 9. Location: As shown on the drawings.
 - 10. Manufacturer and Model:
 - a. M & H.
 - b. Or equal.
- H. Gate Valve:
 - 1. 2½ inches Diameter and Smaller:
 - a. Type: Rising stem with solid wedge and union bonnet.
 - b. Construction:
 - (1) Body: Bronze.
 - (2) Packing: TFE impregnated asbestos.
 - (3) Trim: Bronze.
 - c. End Connections: Threaded.
 - d. Manufacturer and Model:
 - (1) Jenkins Brothers, Fig. 47-U.
 - (2) Walworth, Fig. 2.
 - (3) Or equal.
 - 2. 3 inches Diameter and Larger:
 - a. Standard: AWWA C515.
 - b. Type: Non-Rising Stem, resilient seated.
 - c. Construction:
 - (1) Body and Bonnet: Cast iron.
 - (2) Wedges and Trim: Bronze.
 - (3) Packing: O-ring.
 - d. End Connections:
 - (1) Exposed Valves: Flanged, conforming to ANSI B16.1, Class 125, unless otherwise shown.

- (2) Buried Valves: Mechanical joint, conforming to ANSI B21.11.
 - e. Manufacturer:
 - (1) American Flow Control, Series 500.
 - (2) Or equal.
- I. Sewage Air and Vacuum Valves: (Not Used)
 - 1. Type: Elongated Body and Dual Float.
 - 2. Size: 2-inch inlet and 1-inch outlet.
 - 3. Construction:
 - a. Body, Cover and Baffle: Cast iron.
 - b. Float: Stainless steel.
 - c. Seat: Buna-N.
 - d. Other Internal Parts: Bronze.
 - 4. Required Features:
 - a. Backflush attachments.
 - (1) Flushing water inlet valve.
 - (2) Blowoff valve.
 - (3) 6 feet of hose for flushing.
 - (4) Quick-disconnect couplings.
 - b. Isolation valve to isolate valve from line.
 - c. End Connection: Threaded.
 - 5. Manufacturer and Model:
 - a. Valve and Primer Corp., APCO Model 401.
 - b. Or equal.
- J. Check Valve: (Not Used)
 - 1. Swing Check Valve.
 - a. Type: Counter-weighted swing check.
 - b. Construction:
 - (1) Body, Cover, Disc and Levers: Cast iron.
 - (2) Counterweight Arm: Cast iron or manufacturer standard.
 - (3) Shaft: 18-8 Stainless steel.
 - (4) Body Seat: Bronze.
 - (5) Seat Ring: Rubber.
 - (6) Shaft Packing Gland: Compression type.
 - c. Manufacturer and Model:
 - (1) Clow F-5382.
 - (2) American Flow Control 50SC.
 - (3) Or equal.
- K. Post Indicator Valve: (Not Used)
 - 1. Manufacturer: American flow control or approved equal.
 - 2. Series A240-Field adjustable to fit various trench depths.
- L. Backflow Preventor:
 - 1. Type: Reduced Pressure Principle
 - 2. Components:
 - a. Reduced Pressure Zone Assembly
 - b. Two Gate Valves
 - c. All other components recommended by the manufacturer.
 - 3. Required Features:
 - a. Max working pressure: 175 psi
 - b. Temp. Range: 33° Fahrenheit to 140° Fahrenheit
 - 4. Manufacturer and Model:
 - a. Watts Series 909
 - b. Or Equal.
 - 5. Installation:

- a. According to Manufacturer unless noted on plans.
 - b. Provide insulated aluminum box for temperatures to -30 degrees Fahrenheit.
6. Standard: AWWA C 506

2.02 VALVE APPURTENANCES

1. Valve Boxes:
2. Location: Provide for all buried valves.
3. Construction:
 - a. Heavy pattern cast iron box.
 - b. Type: Three-piece adjustable, telescoping.
 - c. Inside Diameter: 4½ inches minimum.
 - d. Cover: Heavy-duty cast iron.
 - e. The word "WATER" shall be cast in cover.
4. Provide extension stem and operating nut.
5. Operating nut and stuffing box enclosed by lower section which rests on bonnet.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install all valves and appurtenances in accordance with manufacturer's instructions.
- B. Install suitable corporation stops at all points shown and required where air binding of pipe lines might occur.
- C. Unless otherwise approved install all valves plumb and level. Valves shall be installed free from distortion and strain caused by misaligned piping, equipment or other causes.
- D. Valve boxes shall be set plumb, and centered with the bodies directly over the valves. Earth fill shall be carefully tamped around each valve box to a distance of four feet on all sides of the box, or to the undisturbed trench face, if less than four feet.
- E. Hydrants and connecting pipe shall have at least the same depth of cover as the distributing pipe. The hydrants shall be set upon a slab of concrete not less than 4 inches thick and 15 inches square. Where restrained hydrants are not used the side of hydrant opposite the pipe connections shall be firmly blocked against the vertical face of the trench with a concrete thrust block. Not less than ½ cubic yard of washed gravel shall be placed around the base of the hydrant at the location of the drain holes.

3.02 FIELD TEST AND ADJUSTMENTS

- A. Adjust all parts and components as required correct operation.
- B. Conduct functional field test of each valve in presence of the ENGINEER to demonstrate that each part and all components together function correctly. All testing equipment required shall be provided.

END OF SECTION

SECTION 33 30 00

SANITARY SEWER SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish labor, materials, services, equipment, and other necessary items required for accompanying the construction of the sanitary systems. This shall include, but not be limited to, the following: sanitary sewer drainage piping, fittings and accessories, cleanouts, and bedding.
- B. Set lines, elevations, and grades for sanitary sewer system work and control system for duration of work, including careful maintenance of benchmarks, property corners, monuments, or other reference points.

1.02 RELATED REQUIREMENTS

- A. Construction Drawings
- B. Section 31 00 00, Earthwork
- C. Section 33 39 13, Manholes
- D. Section 33 31 13, Plastic Pipe
- E. Local governing authority and code requirements.
- F. All necessary construction permits.
- G. 2004 MDOT Standard Specifications for Road and Bridge Construction.

1.03 REFERENCES

- A. ANSI/ASTM A74, Cast Iron Soil Pipe and Fittings
- B. ANSI/ASTM C12, Practice for Installing Vitrified Clay Pipe Lines
- C. ANSI/ASTM C14, Concrete Sewer, Storm Drain, and Culvert Pipe
- D. ANSI/ASTM C76, Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
- E. ANSI/ASTM C425, Compression Joints for Vitrified Clay Pipe and Fittings
- F. ANSI/ASTM C443, Joints for Circular Concrete Sewer and Culvert Pipe, using Rubber Gaskets
- G. ANSI/ASTM D698, Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop
- H. ANSI/ASTM D3034, Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- I. ASTM C564, Rubber Gaskets for Cast Iron Soil Pipe and Fittings
- J. ASTM D1785, Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120

- K. ASTM D2922, Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
- L. ASTM D3017, Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures

1.04 DEFINITIONS

Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.05 SUBMITTALS

- A. Product Data: Provide catalog materials indicating pipe, pipe accessories, and fittings.
- B. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- C. Manufacturer's Certificate: Certify that products meet or exceed ASTM designations.

1.06 COORDINATION

Coordinate the Work with termination of sanitary sewer connection outside building, connection to municipal sewer utility service, and trenching.

PART 2 - PRODUCTS

2.01 SEWER PIPE MATERIALS

Polyvinyl Chloride Sanitary Sewer:

See Section 33 31 13, Plastic Pipe.

2.02 PIPE ACCESSORIES

- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.03 CLEANOUTS

- A. Lid and Frame: Heavy Duty cast iron construction, manufactured by Mueller: Lid Design: Closed Lid.
- B. Shaft Construction: Cast Iron shaft of internal diameter as specified on plans with 2,500 psi concrete collar for cleanouts located in paved areas.
- C. Base Pad: Cast-in-place concrete, 2,500 psi leveled top surface to receive cast iron shaft sections, sleeved to receive sanitary sewer pipe sections.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.
- B. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.

3.02 BEDDING

- A. Excavate pipe trench in accordance with Section 31 00 00, Earthwork, for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Place bedding material at trench bottom, level materials in continuous layer not exceeding 8 inches compacted depth, compact to 95 percent.
- C. Maintain optimum moisture content of bedding material to attain required compaction density.

3.03 INSTALLATION – PIPE

- A. See Section 31 23 33.01, Buried Piping Installation.
- B. Install pipe, fittings, and accessories in accordance with ASTM C12, ASTM C14 and/or manufacturer's instructions. Seal joints watertight.
- C. Lay pipe to slope gradients noted on civil engineering drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
- D. Install bedding at sides and over top of pipe to minimum compacted thickness of 12 inches compacted to 95 percent.
- E. Refer to Section 31 00 00, Earthwork, for trenching requirements. Do not displace or damage pipe when compacting.
- F. Refer to Section 33 39 13, Manholes, for manhole requirements.
- G. Connect to building sanitary sewer outlet and municipal sewer system through installed sleeves.

3.04 INSTALLATION – CLEANOUTS

- A. Form bottom of excavation clean and smooth to correct elevation.
- B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.
- C. Establish elevations and pipe inverts for inlets and outlets as indicated.
- D. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.05 FIELD QUALITY CONTROL

- A. Compaction testing will be performed in accordance with ANSI/ASTM D698, ASTM D2922 or ASTM D3017.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

- C. Deflection Test:
1. Deflection tests shall be performed on all flexible pipe. The test shall be conducted after the final backfill has been in place at least 30 days.
 2. No pipe shall exceed a deflection of 5 percent.
 3. If the deflection test is to be run using a rigid ball or mandrel, it shall have a diameter equal to 95 percent of the inside diameter of the pipe. The test shall be performed without mechanical pulling devices.
 4. Installed Low Pressure Air Test: Uni-Bell's UNI-B-6.
 - a. Installed gravity sewer pipe shall be air-tested prior to acceptance.
 - b. Specified pressure drop of 0.5 psig shall be used to determine the required time the pipe is tested.
 - c. Manholes are not required to be tested.
 - d. Sections of installed pipe shall be tested from manhole to manhole.

END OF SECTION

SECTION 33 31 13

PLASTIC PIPE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Furnish all labor, materials, equipment and incidentals for PVC pipe systems.
 - 2. The extent of plastic piping is shown on the Contract Drawings.
- B. Coordination: Review installation procedures under other Sections and coordinate the Work that must be installed with the materials specified herein and which is related to this Section.
- C. Related Work Specified Elsewhere:
 - 1. Section 31 00 00, Earthwork.
 - 2. Section 31 23 33.01, Buried Piping Installation
 - 3. 2004 MDOT Standard Specifications for Road and Bridge Construction.

1.02 QUALITY ASSURANCE

Reference Standards: Comply with the latest edition of the following:

- A. ASTM D 1248, Standard Specification for Polyethylene Plastics Molding and Extrusion Material
- B. ASTM D 1784, Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
- C. ASTM D 3034, Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- D. ASTM D 3350, Standard Specification for Polyethylene Plastic Pipe and Fittings Material
- E. ASTM F 679, Standard Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings
- F. ASTM F 714, Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter (3" IPS and larger)
- G. ASTM F 1803, Standard Specification for Poly (Vinyl Chloride) (PVC) Closed Profile Gravity Pipe and Fittings Based on Controlled Inside Diameter
- H. ASTM D 2241, Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR series).

1.03 SUBMITTALS

- A. Shop Drawings and Product Data: Comply with the general requirements of Division 1 and the supplemental requirements.
- B. Submit drawings and manufacturer's data showing details of each piping system to include material composition of pipe and fittings, pressure ratings, nominal size and wall dimensions, fittings and interfacing with equipment and appurtenances in conjunction with the Shop Drawings required under Section 31 23 33.01, Buried Piping Installation.

1.04 DELIVERY, STORAGE AND HANDLING

Refer to Section 31 23 33.01, Buried Piping Installation.

PART 2 - PRODUCTS

2.01 GENERAL

All pipes shall be furnished by a pipe manufacturer having experience in manufacturing the specific type of pipe in the specific sizes required for use on this project.

2.02 POLYVINYL CHLORIDE (PVC) GRAVITY FLOW

A. Pipe and Fitting Material:

1. Standard: ASTM D 1784.
2. Type: Cell Classification as specified in ASTM D 3034, ASTM F 679, or ASTM F 1803.

B. Pipe Standard:

1. ASTM D 3034, SDR-26, sizes 4 inch through 15 inch diameter.
2. ASTM F 679, PS-46, sizes 18 inch through 36 inch diameter.
3. ASTM F 1803, PS-46 psi, sizes 21 inch through 54 inch diameter.

C. Joints:

1. Standard: ASTM D 3212.
2. Type: Integral bell and spigot.
3. Flexible seals: Elastomeric, conforming to ASTM F-477.
4. Lubricant: As recommended by manufacturer.
5. Gaskets shall be factory applied.

D. Fittings:

1. Standard: ASTM D 3034 and F 679 and F 1803.
2. Joint Standard: ASTM D 3212.
3. Schedule: SDR-26, sizes 4 inch through 15 inch diameter
PS-46, sizes 18 inch through 36 inch.

E. Lateral Connectors:

1. Lateral connectors can be employed in the connection of service line to sewer trunk line.
2. Lateral connectors shall consist of a PVC hub, rubber sleeve, and stainless steel band.
3. PVC hub shall meet ASTM D 3034 and be SDR 26 and gasket in hub shall meet ASTM F 477. Rubber sleeve shall meet ASTM C 443. Band and housing shall be type 301 stainless steel and screw shall be type 305 stainless steel.
4. Model and Manufacturer:
 - a. Inserta Tee by Inserta Fittings Company.
 - b. Or equal.

2.03 POLYVINYL CHLORIDE (PVC) PIPE FOR WATER TRANSMISSION AND DISTRIBUTION MAINS (NOT USED IN THIS PROJECT)

A. Pipe and Fitting Material:

1. Standard: ASTM D 1784.
2. Type: Cell Classification, 12454-B.

B. Pipe:

1. Standard: ASTM D 2241, AWWA C900, size 4-inch thru 12-inch
AWWA C905, size 14-inch thru 48-inch.

- 2. Schedule: DR 18, PC-150.
 - C. Joints:
 - 1. Type: Integral bell and spigot.
 - 2. Flexible seals: elastomeric, conforming to ASTM F 477.
 - 3. Lubricant: As recommended by the manufacturer.
 - D. Fittings:
 - 1. Mechanical Joint Ductile iron fittings as specified in Section 33 11 13.13, Ductile-Iron Pipe and Fittings.
 - 2. Restraint Devices: Megalug by EBAA Iron Sales, Inc., or equal.
- 2.04 POLYVINYL CHLORIDE (PVC) FOR SEWER FORCE MAIN (Not Used)
- 2.05 MARKING REQUIREMENTS
- A. Intervals: Five feet maximum.
 - B. Designation:
 - 1. Pipe nominal size.
 - 2. Pipe stiffness or SDR designation.
 - 3. Designation "Specification ASTM D 3034 or ASTM F 679 or ASTM F 1803".
 - 4. PVC cell classification.
 - 5. Manufacturer's name or trade name and code.
 - 6. PVC pipe intended for water transmission or distribution shall bear the National Sanitation Foundation seal for potable water.

PART 3 - EXECUTION

3.01 INSTALLATION

Comply with Section 31 23 33.01, Buried Piping Installation.

END OF SECTION

SECTION 33 39 13

MANHOLES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope: CONTRACTOR shall furnish all labor, materials, equipment and incidentals necessary to provide all precast sanitary sewer manholes and pump station wetwells shown, specified and otherwise required to complete the Work.
- B. General:
1. Structures shall conform in shape, size, dimensions, material, and other respects to the details shown on the Drawings or as ordered by the ENGINEER.
 2. Metal frames, grates, covers and similar required items shall be as shown and as specified in Division 5 for metal fabrications.
 3. Inverts shall conform accurately to the size and elevation of the adjoining pipes. Side inverts shall be curved and main inverts, where direction changes, shall be laid out in smooth curves of the longest possible radius which is tangent to the centerlines of adjoining pipelines.
- C. Related Work Specified Elsewhere:
1. Section 03 01 40.61, Monolithic Manhole Surfacing System
 2. Section 07 16 16, Crystalline Concrete Waterproofing
 3. Section 31 00 00, Earthwork
 4. Section 31 23 33.01, Buried Piping Installation
 5. Section 33 11 13.13, Ductile-Iron Pipe and Fittings
 6. 2004 MDOT Standard Specifications for Road and Bridge Construction

1.02 QUALITY ASSURANCE

Reference Standards:

- A. ASTM C 139, Concrete Masonry Units for Construction of Catch Basins and Manholes.
- B. ASTM C 140, Sampling and Testing Concrete Masonry Units.
- C. ASTM C 207, Hydrated Lime for Masonry Purposes.
- D. ASTM C 478, Precast Reinforced Concrete Manhole Sections.

1.03 SUBMITTALS

- A. Samples: Submit for approval samples of gaskets and all accessories required for the manholes, if requested by ENGINEER.
- B. Shop Drawings:
1. Submit for approval Shop Drawings of design and construction details of all precast concrete manholes.
 2. Submit manufacturer's data on ceramic epoxy lining material, joint gasket, and flexible pipe gasket material if required.
- C. The CONTRACTOR shall submit an affidavit from the coating supplier that each manhole sections and special has been coated in accordance with this specification.

PART 2 - PRODUCTS

2.01 PRECAST CONCRETE MANHOLES

- A. Precast manholes shall conform to the details shown. Manhole bases may be precast unless cast-in-place is required by the Drawings.
- B. Except where otherwise specified, manhole sections shall conform to ASTM C 478.
- C. Precast manhole bases shall be of approved design and of sufficient strength to withstand the loads to be imposed upon them. An approved joint shall be provided to receive the pipe sections forming the barrel.
- D. Mark date of manufacture and name or trademark of manufacturer on inside of barrel.
- E. Unless a larger size is required by the Drawings or the Manhole Schedule below, the barrel of precast manholes shall be constructed of 48-inch diameter standard reinforced concrete manhole sections. The barrel shall be constructed of various lengths of pipe in combination to provide the correct height with the fewest joints. Wall sections shall not be less than five inches thick. For 72-inch and larger manholes, a transition slab, as shown on the Contract Drawings, is required for manholes greater than 12 feet deep.
- F. Joints shall be preformed mastic joint compound or rubber and concrete using O-ring gaskets conforming with ASTM C 443. For rubber ring joints, the base of the bell shall be buttered with 1 to 2 cement mortar to provide a uniform bearing for the spigot of the entering pipe.
- G. A precast or cast-in-place slab or precast eccentric cone, as shown or approved, shall be provided at the top of the manhole barrel to receive the cast iron frame and cover. The slab or cone shall be of acceptable design and of sufficient strength to safely support an H-20 loading. Concrete slabs shall be not less than 8 inches thick.
- H. Monolithic Surfacing System:
 - 1. All manhole sections shall be lined with an approved epoxy coating.
 - 2. See Section 03 01 40.61, Monolithic Manhole Surfacing System.
- I. Bituminous Waterproofing:
 - 1. All pre-cast manholes and wet-wells shall be waterproofed in accordance with Specification Section 07 16 16, Crystalline Concrete Waterproofing.

2.02 MISCELLANEOUS METALS

Metal frames, covers, toe pockets and similar required items shall be provided as shown and in accordance with the Contract Documents.

2.03 DROP INLET CONNECTIONS

Drop inlet connections for manholes shall be constructed where shown and shall conform to the design and details shown. Pipe and fittings shall be ductile iron or reinforced concrete as shown or otherwise approved. Concrete shall be bonded to manhole in a manner shown or otherwise approved by ENGINEER.

2.04 FLEXIBLE CONNECTORS

- A. Flexible connections complying with ASTM C 923 shall be employed in the connection of each sewer pipe with outside diameter less than 59 inches to precast manholes.

- B. Connector will consist of rubber EPDM and elastomers designed to resist ozone, acids, alkalis, oils and petroleum products.
- C. Banding mechanism shall be totally non-magnetic 304 stainless steel and torqued for 60-70 inch/lbs.
- D. Manufacturer:
 1. Kor-N-Seal.
 2. Press Seal Gasket Corporation
 3. Or equal.

2.05 MANHOLE WATERSTOPS

- A. Elastomeric PVC manhole waterstops shall be employed in the connection of each sewer pipe with outside diameter greater than 59 inches to precast manholes.
- B. Waterstop will consist of elastomeric PVC designed to resist ozone, acids, alkalis, oils and petroleum products.
- C. Banding mechanism shall be totally non-magnetic stainless steel, torqued for 60 inch/lbs, and furnished with a waterstop.
- D. Installation:
 1. Slide waterstop over clean end of entrance pipe.
 2. Position waterstop on centerline of manhole wall.
 3. Tighten the stainless steel band to required torque.
 4. Use waterplug around the waterstop to close the opening in the manhole.
- E. Manufacturer:
 1. Fernco, Inc.
 2. DFW Plastics, Inc.
 3. Or equal.

2.06 CASTINGS

- A. Materials
Product and Manufacturer: Provide castings and frames for manholes as manufactured by one of the following:

EJIW (Vulcan), C. L. Dews, Neenah or equal.
- B. Design and Fabrication
 1. Fabricate castings true to pattern so that component parts fit together.
 2. Identification Markings:
 - a. All markings shall be subject to review by the ENGINEER.
 - b. Markings shall include UTILITY OWNER'S STANDARD.
- C. Finish
Iron: Coat with asphaltic paint standard with the manufacturer.

PART 3 - EXECUTION

3.01 LAYING MASONRY

Each grading ring shall be laid in a full bed of mortar and shall be thoroughly bonded.

3.02 PLASTERING

The outside of grading rings shall be neatly plastered with 1/2 inch of cement mortar as the Work progresses.

3.03 MANHOLE BASES

Precast bases shall be set on a concrete foundation or compacted granular material as shown. Precast bases shall be set at the proper grade and carefully leveled and aligned.

3.04 PRECAST MANHOLE SECTIONS

- A. Set sections in true alignment.
- B. Install sections, joints and gaskets in accordance with manufacturers recommendations.
- C. Lifting holes shall be sealed tight with a solid rubber plug driven into hole and the remaining void filled with 1 to 2 cement-sand mortar.

3.05 MANHOLE CHANNELS

- A. For straight through flow, channels shall be formed from pipe laid through the manholes. A bench of concrete shall be built up to the 2/3 point of the vertical sewer diameter before the top of the sewer pipe is broken out.
- B. Where side channels and curved sections occur, the channels within the manholes shall be formed of concrete and shall be given a hard trowel finish.

3.06 GRADING RINGS

Grading rings shall be used for all precast manholes where required. Stacks shall be a maximum of 12 inches in height, constructed on the roof slab or cone section on which the manhole frame and cover shall be placed. The height of the stack shall be such as is necessary to bring the manhole frame to the proper grade.

3.07 GRADING AT MANHOLES

- A. All manholes in unpaved areas shall be built as shown or directed to an elevation higher than the surrounding ground.
- B. The ground surface shall be graded to drain away from the manhole. Fill shall be placed around them to the level shown on the plans, and the surface evenly graded on a 1 to 5 slope to the existing surrounding ground unless otherwise shown. The slope shall be covered with 4 inches of top soil, seeded and maintained until a satisfactory growth of grass is obtained.

3.08 MANHOLE WATERTIGHTNESS

All manholes shall be free of visible leakage. Each manhole shall be tested for leaks and inspected, and all leaks shall be repaired in a manner subject to ENGINEER'S approval.

3.09 FLEXIBLE PIPE CONNECTOR AND WATERSTOP AT MANHOLE BASE

An approved flexible connector or waterstop shall be provided between each pipe entering and exiting manhole. The joint into the manhole base shall be completely watertight.

3.10 CASTING

A. Installation

1. Follow manufacturer's printed instructions and approved Shop Drawings.
2. Set castings accurately to required location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Brace temporarily or anchor temporarily in formwork.

- B. Castings which are cracked, chipped, distorted or otherwise damaged will not be acceptable.

END OF SECTION

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

SUPPLEMENT TO SPECIAL PROVISION NO. 907-307-3

DATE: 10/17/2012

SUBJECT: Lime Treated Courses

Delete the sentence in Subsection 907-307.02.4 on page 1, and substitute the following:

After “EA-1,” in the first sentence of 307.02.4 on page 195, add “EPR-1, AE-P, CSS-1,”.

Before Subsection 907-307.05 on page 1, add the following.

907-307.04--Method of Measurement. Delete the last sentence of Subsection 307.04 on page 202 and substitute the following.

Bituminous curing seal will be measured by the gallon as prescribed in Subsections 109.01. Unless otherwise specified, distributor tank measurements will be used. The volume of material over five percent above the allowed range for each shot will be deducted from measured quantities, except that 15 percent will be allowed for irregular areas where hand spraying is necessary. The volume of all bituminous material lost, wasted, damaged, or rejected, or applied outside of designated areas, or in excess of the Engineer's directions and tolerances allowed, or contrary to the specifications, will be deducted from measured quantities.

Water will not be measured for separate payment.

After the first sentence of Subsection 907-307.05 on page 1, add the following.

Bituminous curing seal, measured as prescribed above, will be paid for at the contract unit price per gallon, which price shall be full compensation for furnishing, applying and reapplying if needed, protecting, maintaining; and all tools, equipment, labor and incidentals necessary to complete the work.

After the last pay item listed on page 204, add the following.

907-307-S: Bituminous Curing Seal - per gallon

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-307-3

CODE: (IS)

DATE: 10/08/2007

SUBJECT: Lime Treated Courses

Section 907-307, Lime Treated Courses, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-307.02--Materials.

907-307.02.4--Curing Seals. After “EA-1,” in the first sentence of 307.02.4 on page 195, add “AE-P,”.

907-307.02.5--Soil-Lime Design. Delete the first paragraph of Subsection 307.02.5 on page 195 and substitute the following:

Quantities and percentages of lime shown on the plans are preliminary. The actual application rate will be established from tests made prior to beginning treatment. The design of soil-lime courses shall be performed by the Central Laboratory. At least 45 days prior to the proposed use of a lime course, the Contractor shall make available materials proposed for use in the mixture for sampling and testing by the Department as the Engineer may consider necessary for the establishment of a mix design.

Changes in source of lime shall not be made without approval. Approval will be based on verification of a mix design.

907-307.03--Construction Requirements.

907-307.03.2--Equipment. Delete the second paragraph of Subsection 307.03.2 on pages 196 & 197.

907-307.05--Basis of Payment. Add the “907” prefix to all pay item numbers listed in Subsection 307.05 on pages 203 & 204.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-321-1

CODE: (SP)

DATE: 02/07/2013

SUBJECT: In-Grade Preparation

Section 907-321, In-Grade Preparation, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby deleted and replaced as follows.

SECTION 907-321 - IN-GRADE PREPARATION

907-321.01--Description. The term "in-grade" is defined as existing material in place regardless of whether the material was placed under this contract or a previous contract. The term "in-grade preparation" is defined as the work required to prepare, blade, shape, scarify, disk, mix, compact, etc. the existing material to specification requirements prior to placement of a subsequent course of material.

In-grade preparation shall be performed in reasonable close conformity with the location, lines, grades, and typical section(s) and notes shown on the plans.

Unless otherwise specified, the in-grade preparation course shall be the top eight inches (8") of the existing soil.

907-321.02--Blank.

907-321.03--Construction Requirements.

907-321.03.1--General. Prior to beginning in-grade preparation, the area to be processed shall be cleaned of all vegetation or debris, bladed, shaped and filled as necessary to obtain the required line, grades and typical section as shown on the plans or as specified.

The top eight inches, unless a greater depth is specified, shall be broken up, either by scarifying or blading, and then thoroughly mixed by a disk-harrow. The disk shall be of sufficient weight and size to cut a minimum depth of eight inches. After mixing with a disk-harrow, the area will be shaped and compacted to the proper section and density.

907-321.03.2--Unsuitable Materials. All materials which cannot be stabilized and compacted to the required density, shall be removed and disposed of as directed. The material removed will be replaced by acceptable materials. Unless the unsuitable material was placed under this contract, the removal, disposal, and replacement of the material will be measured and paid for under the appropriate items of the contract. Materials which meet contract requirements except for moisture content will not be classified as unsuitable materials.

907-321.03.3--Density. The required density for in-grade preparation of courses shall be 95.0 percent in accordance with the requirements of Subsection 203.03.8.7.

907-321.03.4--Tolerances.

907-321.03.4.1--General. It shall be understood that although certain tolerances in grade, cross section, and density are allowable under the specifications, it shall be the Contractor's responsibility to prepare the surface of all in-grade courses to the degree of true grade and cross section and to the density and stability necessary to insure the ability to withstand subsequent construction. It shall be the Contractor's responsibility to construct each course to the degree of accuracy, maximum allowable tolerances notwithstanding, necessary to insure meeting final requirements.

907-321.03.4.2--Vertical Tolerances. No vertical tolerances will be allowed which will pond water. Otherwise, allowable tolerances will be $\pm\frac{1}{2}$ "

907-321.04--Method of Measurement. In-grade preparation of the depth specified will be measured by the square yard of area processed.

If it is necessary to excavate, pickup, load, and haul any of the in-grade material for use at other locations or for disposal as directed in order to prepare the area in accordance with the conditions specified, such work shall be performed and will be measured and paid for under the applicable provisions and requirements.

907-321.05--Basis of Payment. In-grade preparation, measured as prescribed above, will be paid for at the contract unit price per square yard, which price shall be full compensation for all specified scarifying, disk-harrowing, mixing, or other processing; for furnishing and applying all water; for all aerating necessary to dry wet materials; for all shaping and compacting; for all other work of whatever nature necessary for preparation as set forth under this specification; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

907-321-A: ___" In-Grade Preparation - per square yard

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

SPECIAL PROVISION NO. 907-401-6

CODE: (SP)

DATE: 08/21/2012

SUBJECT: Warm Mix Asphalt (WMA)

Section 401, Hot Mix Asphalt (HMA) - General, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as amended by this special provision is applicable to Warm Mix Asphalt Only.

907-401.01--Description.

These specifications include general requirements that are applicable to Warm Mix Asphalt (WMA).

This work consists of the construction of one or more lifts of WMA in accordance with Section 401 for Hot Mix Asphalt, with the exceptions set forth in this special provision. The WMA shall meet the specific requirements for the mixture to be produced and placed in reasonably close conformity with the lines, grades, thicknesses and typical sections shown on the plans or established by the Engineer.

907-401.02--Materials.

907-401.02.2--WMA Products and Processes. The Department will maintain a list of qualified WMA products and processes. No product or process shall be used unless it appears on this list.

The Contractor may propose other products or processes for approval by the Product Evaluation Committee. Documentation shall be provided to demonstrate laboratory performance, field performance, and construction experience.

907-401.03--Construction Requirements.

907-401.03.1.1--Weather Limitations. The air and pavement temperature at the time of placement shall equal or exceed 40°F, regardless of compacted lift thickness.

907-401.03.8--Preparation of Mixture. Warm mix asphalt is defined as a plant produced asphalt mixture that can be produced and constructed at lower temperatures than typical hot mix asphalt. Typical temperature ranges of non-polymer modified, WMA produced by foaming the asphalt binder at the plant are typically 270°F to 295°F 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 280°F to 305°F 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 270°F as long as all mixture quality and field density requirements are met. Production temperatures at the plant may need to be increased or decreased due to factors such as material

characteristics, environmental conditions, and haul time to achieve mixture temperatures at the time of compaction in which uniform mat density can be achieved.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-403-4

DATE: 01/08/2013

SUBJECT: Hot Mix Asphalt (HMA)

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

907-403.03--Construction Requirements.

907-403.03.2--Smoothness Tolerances. Delete the fourth paragraph of Subsection 403.03.2 on page 267 and substitute the following.

Where only a surface lift is required, the finished surface lift shall have a profile index of not more than 60.0 inches per mile.

Delete the last paragraph of Subsection 403.03.2 at the bottom of page 268, and the table at the top of page 269 and substitute the following:

Except for a single lift overlay, when the Profile Index for the final surface lift is less than or equal to eighteen inches per mile (18.0 inches / mile) per segment, a unit price increase will be added. The following schedule lists the Profile Index range and the corresponding contract price adjustment:

Profile Index inches / mile / segment	Contract Price Adjustment percent of unit bid price
less than 6.0	108
6.0 to 10.0	106
10.1 to 14.0	104
14.1 to 18.0	102
18.1 to Required P.I.	100
over Required P.I.	100 (with correction to Required P.I.)

For a single lift overlay, when the Profile Index for the final surface lift is less than or equal to eighteen inches per mile (18.0 inches / mile) per segment, a unit price increase will be added. The following schedule lists the Profile Index range and the corresponding contract price adjustment:

Profile Index inches / mile / segment	Contract Price Adjustment percent of unit bid price
less than or equal to 18.0	103
18.1 to Required P.I.	100
over Required P.I.	100 (with correction to Required P.I.)

Delete the first full paragraph of Subsection 403.03.2 on page 269 and substitute the following:

Contract price adjustments for rideability shall only be applicable to the surface lift and furthermore to only the segment(s) or portions of the segments(s) of the surface lift that require smoothness be determined by using a profilograph.

Delete the third full paragraph of Subsection 403.03.2 on page 269 and substitute the following:

Any contract price adjustment for rideability will be applied on a segment to segment basis on the theoretical tonnage based on 12-foot lanes, determined in accordance with Subsections 401.02.6.5 and 403.04, for the segment(s) or portions thereof for which an adjustment is warranted.

Delete Subsection 403.03.5.5 on page 273 and substitute the following:

907-403.03.5.5--Preliminary Leveling. All irregularities of the existing pavement, such as ruts, cross-slope deficiencies, etc., shall be corrected by spot leveling, skin patching, feather edging or a wedge lift in advance of placing the first overall lift.

907-403.04--Method of Measurement. After the first paragraph of Subsection 403.04 on page 274, add the following.

The pay quantities for each individual job mix formula (JMF) will be calculated using the approved JMF maximum specific gravity (Gmm) and the following formulas.

When the composite mixture has a maximum specific gravity of 2.540 or less,

$$T_p = T_w$$

When the composite mixture has a maximum specific gravity greater than 2.540,

$$T_p = T_w((100-(((Gmm*A*B)-C)/(Gmm*A*B))*100))/100$$

Where:

- T_p = Total tonnage for payment
- T_w = Total tonnage weighed, used and accepted

- Gmm = Maximum Specific Gravity of the approved composite asphalt mixture
- A = 46.725 lbs/yd²/in
- B = 0.93 = 93% density
- C = 110.374 lbs/yd²/in = Theoretical density at 2.540 Gmm

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-403-4

CODE: (IS)

DATE: 11/04/2005

SUBJECT: Hot Mix Asphalt (HMA)

Section 403, Hot Bituminous Pavement, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-403.05.2--Pay Items. Add the "907" prefix to the pay items listed on page 275 & 276.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-403-12

CODE: (SP)

DATE: 08/21/2012

SUBJECT: Warm Mix Asphalt (WMA)

Section 403, Hot Bituminous Pavement, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as amended by this special provision is applicable to Warm Mix Asphalt Only.

907-403.01--Description. This work consists of constructing one or more lifts of Warm Mix Asphalt (WMA) pavement in accordance with the requirements of Section 403 for Hot Mix Asphalt, with the exceptions set forth in this special provision. The WMA shall meet the requirements of this section and placed in reasonably close conformity with the lines, grade, thicknesses, and typical cross sections shown on the plans or established by the Engineer.

907-403.04--Method of Measurement. Warm mix asphalt will be measured by the ton. The weight of the composite mixture shall be determined in accordance with the provisions of Subsection 401.03.2.1.11.

907-403.05--Basis of Payment. Subject to the adjustments set out in Subsections 401.02.6.3, 401.02.6.4, 401.02.6.5, 401.02.6.6 & 403.03.2, warm mix asphalt, measured as prescribed above, will be paid for at the contract unit price per ton for each lift of pavement specified in the bid schedule and shall be full compensation for completing the work.

907-403.05.2--Pay Items. After the last pay item listed on page 276, add the following:

907-403-M: Warm Mix Asphalt, (1), (2) - per ton
Type Mixture

907-403-N: Warm Mix Asphalt, (1), (3), Leveling - per ton
Type Mixture

907-403-O: Warm Mix Asphalt, (1), (4), Trench Widening - per ton
Type Mixture

907-403-P: Warm Mix Asphalt, HT, (3), Polymer Modified - per ton
Mixture

907-403-Q: Warm Mix Asphalt, HT, (3), Polymer Modified, Leveling - per ton
Mixture

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. 907-619-4

CODE: (SP)

DATE: 12/4/2007

SUBJECT: Construction Safety Fence

Section 619, Traffic Control for Construction Zones, of the 2004 Edition of Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-619.02--Materials. After Subsection 619.02.13 on page 424, add the following:

907-619.02.14--Construction Safety Fence. Construction safety fence shall be 4-foot orange safety fence manufactured by Tenex, Nilex, Roadtech , or approved equal.

Steel tee post shall meet the requirements of Subsection 712.05.2.2.

Tie wire shall meet the requirements of Subsection 712.13.

907-619.03--Construction Requirements. After Subsection 619.03.9 on page 427, add the following:

907-619.03.10--Construction Safety Fence. In order to route the public, workers, and equipment around the work area or certain parts of the work areas, the Contractor shall install the fence at the location(s) shown on the plans, or directed by the Engineer. The fence shall be supported by at least 6-foot tee post spaced on 10-foot centers. The fence shall be secured to the post by aluminum fence tie wire.

907-619.05--Basis of Payment. After the last pay item listed in Subsection 619.05 on page 430, add the following.

907-619-L: Construction Safety Fence

- per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-626-25

CODE: (IS)

DATE: 11/13/2012

SUBJECT: Thermoplastic Traffic Markings

Section 626, Thermoplastic Traffic Markings, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-626.01--Description. After the last sentence of the first paragraph of Subsection 626.01 on page 443, add the following.

All pavement marking material, excluding edge lines over rumble strips, shall be applied using the extrusion/ribbon method. Edge lines placed over rumble strips shall be applied using the atomization/spray method.

907-626.03.1.1--Equipment. After the second paragraph of Subsection 626.03.1.1 on page 444, add the following.

When edge lines are placed over rumble strips, the equipment must be able to apply the marking material using the atomization/spray method instead of extrusion/ribbon method.

907-626.03.1.2--Construction Details. Delete the second sentence of the first full paragraph of Subsection 626.03.1.2 on page 445, and substitute the following.

Unless otherwise specified in the plans or contract documents, the thickness shall be 90 mils for edge lines, center lines, lane lines, barrier lines and detail stripe including gore markings, and 120 mils for crosswalks, stop lines, and railroad, word and symbol markings.

After the last sentence of the third full paragraph of Subsection 626.03.1.2 on page 445, add the following.

When double drop thermoplastic stripe is called for in the contract, additional beads by the drop-on method shall be applied as follows.

Class A glass beads at a rate of not less than three pounds of beads per 100 feet of six-inch stripe.
Class B glass beads at a rate of not less than three pounds of beads per 100 feet of six-inch stripe.

The Class B glass beads shall be applied to the newly placed stripe first, followed by the application of the Class A glass beads.

907-626.05--Basis of Payment. Delete the pay items listed on page 446 and substitute the following.

907-626-A: 6" Thermoplastic* Traffic Stripe, Skip White	- per linear foot or mile
907-626-B: 6" Thermoplastic* Traffic Stripe, Continuous White	- per linear foot or mile
907-626-C: 6" Thermoplastic* Edge Stripe, Continuous White	- per linear foot or mile
907-626-D: 6" Thermoplastic* Traffic Stripe, Skip Yellow	- per linear foot or mile
907-626-E: 6" Thermoplastic* Traffic Stripe, Continuous Yellow	- per linear foot or mile
907-626-F: 6" Thermoplastic* Edge Stripe, Continuous Yellow	- per linear foot or mile
907-626-G: Thermoplastic* Detail Stripe, <u>Color</u>	- per linear foot
907-626-H: Thermoplastic* Legend, White	- per linear foot or square foot

* Indicate Double Drop if applicable

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-631-1

CODE: (SP)

DATE: 05/04/2010

SUBJECT: Flowable Fill

Section 631, Flowable Fill, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is deleted in toto and replaced as follows:

SECTION 907-631 - FLOWABLE FILL

907-631.01--Description. This work shall consist of furnishing and placing a flowable fill material. Uses include, but are not limited to, placement under existing bridges, around or within box culverts or pipe culverts, or at other locations shown on the plans.

907-631.02--Materials. All materials shall meet the requirements of the following Subsections, or as stated herein:

Fine Aggregate	*
Portland Cement	701.01 and 701.02
Fly Ash.....	714.05
Air Entraining Admixtures **	713.02
Water.....	714.01.1 and 714.01.2
Calcium Chloride **	714.02

* The gradation of the fine aggregate shall be fine enough for the fine aggregate to stay in suspension in the mortar to the extent required for proper flow and shall conform to the following grading:

<u>Sieve Size</u>	<u>% Passing</u>
1/2 inch	100
No. 200	< 1

** High air generators shall be used, as required, in order to increase the total air content to 25 – 35%. Only approved high air generators shall be used to obtain the required air content. Either a Type C or E chemical admixture or maximum 1.0% calcium chloride by weight of the total cementitious materials may be added as required by the application and with the approval of the Engineer. Calcium chloride may not be used where the flowable fill comes into contact with metal. Adding the Type C or E chemical admixture or calcium chloride does not require a different or new mixture design from one previously approved.

907-631.02.1--Mixture Design. Flowable fill is a mixture of Portland cement, fine aggregate, water, and, as required to obtain the required total air content, either high air generators or air

entraining admixtures. Fly ash shall be used for Non-Excavatable applications. Flowable fill contains a low cementitious content for reduced strength development.

At least 30 days prior to production of flowable fill, the Contractor shall submit to the Engineer proposed flowable fill mixtures design following the mixture design submittal procedures listed in the Department's *Concrete Field Manual*.

The concrete producer shall assign a permanent unique mixture number to each flowable fill mixture design. All flowable fill mixture designs will be reviewed by the Materials Division prior to use. Flowable fill mixture designs disapproved will be returned to the Contractor with a statement explaining the disapproval.

Once approved, a flowable fill mixture design may be transferred to other projects without additional testing provided the material sources have not changed. Allowable changes in material sources shall meet the requirements of the Department's *Concrete Field Manual*, Section 5.7. For allowable changes in material sources, the mixture design shall be re-verified following the requirements of Subsection 907-631.02.1.2.

907-631.02.1.1--Proportioning of Mixture Design. The mixture design proportions shall be determined based on batches mixed using production equipment.

Table 1, "Flowable Fill Mixture Design Proportioning Guide", is a guide for proportioning flowable fill, except where noted.

Table 1
Flowable Fill Mixture Design Proportioning Guide

	Excavatable	Non-Excavatable
Material	Amount (lbs/yd ³)	
Cement	75 – 150 *	75 – 150 *
Fly Ash	-	150 – 600 *
Fine Aggregate	**	**
Water	***	***

* Guideline for proportioning. The actual amount may vary from the amount listed the Table 1.

** Fine aggregate shall be proportioned to yield one cubic yard of mixture as verified by unit weight.

*** Mixture designs shall produce a consistency that will result in a flowable self-leveling product at time of placement.

Each mixture design shall be verified using production equipment prior to submittal of the mixture design for review. During the verification, the mixture design shall meet the

requirements of the “Performance Requirements Flowable Fill Design” listed in Table 2. The verification performance data and the corresponding batch ticket shall be submitted with the mixture design.

Table 2
Performance Requirements for Verification of Flowable Fill Mixture Designs

Mixture Property	Performance Requirement		Required Test Method
	Excavatable	Non-Excavatable	
Consistency	Approximate 8-inch spread		(see below)
Total Air Content (%)	25 – 35	5 – 15	AASHTO T121
28 Day Compressive Strength (psi)	–	Minimum 125	AASHTO T22 and T23
Unit Weight (lbs/ft ³)	90 – 110	100 – 125	AASHTO T121

The consistency of the fresh mixture shall be that of a thin slurry. The consistency shall be tested by filling to the top a three-inch diameter by six-inch high cylinder which is open on both ends. With the mixture in the cylinder, immediately pull the cylinder straight up. The correct consistency of the mixture will produce a spread meeting the requirements in Table 2 with no segregation.

907-631.02.1.2--Verification of Mixture Design. The verification shall be performed by the Contractor prior to submittal of the mixture design proportions for review. The verification performance data and the corresponding batch ticket shall be submitted with the mixture design. The verification shall be performed using the batching and mixing equipment anticipated to be used during production of the mixture for the project. In addition to the performance requirements listed in Table 2, the verification shall meet the batching tolerance requirements for the material weights listed in the Department’s *Concrete Field Manual*.

Adjustments of the proportions of fine aggregate and/or water shall be made to achieve suspension of the fine aggregate.

The requirements in Table 2 for consistency, percent total air content, compressive strength, and unit weight are for verification of the mixture design proportion purposes only and are not intended for jobsite acceptance requirements.

907-631.02.2--Acceptance of Mixture. The acceptance of the mixture at the job site will be based on the performance of the flowable fill mixture placed and will be at the discretion of the Engineer. For acceptance of the mixture at the job site, the mixture shall be self-leveling and shall not settle, segregate, or have excessive bleed water.

907-631.02.3--Manufacturing. Flowable fill will be batched, mixed, and transported in accordance with the requirements of Section 804.

907-631.02.4--Sampling and Testing. The yield shall be determined by testing the first load

placed on each production day in accordance with AASHTO Designation: T121. If adjustments are made to the mixture design proportions to correct for yield, the yield shall be determined on the next load with the adjusted proportions.

907-631.03--Construction Requirements. Prior to placing flowable fill, each end of the structure shall be plugged leaving an opening at each end no larger than necessary to accommodate the filling equipment. Flowable fill shall be discharged from the mixer by any reasonable means into the area to be filled. Unless otherwise approved by the Engineer, filling will begin on the downstream end of the structure and continue until no further material will enter the structure. The flowable fill will then be continued from the upstream end of the structure.

907-631.04--Method of Measurement. Flowable fill will be measured by the cubic yard which will be determined from the yield in accordance with the requirements of Subsection 907-631.02.4. The yield will be calculated by dividing the actual batch weights of each load by the unit weight of the mix, which will be determined by testing the first load placed on each production day.

907-631.05--Basis of Payment. Flowable fill, measured as prescribed above, will be paid for at the contract unit price per cubic yard, which price shall be full compensation for furnishing all labor, equipment, tools and materials to complete the work.

Payment will be made under:

- 907-631-A: Flowable Fill, Excavatable - per cubic yard
- 907-631-B: Flowable Fill, Non-Excavatable - per cubic yard

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-699-4

CODE: (IS)

DATE: 02/15/2012

SUBJECT: Construction Stakes

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

907-699.01--Description. After the first paragraph of Subsection 699.01 on page 585, add the following:

This work may be performed utilizing Automated Machine Guidance technologies and systems in accordance with the standard specifications and contract documents. Automated Machine Guidance (AMG) is defined as the utilization of positioning technologies such as Global Positioning Systems (GPS), Robotic Total Stations, lasers, and sonic systems to automatically guide and adjust construction equipment according to the intended design requirements. The Contractor may use any type of AMG system(s) that result in compliance with the contract documents and applicable Standard Specifications.

Automated Machine Guidance (AMG) is not a mandatory requirement. Automated Machine Guidance (AMG), conventional staking, or a combination of both may be used at the Contractor's option for staking on this project.

907-699.02--Materials. After the last sentence of the first paragraph of Subsection 699.02 on page 585, add the following.

All equipment required to accomplish automated machine guidance shall be provided by the Contractor. The Contractor may use any type of AMG equipment that achieves compliance with the contract documents and applicable Standard Specifications.

907-699.03--Construction Requirements. Delete the first sentence of Subsection 699.03 on page 585 and substitute the following:

The Department will establish, one time only, secondary control points with elevations at distances not to exceed 1500 feet or that minimum distance necessary to maintain inter-visibility.

Delete the third sentence of the fourth paragraph of Subsection 699.03 on page 587, and substitute the following.

The duties performed by said Registrant shall conform to the definitions under the "practice of engineering" and practice of "land surveying" in Mississippi Law and the latest edition of the MDOT Survey Manual. The MDOT Survey Manual can be obtained online at the following address.

<http://www.gomdot.com/Divisions/Highways/Resources.aspx?Div=RoadwayDesign>.

After the last paragraph of Subsection 699.03 on page 587, add the following.

907-699.03.1--Automated Machine Guidance.

907-699.03.1.1--Automated Machine Guidance Work Plan. The Contractor shall submit a comprehensive written Automated Machine Guidance Work Plan to the Engineer for review at least 30 days prior to use. The submittal of a AMG Work Plan shall be an indication of the Contractor's intention to utilize AMG instead of conventional methods on the project areas and elements stated in the Work Plan. The Engineer shall review the Automated Machine Guidance Work Plan to ensure that the requirements of this special provision are addressed. The Contractor shall assume total responsibility for the performance of the system utilized in the Work Plan. Any update or alteration of the Automated Machine Guidance Work Plan in the course of the work shall be approved and submitted to MDOT for determination of conformance with requirements of this special provision.

The Automated Machine Guidance Work Plan shall describe how the automated machine guidance technology will be integrated into other technologies employed on the project. This shall include, but not limited to, the following:

1. A description of the manufacturer, model, and software version of the AMG equipment.
2. Information on the Contractor's experience in the use of Automated Machine Guidance system (or Related Technologies) to be used on the project, including formal training and field experience of project staff.
3. A single onsite staff person as the primary contact, and up to one alternate contact person for Automated Machine Guidance technology issues.
4. A definition of the project boundaries and scope of work to be accomplished with the AMG system.
5. A description of how the project proposed secondary control(s) is to be established. It shall also include a list and map detailing control points enveloping the site.
6. A description of site calibration procedures including, but not limited to, equipment calibration and the frequency of calibration as well as how the equipment calibration and information will be documented to MDOT and the Project Engineer. The documentation shall contain a complete record of when and where the tests were performed and the status of each equipment item tested within or out of the ranges of required tolerances.
7. A description of the Contractor's quality control procedures for checking mechanical calibration and maintenance of equipment. It shall also include the frequency and type of checks to be performed.
8. A description of the method and frequency of field verification checks and the submission schedule of results to the Project Engineer.
9. A description of the Contractor's contingency plan in the event of failure/outage of the AMG system.
10. A schedule of Digital Terrain Models (DTM) intended for use on the project. This shall be submitted to the Engineer for review, feedback, and communication.

The Contractor and MDOT will agree on the quantity and schedule of Contractor-provided training on the utilized AMG system required under Subsection 907-699.03.1.3.

907-699.03.1.2--State's Responsibilities. The District Surveyor will set the primary horizontal

and vertical control points in the field for the project as per latest edition of the MDOT Survey Manual. The control points shall be in Mississippi State Plane coordinate system.

MDOT will provide an electronic alignment file and primary control file for the project. This file will be based on the appropriate Mississippi State Plane Coordinate Zone either West or East. These files will be created with the computer software applications MicroStation (CADD software) and GEOPAK (civil engineering software). The data files will be provided in the native formats. The Contractor shall perform necessary conversion of the files for their selected grade control equipment, field verify the data for accuracy, and immediately report any errors to MDOT.

MDOT will provide design data, if available, in an electronic format to the Contractor. These files will be created with the computer software applications MicroStation (CADD software) and GEOPAK (civil engineering software). The data files will be provided in the native formats as specified in the Data Format section of this specification. No guarantee is made to the data accuracy or completeness, or that the data systems used by MDOT will be directly compatible with the systems used by the Contractor. Information shown on the paper plans marked with the seal (official plans as advertised) shall govern.

The Engineer will perform spot checks as necessary of the Contractor's machine control grading results, surveying calculations, records, field procedures, and actual staking. If the Engineer determines that the work is not being performed in accordance with the Specifications, the Engineer shall order the Contractor to re-construct the work to the requirements of the contract documents at no additional cost to the Department.

907-699.03.1.3--Contractor's Responsibilities The Contractor shall provide formal training, if requested, on the use of the Automated Machine Guidance Equipment and the Contractor's systems to MDOT project personnel prior to the start of construction activities utilizing AMG. This training is for providing MDOT project personnel with an understanding of the equipment, software, and electronic data being used by the Contractor.

The Contractor shall use the alignment and control data provided by MDOT.

The Contractor shall bear all costs, including but not limited to the cost of actual reconstruction work that may be incurred due to errors in application of Automated Machine Guidance techniques or manipulation of MDOT design data in Digital Terrain Models (DTM).

The Contractor shall be responsible for converting the information on the plans and/or electronic data file provided by MDOT into a format compatible with the Contractor's AMG system.

The Contractor shall establish secondary control points at locations along the length of the project and outside the project limits and/or where work is performed beyond the project limits as required by the Automated Machine Guidance system utilized. The Contractor shall establish this secondary control using survey procedures as outlined in the latest edition of the MDOT Survey Manual. A copy of all new control point information shall be provided to the Engineer prior to construction activities. The Contractor shall be responsible for all errors resulting from their efforts and shall correct deficiencies to the satisfaction of the Engineer and at no additional cost to the State.

The Contractor shall preserve all reference points and monuments that are established by the District Surveyor outside the construction limits. If the Contractor fails to preserve these items, they shall be re-established by the Contractor to their original quality at no additional cost to the State.

The Contractor shall set grade stakes at the top of the finished sub-grade and base course at all hinge points on the typical sections at 2000-foot maximum intervals on mainline, critical points such as, but not limited to, PC's, PT's, beginning and ending super elevation transition sections, middle of the curve, and at least two locations on each of the side roads and ramps, and at the beginning and end of each cross slope transition where Automated Machine Guidance is used. These grade stakes shall be established using conventional survey methods for use by the Engineer to check the accuracy of the construction.

The Contractor shall meet the same accuracy requirements as detailed in the Mississippi Standard Specifications for Road and Bridge Construction. Grade stakes shall be established as per Section 699 of the Mississippi Standard Specifications for Road and Bridge Construction for use by the Engineer to check the accuracy of the construction.

The Contractor shall be responsible for implementing the AMG system using the Mississippi State Plane Coordinate System. No localization methods will be accepted.

907-699.03.1.4--Data Format. It is the Contractor's responsibility to produce the Digital Terrain Model(s) and/or 3D line work needed for Automated Machine Guidance. MDOT does not produce this data in its design process. MDOT does provide CADD files created in the design process to the Contractor. The CADD files provided by MDOT are provided in the native software application formats in which they are created with no conversions, and their use in developing 3D data for machine guidance is at the discretion of the Contractor. The CADD files that may be available are listed below. Cross-Sections are one of the items provided but are not necessarily created at critical design locations. Therefore their use in Digital Terrain Models (DTM) for AMG is limited.

1. Project Control - Microstation DGN file and ASCII file
2. Existing Topographic Data - Microstation DGN file(s)
3. Preliminary Surveyed Ground Surface - GeoPak TIN, if available
4. Horizontal and Vertical alignment information - GeoPak GPK file and/or Microstation DGN file(s)
5. 2D Design line work (edge of pavement, shoulder, etc.) - Microstation DGN file(s)
6. Cross sections - Microstation DGN file(s), GeoPak format
7. Superelevation - Microstation DGN file(s), GeoPak format
8. Form Grades - Microstation DGN file(s)
9. Design Drainage - Microstation DGN file(s)

It is expressly understood and agreed that MDOT assumes no responsibility in respect to the sufficiency or accuracy of these CADD files. These files are provided for convenience only and the contract plans are the legal document for constructing the project.

907-699.05--Basis of Payment. Add the "907" prefix to the pay items listed on page 588.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-701-4

CODE: (IS)

| DATE: 11/09/2010

SUBJECT: Hydraulic Cement

Section 701, Hydraulic Cement, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete Subsection 701.01 on pages 595 & 596, and substitute the following:

907-701.01--General. The following requirements shall be applicable to hydraulic cement:

Only hydraulic cements conforming to Section 701 shall be used. Hydraulic cements shall not be listed or designated as meeting more than one AASHTO or Department type.

Different brands of hydraulic cement, or the same brand of hydraulic cement from different mills, shall not be mixed or used alternately in any one class of construction or structure, without written permission from the Engineer; except that this requirement will not be applicable to hydraulic cement treatment of design soils, or bases.

The Contractor shall provide suitable means for storing and protecting the hydraulic cement against dampness. Hydraulic cement, which for any reason, has become partially set or which contains lumps of caked hydraulic cement will be rejected. Hydraulic cement salvaged from discarded or used bags shall not be used.

The temperature of bulk hydraulic cement shall not be greater than 165°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 (C₃A) 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 (C₃A) may be used in lieu of Type II cement as allowed in Subsection 907-701.02.1; this cement is given the designation "Type III(MS)".
- *** Blended cement meeting the sulfate resistance requirements of Subsection 907-701.04 may be used in lieu of Type II as allowed in Subsection 907-701.04. No additional cementitious materials shall be added to or as a replacement for blended cement.
- **** Class F fly ash or GGBFS may be added as a replacement for cement as allowed in Subsection 907-701.02.2.

Class C fly ash shall not be used as a replacement for cement in any of the sulfate exposure conditions listed above.

907-701.02.2.2--Cement for Soil Stabilization Exposed to Soluble Sulfate Conditions or Seawater. When Portland cement for use in soil stabilization is exposed to moderate or severe soluble sulfate conditions, or to seawater, cement types and replacement of cement by Class F fly ash or GGBFS shall meet the requirements of Subsection 907-701.02.2.1. Neither metakaolin nor silica fume shall be used to bring the cementitious materials into compliance with the requirements of Table 1.

Delete Subsection 701.03 on page 596, and substitute the following:

907-701.03--Masonry Cement. Masonry cement shall conform to ASTM Designation: C 91 and shall only be used in masonry applications.

Delete Subsection 701.04 on page 596, and substitute the following:

907-701.04--Blended Hydraulic Cement.

907-701.04.1--General.

907-701.04.1.1--Types of Blended Cement. Blended hydraulic cements (blended cements) shall be of the following types and conform to AASHTO Designation: M 240:

- Type I(SM) – Slag-modified Portland cement
- Type IS – Portland blast-furnace slag cement
- Type I(PM) – Pozzolan-modified Portland cement
- Type IP – Portland-pozzolan cement

Blended cement for use in Portland cement concrete or soil stabilization exposed to the moderate soluble sulfate condition or exposure to seawater as defined in Table 1 shall meet the Sulfate resistance requirement listed in AASHTO Designation: M 240, Table 2 and the "(MS)" suffix shall be added to the type designation.

907-701.04.1.2--Alkali Content. All blended cement types in this Subsection shall meet the Mortar expansion requirements listed in AASHTO Designation: M 240, Table 2.

907-701.04.2--Replacement by Other Cementitious Materials. No additional cementitious materials, such as Portland cement, performance hydraulic cement, fly ash, GGBFS, metakaolin, or others, shall be added to or as a replacement for blended cement.

907-701.04.3--Exposure to Soluble Sulfate Conditions or Seawater. When Portland cement concrete or blended cement for soil stabilization is exposed to moderate soluble sulfate conditions or to seawater, where the moderate soluble sulfate condition is defined in Table 1, the blended cement shall meet the sulfate resistance requirement listed in AASHTO Designation: M 240, Table 2.

When Portland cement concrete or blended cement for soil stabilization is exposed to severe soluble sulfate conditions, where the severe soluble sulfate condition is defined in Table 1, blended cements shall not be used.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-702-3

CODE: (SP)

DATE: 05/08/2012

SUBJECT: Polyphosphoric Acid (PPA) Modification of Petroleum Asphalt Cement

Section 702.05, Petroleum Asphalt Cement, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-702.05--Petroleum Asphalt Cement. Delete the third paragraph of Subsection 702.05 on page 598, and substitute the following.

The bituminous material used in all types of asphalt mixtures shall conform to AASHTO Designation: M 320, Performance Grade PG 67-22, as modified in the table below, except that Polyphosphoric Acid (PPA) may be used at low dosage rates as a modifier to enhance the physical properties of a base binder to meet the requirements for Performance Grade PG 67-22. In addition, PPA may be used as a catalyst or mixing agent at low dosage rates in the production of Polymer Modified, Performance Grade PG 76-22.

When PPA is used as a modifier, in no case shall the PPA modifier be used to adjust the physical properties of the binder a full binder grade. For example: the base binder (unmodified) is graded as a PG 64-22 and should only be modified by the addition of PPA to a modified binder grade of PG 67-22.

When petroleum asphalt cement is modified by PPA, the following dosage limits shall be applied.

Grade	Dosage Limit
PG 67-22	0.75% by weight of binder
PG 76-22	0.50% by weight of binder

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-703-10

DATE: 1/08/2013

SUBJECT: Aggregates

Before Subsection 907-703.06.1.2 on page 1, add the following.

907-703.06.1--Coarse Aggregates. Delete the third paragraph of Subsection 703.06.1 on page 613, and substitute the following.

When tested in accordance with AASHTO Designation: T 19, the dry rodded unit weight of all aggregates except expanded clay and shale shall not be less than 70 pounds per cubic foot.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-703-10

CODE: (SP)

| DATE: 06/06/2012

SUBJECT: Aggregates

Section 703, Aggregates, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-703.03.2.4--Gradation. Delete the last sentence of the last paragraph of Subsection 703.03.2.4 on page 611.

907-703.04--Aggregate for Crushed Stone Courses.

907-703.04.1--Coarse Aggregate. Delete the first paragraph of Subsection 703.04.1 on page 611, and substitute the following.

Coarse aggregate, defined as material retained on No. 8 sieve, shall be either crushed limestone, steel slag, granite, concrete, or combination thereof. Crushed concrete is defined as recycled concrete pavement, structural concrete, or other concrete sources that can be crushed to meet the gradation requirements for Size No. 825 B as modified below. In no case shall waste from concrete production (wash-out) be used as a crushed stone base.

907-703.04.2--Fine Aggregate. Delete the first sentence of the first paragraph of Subsection 703.04.2 on page 612, and substitute the following.

Fine aggregate, defined as material passing No. 8 sieve, shall be material resulting from the crushing of limestone, steel slag, granite, concrete, or combination thereof.

Delete the third paragraph of Subsection 703.04.2 on page 612.

907-703.04.3--Gradation. After the table in Subsection 703.04.3 on page 613, add the following.

If crushed concrete is used, the crushed material shall meet the gradation requirements of Size No. 825 B with the exception that the percent passing by weight of the No. 200 sieve shall be 2 – 18.

907-703.06--Aggregates for Hot Mix Asphalt.

907-703.06.1.2--Fine Aggregates. Delete the last sentence of Subsection 703.06.1.2 on page 614.

907-703.20.3--Gradation. Delete the table and notes in Subsection 703.20.3 at the top of page 626, and substitute the following.

PERCENT PASSING BY WEIGHT

Square Mesh Sieves	Shell	Coarse			Medium	Fine
		Size I	Size II Note (1)	Size III Note (3)		
3 inch	90-100			100		
2 1/2 inch				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. 907-710-1

CODE: (SP)

DATE: 06/24/10

SUBJECT: Fast Dry Solvent Traffic Paint

Section 710, Paint, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is amended as follows:

After Subsection 710.05 on Page 661, add the following:

907-710.06--Fast Dry Solvent Traffic Paint. Fast dry solvent traffic paints intended for use under this specification shall include products that are single packaged and ready mixed. Upon curing, these materials shall produce an adherent, reflective pavement marking capable of resisting deformation by traffic. The manufacturer shall have the option of formulating the material according to their own specifications. However, the requirements delineated in this specification, Section 619 and Section 710 shall apply regardless of the formulation used. The material shall be free from all skins, dirt and foreign objects.

907-710.06.1--Composition.

907-710.06.1.1--Percent Pigment. The percent pigment by weight shall be not less than 51% nor more than 58% when tested in accordance with ASTM D 3723.

907-710.06.1.2--Viscosity. The consistency of the paint shall be not less than 75 nor more than 95 Krebs Units (KU) when tested in accordance with ASTM D 562.

907-710.06.1.3--Weight per Gallon. The paint shall weigh a minimum 11.8 pounds per gallon and the weight of the production batches shall not vary more than +/- 0.5 pounds per gallon from the weight of the qualification samples when tested in accordance with ASTM D 1475.

907-710.06.1.4--Total Solids. The percent of total solids shall not be less than 70% by weight when tested in accordance with ASTM D 2369.

907-710.06.1.5--Dry Time (No pick-up). The paint shall dry to a no tracking condition in a maximum of 10 minutes.

907-710.06.1.6--Volatile Organic Content. The volatile organic content (VOC) shall contain a maximum of 1.25 pounds of volatile organic matter per gallon of total non-volatile paint material when tested in accordance with ASTM D 3960.

907-710.06.1.7--Bleeding. The paint shall have a minimum bleeding ratio of 0.95 when tested in accordance with Federal Specification TT-P-115D.

907-710.06.1.8--Color. The initial daytime chromaticity for yellow materials shall fall within the box created by the following coordinates:

Initial Daytime Chromaticity Coordinates (Corner Points)

	1	2	3	4
x	0.53	0.51	0.455	0.472
y	0.456	0.485	0.444	0.4

The initial daytime chromaticity of white materials shall fall within the box created by the following coordinates:

Initial Daytime Chromaticity Coordinates (Corner Points)

	1	2	3	4
x	0.355	0.305	0.285	0.355
y	0.355	0.305	0.325	0.375

907-710.06.2--Environmental Requirements. All yellow materials using lead chromate pigments shall meet the criteria of non-hazardous waste as defined by 40 CFR 261.24 when tested in accordance with EPA Test Method 1311, Toxicity Characteristics Leaching Procedures (TCLP). The striping and marking material , upon preparation and installation, shall not exude fumes which are toxic, or detrimental to persons or property. All material using lead free pigments shall NOT contain either lead or other Resource Conservation and Recovery Act (RCCA) materials in excess of the standard defined by EPA Method 3050 and 6010.

907-710.06.3--Acceptance Procedures. Acceptance of all fast dry solvent based traffics paint will be based on the Manufacturer’s Certification and Certified Test Results. The Contractor shall furnish the Engineer with three copies of the manufacturer’s certification stating that each lot of material in a shipment complies with the requirements of this contract. In addition, the Contractor shall provide Certified Test Reports for all tests required by this specification. The test results shall be representative of the material contained with the shipment.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-711-4

CODE: (IS)

DATE: 06/26/2009

SUBJECT: Synthetic Structural Fiber Reinforcement

Section 711, Reinforcement and Wire Rope, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

After Subsection 711.03.4.3 on page 665, add the following:

907-711.04--Synthetic Structural Fiber. The synthetic structural fibers shall be approved for listing in the Department's "Approved Sources of Materials" prior to use. The synthetic structural fibers shall be added to the concrete and mixed in accordance with the manufacturer's recommended methods.

907-711.04.1--Material Properties. The fibers shall meet the requirements of ASTM Designation: C 1116, Section 4.1.3. The fibers shall be made of polypropylene, polypropylene/polyethylene blend, nylon, or polyvinyl alcohol (PVA).

907-711.04.2--Minimum Dosage Rate. The dosage rate shall be such that the average residual strength ratio ($R_{150,3.0}$) of fiber reinforced concrete beams is a minimum of 20.0 percent when the beams are tested in accordance with ASTM Designation: C 1609. The dosage rate for fibers shall be determined by the following.

The fiber manufacturer shall have the fibers tested by an acceptable, independent laboratory acceptable to the Department and regularly inspected by the Cement and Concrete Reference Laboratory of the National Institutes of Standards and Technology and approved to perform ASTM Designations: C 39, C 78, and C192.

The laboratory shall test the fibers following the requirements of ASTM Designation: C 1609 in a minimum of three (3) test specimens cast from the same batch of concrete, molded in 6 x 6 x 20-inch standard beam molds meeting the requirements of ASTM Designation: C 31. The beams shall be tested on an 18-inch span. The tests for $R_{150,3.0}$ shall be performed when the average compressive strength of concrete used to cast the beams is between 3500 and 4500 psi. The tests for compressive strength shall follow the requirements of ASTM Designation: C 39. The average compressive strength shall be determined from a minimum of two (2) compressive strength cylinders.

The value for $R_{150,3}$ shall be determined using the following equation:

$$R_{150,3.0} = \frac{f_{150,3.0}}{f_1} \times 100$$

The residual flexural strength ($f_{150,3.0}$) shall be determined using the following equation:

$$f_{150,3.0} = \frac{P_{150,3.0} \times L}{b \times d^2}$$

where:

$f_{150,3.0}$ is the residual flexural strength at the midspan deflection of $L/150$, (psi),

$P_{150,3.0}$ is the residual load capacity at the midspan deflection of $L/150$, (lbf),

L is the span, (in),

b is the width of the specimen at the fracture, (in), and

d is the depth of the specimen at the fracture, (in).

For a 6 x 6 x 20-inch beam, the $P_{150,3.0}$ shall be measured at a midspan deflection of 0.12 inch.

Additionally, $R_{150,3.0}$, $f_{150,3.0}$, and $P_{150,3.0}$ may also be referred to as R_{150}^{150} , f_{150}^{150} , and P_{150}^{150} respectively.

At the dosage rate required to achieve the minimum $R_{150,3}$, the mixture shall both be workable and the fibers shall not form clumps.

The manufacturer shall submit to the State Materials Engineer certified test reports from the independent laboratory showing the test results of each test specimen.

907-711.04.3--Job Control Requirements. The synthetic structural fibers shall be one from the Department's "Approved Sources of Materials."

At the required dosage rate, the mixture shall both be workable and the fibers shall not form clumps to the satisfaction of the Engineer. If the mixture is determined by the Engineer to not be workable or have clumps of fibers, the mixture may be rejected.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-713-2

DATE: 04/04/2012

SUBJECT: Admixtures for Concrete

After the last sentence of the first paragraph of Subsection 907-713.02 on page 1, add the following.

Admixtures providing a specific performance characteristic(s) other than those of water reduction or set retardation shall meet the minimum requirements for Type S. For admixtures meeting the requirements for Type S, the manufacturer shall provide data to substantiate the specific performance characteristic(s) to the satisfaction of the State Materials Engineer.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-713-2

CODE: (IS)

| DATE: 11/09/2010

SUBJECT: Admixtures for Concrete

Section 713, Concrete Curing Materials and Admixtures, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

After the second paragraph of Subsection 713.01.2 on page 676, add the following.

Type 1-D compound may be used on bridge rails, median barriers, and other structures requiring a spray finish. When Type 1-D compound is used, it will be the Contractor's responsibility to assure that the compound has dissipated from the structure prior to applying the spray finish and that the spray finish adheres soundly to the structure.

Delete Subsection 713.02 on pages 676 & 677, and substitute the following:

907-713.02--Admixtures for Concrete. Air-entraining admixtures used in Portland cement concrete shall comply with AASHTO Designation: M 154. Set-retarding, accelerating, and/or water-reducing admixtures shall comply with AASHTO Designation: M 194. Water-reducing admixture shall meet the minimum requirements for Type A. Set-retarding admixtures shall meet the minimum requirements for Type D.

In order to obtain approval of an admixture, the State Materials Engineer shall have been furnished certified test reports, made by an acceptable independent laboratory regularly inspected by the Cement and Concrete Reference Laboratory of the National Institutes of Standards and Technology, which show that the admixture meets all the requirements of the applicable AASHTO Standard Specification.

The Department reserves the right to sample, for check tests, any shipment or lot of admixture delivered to a project.

The Department reserves the right to require tests of the material to be furnished, using the specific cement and aggregates proposed for use on the project, as suggested in AASHTO Designation: M 154 and outlined in AASHTO Designation: M 194.

After an admixture has been approved, the Contractor shall submit to the State Materials Engineer, with each new lot of material shipped, a certification from the manufacturer in accordance with the requirements of Subsection 700.05.1 and stating the material is of the same composition as originally approved and has not been changed or altered in any way. The requirement in Subsection 700.05.1(b) is not required on the certification from the manufacturer.

Admixtures containing chlorides will not be permitted.

Failure to maintain compliance with any requirement of these specifications shall be cause for rejection of any previously approved source or brand of admixture.

Admixtures shall only be used in accordance with the manufacturer's recommended dosage range as set forth in the manufacturer's approval request correspondence. When an admixture is used in Portland cement concrete, it shall be the responsibility of the Contractor to produce satisfactory results.

907-713.02.1--Source Approval. In order to obtain approval of an admixture, the Producer/Suppliers shall submit to the State Materials Engineer the following for review: certified test reports, made by an acceptable independent laboratory regularly inspected by the Cement and Concrete Reference Laboratory of the National Institutes of Standards and Technology, which show that the admixture meets all the requirements of the applicable AASHTO or Department Specification for the specific type and the dosage range for the specific type of admixture.

907-713.02.2--Specific Requirements. Admixtures containing chlorides will not be permitted.

907-713.02.3--Acceptance. The Department reserves the right to sample, for check tests, any shipment or lot of admixture delivered to a project.

The Department reserves the right to require tests of the material to be furnished, using the specific cement and aggregates proposed for use on the project, as suggested in AASHTO Designation: M 154 and outlined in AASHTO Designation: M 194.

Failure to maintain compliance with any requirement of these specifications shall be cause for rejection of any previously approved source or brand of admixture.

With each new lot of material shipped the Contractor shall submit to the State Materials Engineer, a notarized certification from the manufacturer showing that the material complies with the requirements of the applicable AASHTO or Department Specification.

When an admixture is used, it shall be the responsibility of the Contractor to produce satisfactory results.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-714-6

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 alkalis 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 $\pm 0.15\%$ 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 placed in accordance with the manufacturer's instructions. When the mixture is to be placed in contact with steel, the certification shall further state that the packaged material contains no chlorides. Certified test report(s) and certification shall be furnished for each lot in a shipment.

The proportioning of materials must be approved by the State Materials Engineer and any subsequent change in proportioning must also be approved. A sample of each component shall be submitted to the Engineer along with the quantity or percentage of each to be blended. At least 45 days must be allowed for initial approval.

The proportioning of materials for subsequent lots may be approved by the State Materials Engineer upon receipt of certification from the manufacturer that the new lot of material is the same composition as that originally approved by the Department and that the material has not been changed or altered in any way.

907-714.11.7--Commercial Grout for Anchoring Doweled Tie Bars in Concrete. Before Subsection 714.11.7.1 on page 691, add the following:

Approved Non-“Fast Set” Epoxy anchor systems as specified below may be used for the repair of concrete pavements that do not involve permanent sustained tension applications or overhead applications.

“*Fast Set Epoxy*” may not be used for any Adhesive Anchor Applications. Adhesive Anchor Systems (Fast Set epoxy or otherwise) shall not be used for permanent sustained tension applications or overhead applications. “Fast Set Epoxy” refers to an epoxy produced by the Sika Corporation called Sikadur AnchorFix-3 and repackaged for sale under a variety of names/companies listed at the Federal Highway Administration web site at the following link:

<http://www.fhwa.dot.gov/Bridge/adhesives.cfm>

907-714.11.7.4--Acceptance Procedure. After the last sentence of the first paragraph of Subsection 714.11.4 on page 691, add the following:

Upon approval, a product must be recertified every four (4) years to remain on the “Approved Sources of Materials” list.

907-714.11.8--Epoxy Joint Repair System.

907-714.11.8.1--General. After the last sentence of the first paragraph of Subsection 714.11.8.1 on page 692, add the following:

Upon approval, a product must be recertified every four (4) years to remain on the “Approved Sources of Materials” list.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-720-1

DATE: 10/04/2012

SUBJECT: Pavement Marking Material

Before Subsection 907-720.02 on page 1, add the following.

907-720.01--Glass Beads. After the first sentence of Subsection 720.01 on page 729, add the following.

The glass beads shall contain no more than 200 ppm (mg/kg) total concentration for lead, arsenic, or antimony. The manufacture shall furnish the Engineer with a certified test report indicating that the glass beads meet the above requirement.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-720-1

CODE: (IS)

DATE: 3/17/2008

SUBJECT: Pavement Markings Materials

Section 720, Pavement Marking Materials, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-720.02--Thermoplastic Pavement Markings. Delete the first paragraph of Subsection 720.02 on page 730 and substitute the following:

The thermoplastic material shall be lead free and conform to AASHTO Designation: M 249 except the glass beads shall be moisture resistant coated.

After the first sentence of the second paragraph of Subsection 720.02 on page 730, add the following:

In addition, the certification for the thermoplastic material shall state that the material is lead free.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-804-13

| **DATE:** **02/14/2013**

SUBJECT: **Concrete Bridges And Structures**

After the second paragraph of Subsection 907-804.02.10 on page 2, add the following.

After the first paragraph of Subsection 804.02.10 on page 850, add the following.

If the Contractor chooses to cure the concrete in accordance with the requirements listed under **Length of Time Defined by Development of Compressive Strength** in Subsection 907-804.03.17, the compressive strength/maturity relationship shall be developed for the mixture design for a minimum of 28 days following the requirements of Subsection 907-804.03.15. The compressive strength/maturity relationship information shall be submitted with the mixture design information.

In the ** Note of Subsection 907-804.02.10 on page 2, delete “metakaolin” from the list of other cementitious materials.

After the first sentence of the last paragraph of Subsection 907-804.02.10 on page 3, add the following.

Mixture designs containing accelerating admixtures will not be approved. Admixtures providing a specific performance characteristic other than those of water reduction or set retardation may be used in accordance with the manufacturer’s recommended dosage range.

After Subsection 907-804.02.10.1.1 on page 3, add the following.

907-804.02.10.1.2--Proportioning on the Basis of Laboratory Trial Mixtures. Delete subparagraph d) of Subsection 804.02.10.1.2 on pages 852 & 853, and substitute the following.

- d) For each proposed mixture, at least three compressive test cylinders shall be made and cured in accordance with AASHTO Designation: T 126. Each change of water-cementitious ratio shall be considered a new mixture. The cylinders shall be tested for strength in accordance with AASHTO Designation: T 22 and shall be tested at 28 days.

After Subsection 907-804.02.10.3 on page 4, add the following.

After Subsection 804.02.10.3 on page 853, add the following.

907-804.02.10.3.1--Slump Retention of Class DS Concrete Mixture Designs. Prior to concrete placement, the Contractor shall provide test results of a slump loss test using approved methods to demonstrate that the mixture meets the four hour requirement in Subsection 907-803.02.7.1. These tests shall be conducted successfully by an approved testing laboratory within

30 days prior to installation of the trial shaft, with personnel from the Department's Central Laboratory present. The slump loss test shall be conducted at temperatures and conditions similar to those expected at the job site at the time of the installation of the trial shaft. The sample for the slump loss test shall be from a minimum batch size of four cubic yards of concrete. If the time between the previous successful slump loss test and the installation of the trial shaft exceeds 30 days, another successful slump loss test shall be performed on the first truckload of concrete as part of the installation of the trial shaft. This requirement limiting the time between the previous slump loss test and an installation of the trial shaft also applies to Class DS concrete mixture designs being transferred from another project. During any shaft installation a slump loss test shall be conducted by the Contractor at the direction of the Engineer from the concrete at the site for verification of slump loss requirements using a sample from a minimum batch size of four cubic yards of concrete.

Before Subsection 907-804.02.12.3 on page 5, add the following.

907-804.02.12.1.1--Elements of Plan. After item 3) in Subsection 804.02.12.1.1 on page 855, add the following.

4) Job Site Batch Adjustments by Addition of Chemical Admixtures:

The Plan shall address if the Contractor intends to adjust either the slump and/or total air content of a batch on the job site by adding chemical admixture(s) to a batch. The Contractor shall include the names of the personnel designated to perform this batch adjustment, the equipment used to add the chemical admixture(s), and the procedure by which the batch adjustment will be accomplished. Only the Contractor's designated personnel shall adjust a batch. Only calibrated dispensing equipment shall be used to add chemical admixture(s) to a batch. Only the procedure described in section of the Plan shall be utilized.

If the maximum permitted slump or total air content is exceeded after the addition of admixtures at the job site, the concrete shall be rejected.

If the Contractor elects to utilize Job Site Batch Adjustments by Addition of Chemical Admixture within Item 2, Procedures for Corrective Actions for Non Compliance of Specifications, to adjust batches which do not meet the minimum specification requirements for slump and/or total air content, no more than three batches on any one project shall be allowed to be adjusted.

5) Construction of Concrete Bridge Decks, including the following:

- the description of the equipment used for placing concrete on the bridge deck in accordance with Subsection 907-804.03.6 and, as applicable, Subsections 907-804.03.7 and 907-804.03.8 including any accessories added to the pump to ensure the entrained air in the concrete mixture remains entrained during pumping and depositing of the concrete mixture,
- the description of and the number of pieces of equipment used to consolidate the concrete in accordance with Subsection 907-804.03.6.2,

- the description of the equipment used to finish the bridge deck in accordance with Subsection 907-804.03.19.7,
- the plan for ensuring a continuous rate of finishing the bridge deck without delaying the application of curing materials within the time specified in Subsection 907-804.03.17, including ensuring a continuous supply of concrete throughout the placement with an adequate quantity of concrete to complete the deck and filling diaphragms and end walls in advance of deck placement,
- the plan for applying the curing materials within the time specified in Subsection 907-804.03.17,
- the description of the powered fogging equipment in accordance with Subsection 907-804.03.17,
- a sample of the documentation used as the daily inspection report for ensuring maintenance of the continuous wet curing in accordance with Subsection 907-804.03.17, as required,
- the description of the equipment used to apply the liquid membrane, including but not limited to, the nozzles, pumping/pressurization equipment, and liquid membrane tanks, in accordance with Subsection 907-804.03.17,
- the method for determining the rate of applied liquid membrane meets the application rate requirements in accordance with Subsection 907-804.03.17,
- a sample of the documentation used for the application rate verification of the liquid membrane in accordance with Subsection 907-804.03.17.

After Subsection 907-804.03.6.2 on page 7, add the following.

907-804.03.8--Pumping Concrete. Delete the second paragraph of Subsection 804.03.8 on page 866, and substitute the following.

Where concrete mixture is conveyed and placed by mechanically applied pressure (pumping), the equipment shall be suitable in kind and adequate in capacity for the work. The Contractor shall select concrete mixture proportions such that the concrete mixture is pumpable and placeable with the selected equipment.

The pumping equipment shall be thoroughly cleaned prior to concrete placement. Excess form release agent shall be removed from the concrete pump hopper. The Contractor shall prime the pump at no additional cost to the Department by pumping and discarding enough concrete mixture to produce a uniform mixture exiting the pump. At least 0.25 cubic yard of concrete mixture shall be pumped and discarded to prime the pump. This shall be accomplished by using the pump to fill a commercially-available six (6) cubic foot wheelbarrow to overflowing or filling a commercially-available eight (8) cubic foot wheel barrow to level. Only concrete mixture shall be added directly into the concrete pump hopper after placement has commenced. If anything other than concrete mixture is added to the concrete pump hopper, all concrete mixture in the concrete pump hopper and pump line shall be discarded and the pump re-primed at no additional cost to the Department.

The discharge end of the pump shall be of such a configuration that the concrete does not move in the pump line under its own weight. The intent of this requirement is to ensure that entrained air in the concrete mixture remains entrained during pumping and depositing the concrete mixture. This shall be accomplished with one or both of the following:

- a minimum 10-foot flexible hose attached to the discharge end of a steel reducer having a minimum length of three (3) feet and a minimum reduction in area of 20% which is attached to the discharge end of the pump line, or
- a flexible reducing hose to the discharge end of the pumpline with a minimum reduction in area of 20% over a minimum 10-foot hose length.

Regardless of the configuration chosen, the Contractor shall ensure that the concrete is pumped and does not free-fall more than five (5) feet within the entire length of pump line and after discharge from the end of pump line.

The Contractor shall not have any type of metal elbow, metal pipe, or other metal fitting within five (5) feet of any person during discharge of concrete mixture.

Boom pumps shall have a current Concrete Pump Manufacturers Association's ASME/ANSI B30.27 certification. Equipment added to the boom and pump line shall meet the pump manufacturer's specifications and shall not exceed the manufacturer's maximum recommended weight limit for equipment added to the boom and pump line.

The operation of the pump shall be such that a continuous stream of concrete without air pockets is produced. When pumping is completed, the concrete remaining in the pipe line, if it is to be used, shall be ejected in such a manner that there will be no contamination of the concrete or separation of the ingredients. After this operation, the entire equipment shall be thoroughly cleaned.

Before Subsection 907-804.03.15 on page 7, add the following.

907-804.03.14.2--Stay-In-Place Metal Forms. Delete the sentence in Subsection 804.03.14.2 on page 871 and substitute the following.

Stay-in-place (SIP) metal forms are corrugated metal sheets permanently installed between the supporting superstructure members. After the concrete has cured, these forms shall remain in place as permanent, non-structural members of the bridge.

Pay quantities for bridge deck concrete will be computed from the dimensions shown in the Contract Plans with no allowance for changes in deflection and /or changes in dimensions necessary to accommodate the SIP metal forms.

There will be no direct payment for the cost of the forms and form supports, or any material, tools, equipment, or labor incidental thereto, but the cost shall be considered absorbed in the contract unit price for bridge deck concrete.

Before fabricating any material, three (3) complete sets of SIP metal form shop drawings and design calculations, bearing the Design Engineer's Seal, shall be submitted to the Director of Structures, State Bridge Engineer, through the Project Engineer, for review. The Contractor's SIP metal form Design Engineer shall be a MS Registered Professional Engineer who is knowledgeable in the field of structural design.

In no case shall additional dead load produced by the use of SIP metal forms overstress any bridge component. Design calculations shall indicate any additional dead load from SIP metal form self-weight, form support hangers, concrete in flutes, concrete due to form deflection, etc. not included in the Contract Plans. The additional dead loads shall be clearly labeled and tabulated on the shop drawings. Bridge Division will evaluate the additional load for overstress of the bridge components. In the event that the additional dead load produces an overstress in any bridge component, Bridge Division will reject the Contractor's design. Deflection and loads produced by deflection of the SIP metal forms shall be considered and indicated in the design calculations.

The cambers and deflections provided in the Contract Plans do not consider the effects of SIP metal forms. The Contractor's Engineer shall take into account the weight of the forms and any additional dead load when developing the "Bridge Superstructure Construction Plan".

For the purpose of reducing any additional dead load produced by the SIP metal forms, the flutes of SIP metal forms may be filled with polystyrene foam. When polystyrene foam is used to fill the forms, the form flutes shall be filled completely; no portion of the polystyrene foam shall extend beyond the limits of the flutes. The Contractor shall ensure that the polystyrene foam remains in its required position within flutes during the entire concrete placement process. The Contractor shall not use reinforcing steel supports or other accessories in such a manner as to cause damage to the polystyrene foam. All damaged polystyrene foam shall be replaced to the satisfaction of the Project Engineer. All welding of formwork shall be completed prior to placement of polystyrene foam.

For bridges not located in horizontal curves, the Contractor may reduce the additional dead load by matching the flute spacing with the transverse steel spacing of the bottom layer. The bottom longitudinal layer of steel shall have one (1) inch of minimum concrete cover measured from the bottom of the reinforcing to the top of the flute. The Contractor will not be allowed to vary the reinforcing steel spacing or size from the Contract Plans for the purpose of matching flute spacing.

907-804.03.14.2.1--Materials. SIP metal forms and supports shall meet the requirements of ASTM Designation: A653 having a coating designation G165. Form materials that are less than 0.03-inch uncoated thickness shall not be allowed.

907-804.03.14.2.2--Certification. The Contractor shall provide written certification from the manufacturer stating the product meets the requirements of this specification to the Project Engineer along with the delivery of the coated forms to the job site.

All welds shall be performed by certified welders meeting the requirements of the approved shop drawings.

907-804.03.14.2.3--Polystyrene Foam. The polystyrene foam shall be comprised of expanded polystyrene manufactured from virgin resin of sufficient density to support the weight of concrete without deformation. The polystyrene foam shall be extruded to match the geometry of the flutes and provide a snug fit. The polystyrene foam shall have a density of not less than 0.8 pounds per cubic foot. The polystyrene foam shall have water absorption of less than 2.6% when tested according to ASTM Designation: C272. The Contractor shall provide written certification

from the manufacturer stating the polystyrene foam product meets the requirements of this specification to the Project Engineer along with the delivery of the coated forms to the job site.

907-804.03.14.2.4--Design. The design of the SIP metal forms shall meet the following criteria.

1. The maximum self-weight of the stay in place metal forms, plus the weight of the concrete or expanded polystyrene required to fill the form flutes (where used), shall not exceed 20 psf.
2. The forms shall be designed on the basis of dead load of form, reinforcement, and plastic concrete plus 50 pounds per square foot for construction loads. The design shall use a unit working stress in the steel sheet of not more than 0.725 of the specified minimum yield strength of the material furnished, but not to exceed 36,000 psi.
3. Deflection under the weight of the forms, reinforcement, and plastic concrete shall not exceed 1/180 of the form span or 1/2 inch, whichever is less, for form spans of 10 feet or less, or 1/240 of the form span or 3/4 inch, whichever is less, for form spans greater than 10 feet.
4. The design span of the form shall equal the clear span of the form plus two (2) inches. The span shall be measure parallel to the form flutes.
5. Physical design properties shall be computed in accordance with requirements of the AISI Specifications for the Design of Cold Formed Steel Structural Members, latest published edition.
6. The design concrete cover required by the plans shall be maintained for all reinforcement.
7. The plan dimensions of both layers of primary deck reinforcement from the top surface of the concrete deck shall be maintained.
8. The SIP metal form shall not be considered as lateral bracing for compression flanges of supporting structural members.
9. SIP metal forms shall not be used under closure pours or in bays where longitudinal slab construction joints are located. SIP metal forms shall not be used under cantilevered slabs such as the overhang outside of fascia members.
10. Forms shall be secured to the supporting members by means other than welding directly to the member. Welding to the top flanges of steel stringers and/or girders shall not be allowed. Alternate installation procedures shall be submitted addressing this condition.

907-804.03.14.2.5--Construction. SIP metal form sheets shall not rest directly on the top of the stringer or floor beam flanges. Sheets shall be fastened securely to form supports, and maintain a minimum bearing length of one (1) inch at each end for metal forms. Form supports shall be placed in direct contact with the flange of the stringer or floor beam. All attachments for coated metal forms shall be made by bolts, clips, screws, or other approved means.

907-804.03.14.2.6--Form Galvanizing Repairs. Where forms or their installation are unsatisfactory in the opinion of the Project Engineer, either before or during placement of the concrete, the Contractor shall correct the defects before proceeding with the construction work. The cost of such corrective work shall be at the sole expense of the Contractor. Minor heat discoloration in areas of welds shall not be touched up.

907-804.03.14.2.7--Placing of Concrete. The Contractor shall insure that concrete placement does not damage the SIP metal forms. The concrete shall be vibrated to avoid honeycomb and voids, especially at construction joints, expansion joints, valleys and ends of form sheets. Approved pouring sequences shall be used. Calcium chloride or any other admixture containing chloride salts shall not be used in the concrete. The completed SIP metal form system shall be sufficiently tight to prevent leakage of mortar or concrete.

907-804.03.14.2.8--Inspection. The Project Engineer will observe the Contractor's method of construction during all phases of the construction of the bridge deck slab, including the installation of the SIP metal form system; location and fastening of the reinforcement; composition of concrete items; mixing procedures, concrete placement, and vibration; and finishing of the bridge deck. Should the Project Engineer determine that the procedures used during the placement of the concrete warrant inspection of the underside of the deck, at least one section of the metal forms shall be removed in each span for this purpose. This shall be done as soon after placing the concrete as practical in order to provide visual evidence that the concrete mix and the procedures are obtaining the desired results. An additional section shall be removed in any span if the Project Engineer determines that there has been any change in the concrete mix or in the procedures warranting additional inspection.

If, in the Project Engineer's judgment, inspection is needed to check for defects in the bottom of the deck or to verify soundness, the SIP metal forms shall be sounded with a hammer after the deck concrete has been in place a minimum of two days. If sounding discloses areas of doubtful soundness to the Project Engineer, the SIP metal forms shall be removed from such areas for visual inspection after the concrete has attained adequate strength. The SIP metal bridge deck forms shall be removed at no expense to the State.

At locations where sections of the metal forms have been removed, the Project Engineer will not require the Contractor to replace the metal forms. The adjacent metal forms and supports shall be repaired to present a neat appearance and to ensure their satisfactory retention. As soon as the form is removed, the Project Engineer will examine the concrete surfaces for cavities, honeycombing, and other defects. If irregularities are found and the Project Engineer determines that these irregularities do not justify rejection of the work, the concrete shall be repaired as directed by the Project Engineer. If the Project Engineer determines that the concrete where the form is removed is unsatisfactory, additional metal forms as necessary shall be removed to inspect and repair the slab, and the Contractor's method of construction shall be modified as required to obtain satisfactory concrete in the slab. All unsatisfactory concrete shall be removed and replaced as directed at no expense to the State.

If the method of construction and the results of the inspections as outlined above indicate that sound concrete has been obtained throughout the slabs, the amount of sounding and form removal may be reduced when approved by the Project Engineer.

The Contractor shall provide a safe and convenient means of conducting of the inspection.

Delete Table 6 of Subsection 907-804.03.15 on page 8, and substitute the following.

Table 6
Minimum Compressive Strength Requirements for Form Removal

Forms:

Columns	1000 psi
Side of Beams	1000 psi
Walls not under pressure	1000 psi
Other Parts	1000 psi

Centering:

Under Beams	2400 psi
Under Bent Caps	2000 psi

Limitation for Placing Beams on:

Pile Bents, pile under beam	2000 psi
Frame Bents, two or more columns	2200 psi
Frame Bents, single column	2400 psi

Forms for bridge deck slabs overhead and bridge deck slabs between beams shall be removed with the approval of the Engineer, between two weeks and four weeks after the removal of the wet burlap applied in accordance with Subsection 907-804.03.17.1, or application of liquid membrane applied in accordance with Subsection 907-804.03.17.2.

Delete the second paragraph of Subsection 907-804.03.16.1 on page 9, and substitute the following.

At the option of the Contractor with the approval of the Engineer, when concrete is placed during cold weather and there is a probability that the ambient temperatures will be lower than 40°F, an approved maturity meter may be used to determine concrete strengths by inserting probes into concrete placed in a structure. The minimum number of maturity meter probes required for each structural component shall be in accordance with Table 7. An approved insulating blanketing material shall be used to protect the work when ambient temperatures are less than 40°F and shall remain in place until the required concrete strength in Table 6 is achieved. Within 30 minutes of removal of the insulating blanketing material in any area, the Contractor shall have curing of the concrete established in accordance with the requirements in Subsection 907-804.03.17. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO Designation: T 325 and ASTM Designation: C 1074 specifications. Technicians using the maturity meter or calculating strength/maturity graphs shall be required to have at least two hours of training prior to using the maturity equipment.

Before Subsection 907-804.03.19 on page 9, add the following.

907-804.03.17--Curing Concrete. Delete Subsection 804.03.17 on pages 874 & 875, and substitute the following.

Curing is defined as all actions taken to ensure the moisture and temperature conditions of freshly placed concrete exist so the concrete may develop its potential properties. Curing shall take place from the time of placement until its potential properties have developed. The Contractor shall use the guidance in ACI 308R-01 to:

- a) cure the concrete in such a manner as to prevent premature moisture loss from the concrete,
- b) supply additional moisture to the concrete as required in order to ensure sufficient moisture within the concrete, and
- c) maintain a concrete temperature beneficial to the concrete.

Curing in accordance with the requirements in either Subsection 907-804.03.17.1 or Subsection 907-804.03.17.2 shall be completely established within 20 minutes after finishing, except as noted for bridge decks. Finishing is complete when the pan drag, burlap drag, or other is complete.

The length of time for curing shall be maintained in accordance with either of the following:

1. Prescribed Length of Time:

- a) Curing following the requirements of Subsection 804.03.17.1 shall continue uninterrupted for at least 14 days.
- b) Curing following the requirements of Subsection 804.03.17.2 shall continue uninterrupted for at least 10 days.

OR

2. Length of Time Defined by Development of Compressive Strength:

Curing following the application requirements of Subsection 907-804.03.17.1 or Subsection 907-804.03.17.2 shall continue uninterrupted for each day's production until the compressive strength of the concrete exceeds 75% of the 28-day compressive strength submitted as the Basis of Proportioning per Subsection 907-804.02.10.1. Therefore, if an area is being cured in accordance with Subsection 907-804.03.17.1, the curing by wet burlap shall continue until the concrete in that area has attained a minimum of 75% of the 28-day compressive strength submitted as the Basis of Proportioning per Subsection 907-804.02.10.1. Likewise, if an area is being cured in accordance with Subsection 907-804.03.17.2, the curing by liquid membrane shall continue until the concrete in that area has attained a minimum of 75% of the 28-day compressive strength submitted as the Basis of Proportioning per Subsection 907-804.02.10.1.

The compressive strength of the concrete may be determined by the use of maturity meter in accordance with Subsection 907-804.03.15.

907-804.03.17.1--Water With Waterproof Cover. All burlap shall be completely saturated and wet prior to placing it on the concrete. The burlap shall have been fully soaked in water for a minimum of 12 hours prior to placement on the concrete.

For bridge decks, the Contractor shall apply one (1) layer of saturated burlap within 20 minutes of the initial strike-off for bridges without a skew and 25 minutes of the initial strike-off for bridges with a skew. For all other concrete, the Contractor shall apply one (1) layer of saturated burlap within 20 minutes of completing finishing.

Following the first layer of burlap, the Contractor shall apply a second layer of saturated burlap within five (5) minutes of applying the first layer. The concrete surface shall not be allowed to dry after strike-off or at any time during the curing period.

The Contractor shall maintain the burlap in a fully wet condition using powered fogging equipment capable of producing a fog spray of atomized droplets of water until the concrete has gained sufficient strength to allow foot traffic without the foot traffic marring the surface of the concrete. Burlap shall not be maintained in the fully wet condition using equipment which does not produce a fog spray of atomized droplets of water or by use of manually pressurized sprayers. For bridge decks, once the concrete has gained sufficient strength to allow foot traffic which does not mar the surface of the concrete, soaker hoses shall be placed on the burlap. The soaker hoses shall then be supplied with running water continuously to maintain continuous saturation of all burlap and the entire concrete surface.

If there is a delay in the placement of the first layer of saturated burlap outside the time limit, the struck-off and finished concrete shall be kept wet by use of the powered fogging equipment used to keep the burlap wet.

White polyethylene sheets shall be placed on top of the wet burlap and, as applicable, soaker hoses covering the entire concrete surface as soon as practical and not more than 12 hours after the placement of the concrete. White polyethylene sheets of the widest practical width shall be used, overlapping adjacent sheets a minimum of six inches (6") and tightly sealed with an adhesive like pressure sensitive tape, mastic, glue, or other approved methods to form a complete waterproof cover of the entire concrete surface. White polyethylene sheets which overlap a minimum of two feet (2') may be held in place using means other than an adhesive. The white polyethylene sheets shall be secured so that wind will not displace them. The Contractor shall immediately repair the broken or damaged portions or replace sections that have lost their waterproof qualities.

If burlap and/or white polyethylene sheets are temporarily removed for any reason during the curing period, the Contractor shall keep the entire exposed area continuously wet. The saturated burlap and white polyethylene sheets shall be replaced, resuming the specified curing conditions, as soon as possible.

The Contractor shall inspect the concrete surface once every 8 hours for the entirety of the curing period, so that all areas remain wet for the entire curing period and all curing requirements are satisfied and document the inspection in accordance with Subsection 907-804.03.17.1.1.

At the end of the curing period, one coating of liquid membrane shall be applied following the requirements of Subsection 907-804.03.17.1.2. The purpose of the coating of liquid membrane is

to allow for slow drying of the concrete. The application of liquid membrane to any area shall be complete within 30 minutes of the beginning of removal of the white polyethylene sheets, soaker hoses, and burlap from this area.

907-804.03.17.1.1--Documentation. The Contractor shall provide the Engineer with a daily inspection report that includes:

- documentation that identifies any deficiencies found (including location of deficiency);
- documentation of corrective measures taken;
- a statement of certification that all areas are wet and all curing material is in place on the entire bridge deck;
- documentation showing the time and date of all inspections and the inspector's signature;
- documentation of any temporary removal of curing materials including location, date and time, length of time curing was removed, and means taken to ensure exposed area was kept continuously wet.

907-804.03.17.1.2--Liquid Membrane. At the end of the 14-day wet curing period the wet burlap and polyethylene sheets shall be removed and within 30 minutes, the Contractor shall apply white liquid membrane to the deck. The liquid membrane shall be thoroughly mixed within the time recommended by the liquid membrane producer but no more than an hour before use. If the use of liquid membrane results in a streaked or blotched appearance, the method shall be stopped and water curing applied until the cause of defective appearance is corrected.

The liquid membrane shall be applied when no free water remains on the surface but while the surface is still wet. The liquid membrane shall be applied according to the manufacturer's instructions with a minimum spreading rate per coat of one (1) gallon per 200 square feet of concrete surface. If the concrete is dry or becomes dry, the Contractor shall thoroughly wet it with water applied as a fog spray by means of approved equipment.

The application of liquid membrane shall be accomplished by the use of power applied spray equipment using nozzles and other equipment recommended by the liquid membrane producer. Manually pressurized or manual pump-up type sprayers shall not be used to apply the first application of liquid membrane.

As a visual guide, the color of concrete covered with the required amount of liquid membrane should be indistinguishable from a sheet of commercially available standard "letter" size white copier paper placed on top of it when viewed from a distance of about five feet (5') away horizontally if standing on the same grade as the concrete. The appearance of the concrete does not supersede applying the minimum spreading rate.

The coating shall be protected against marring for at least seven (7) days after the application of the curing compound. The coating on bridge decks shall receive extra attention and may require additional protection as required by the Engineer. All membrane marred or otherwise disturbed shall be given an additional coating. Manually pressurized or manual pump-up type sprayers may be used for giving marred areas the required additional application of liquid membrane. Should the surface coating be subjected repeatedly to injury, the Engineer may require that the water curing method be applied at once.

The 7-day period during which the liquid membrane is applied and protected shall not be reduced even if the period of wet curing is extended past the required 14 days.

907-804.03.17.1.2.1--Liquid Membrane Documentation. The Contractor shall make available to the Engineer an application rate verification method and any information necessary during application of the liquid membrane to verify that the rate of application meets the prescribed rate for the various surfaces of the concrete, including, but not limited to, the top surface of the bridge deck and exposed sides of the bridge deck after any forms are removed. The Contractor shall submit this application verification method to the Engineer in accordance with Subsection 907-804.02.12.1.1.

One method of verifying the rate of application is as follows:

1. Determine the volume of liquid membrane in the container. For a container with a uniform cross-sectional area, for example a 55-gallon drum, determine the area of the cross-section. Determine the height of the surface of the liquid membrane from the bottom of the container. This may be accomplished by inserting a sufficiently long, clean dip-stick parallel with the axis of the container into the liquid membrane until the inserted end of the dip-stick contacts the bottom of the container. On removing the dip-stick, measure the length from the end which was inserted to the point on the dip-stick where the liquid membrane ceases to coat the dip-stick. Multiply the area of the cross-section by the height of the level of liquid membrane, maintaining consistent units, to determine the volume.
2. Perform step 1 prior to beginning applying the liquid membrane to establish the initial volume.
3. During the period of application, perform step 1 each 100 square feet of bridge deck.
4. In order to meet the required application rate of one (1) gallon per 200 square feet, the amount in the container shall be at least 0.5 gallon less than the previous volume in the previous 100 square feet. Other changes in volume may apply depending on the manufacturer's recommended application rate.
5. Additional applications to an area shall be applied until the required rate is satisfied. Areas which are not visually satisfactory to the Engineer shall have additional liquid membrane applied as directed by the Engineer.

The amount of liquid membrane applied shall be determined each day using the application verification method. This information shall be submitted to the Engineer within 24 hours of applying the liquid membrane.

907-804.03.17.2--Liquid Membrane Method. Surfaces on which curing is to be by liquid membrane shall be given the required surface finish prior to the application of liquid membrane. Concrete surfaces cured by liquid membrane shall receive two applications of white liquid membrane. Neither application shall be made from a position supported by or in contact with the freshly placed concrete. Both applications shall be applied perpendicularly to the surface of the concrete.

When using liquid membrane, the liquid membrane shall be thoroughly mixed within the time recommended by the liquid membrane producer but no more than an hour before use. If the use of liquid membrane results in a streaked or blotched appearance, the method shall be stopped and water curing applied until the cause of defective appearance is corrected.

The application of liquid membrane shall be accomplished by the use of power applied spray equipment using nozzles and other equipment recommended by the liquid membrane producer. Manually pressurized or manual pump-up type sprayers shall not be used to apply the first two applications of liquid membrane.

The liquid membrane shall be applied when no free water remains on the surface but while the surface is still wet. The liquid membrane shall be applied according to the manufacturer's instructions with a minimum spreading rate per coat of one (1) gallon per 200 square feet of concrete surface. If the concrete is dry or becomes dry, the Contractor shall thoroughly wet it with water applied as a fog spray by means of approved equipment.

The first application of the liquid membrane shall be made as the work progresses. For bridge decks, the first application shall be completed in each area of the deck within 20 minutes of initial strike-off for bridges with no skew and within 25 minutes of initial strike-off for bridges with skew. For all other concrete, the first application of the liquid membrane shall be completed within 20 minutes of finishing.

The second application shall be applied within 30 minutes after the first application. The liquid membrane shall be uniformly applied to all exposed concrete surfaces.

As a visual guide, the color of concrete covered with the required amount of liquid membrane should be indistinguishable from a sheet of commercially available standard "letter" size white copier paper placed on top of it when viewed from a distance of about five feet (5') away horizontally if standing on the same grade as the concrete. The appearance of the concrete does not supersede applying the minimum spreading rate.

The Contractor shall make available to the Engineer an application rate verification in accordance with Subsection 907-804.03.17.1.2.1.

The coating shall be protected against marring for at least 10 days after the application of the curing compound. The coating on bridge decks shall receive extra attention and may require additional protection as required by the Engineer. All membrane marred or otherwise disturbed shall be given an additional coating. Manually pressurized or manual pump-up type sprayers may be used for giving marred areas the required additional application of liquid membrane. Should the surface coating be subjected repeatedly to injury, the Engineer may require that the water curing method be applied at once.

Delete Subsection 907-804.19.7 on page 9, and substitute the following.

907-804.03.19.7--Finishing Bridge Decks.

907-804.03.19.7.1--General. Delete the third paragraph of Subsection 804.03.19.7.1 on page 884, and substitute the following.

Except when indicated otherwise on the plans, the finish of the bridge deck shall be either a belt finish, a broom finish, or one of the following drag methods: pan, double pan, burlap, or pan and burlap. Manual finishing of the bridge deck shall be performed only in areas inaccessible by the

finishing equipment mounted to the strike-off screed, but shall not hinder the requirements for curing in accordance with Subsection 907-804.03.17.1. The surface texture specified and surface requirements shall be in accordance with the applicable requirements of Subsections 501.03.17 and 501.03.18 modified only as the Engineer deems necessary for bridge deck construction operations.

At no time shall water on the surface of the concrete from bleeding, fogging, curing, or other sources be worked into the concrete or used as an aid for finishing.

Regardless of the method of finishing selected, requirements for curing per Subsection 907-804.03.17 shall be completed within the specified time limits. If the requirements in Subsection 907-804.03.17 are not completed within the specific time limits, the Contractor shall cease operations, revise his operations up to and including acquiring new or additional equipment or additional personnel in order to satisfy the requirements in Subsection 907-804.03.17, and, on approval from the Engineer, resume operations

907-804.03.19.7.2--Longitudinal Method. Before the first paragraph of Subsection 804.03.19.7.2 on page 884, add the following.

The longitudinal method may be used for repairs to bridge decks or bridge widening projects. For bridge widening projects, the time for establishing curing in accordance with Subsections 907-804.03.17 shall be increased to within 30 minutes for bridges without skew and within 35 minutes for bridges with skew.

907-804.03.19.7.3--Transverse Method. Delete the first sentence of the second paragraph of Subsection 804.03.19.7.3 on page 885, and substitute the following.

The machine shall be so constructed and operated as to produce a bridge deck of uniform density with minimum manipulation of the fresh concrete and achieved in the shortest possible time.

Delete the fourth paragraph of Subsection 804.03.19.7.3 on page 885, and substitute the following.

At least one dry run shall be made the length of each pour with a "tell-tale" device attached to the screed carriage to assure the specified clearance to the reinforcing steel.

Delete the last sentence of the fifth paragraph of Subsection 804.03.19.7.3 on page 885, and substitute the following.

The screed shall be mechanically actuated to deliver the screeding action and for travel in a longitudinal direction at a uniform rate along the bridge deck.

Delete the last paragraph of Subsection 804.03.19.7.3 on page 886, and substitute the following.

Other finishing requirements shall be in accordance with the general requirements in Subsection 907-804.03.19.7.1 and as specified on the plans.

Regardless of the finish, the requirements for curing per Subsection 907-804.03.17 shall be completed within the specified time limits.

After Subsection 907-804.03.19.7.4 on page 9, add the following.

Delete the title of Subsection 804.03.19.7.4.1.3 on page 888, and substitute the following.

907-804.03.19.7.4.1.3--Final Surface Texture.

907-804.03.20--Opening Bridges.

907-804.03.20.2--Construction Traffic. Delete the paragraph in Subsection 804.03.20.2 on page 889, and substitute the following:

Unless otherwise specified, the concrete bridge decks shall be closed to construction traffic for the time required for curing in Subsection 907-804.03.17 and until the required compressive strength for the concrete is obtained.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-804-13

CODE: (IS)

DATE: 11/09/2010

SUBJECT: Concrete Bridges And Structures

Section 804, Concrete Bridges And Structures, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-804.02-- Materials.

907-804.02.1--General. Delete the third and fourth sentences of the first paragraph of Subsection 804.02.1 on page 846, and substitute the following:

For projects with 1000 cubic yards and more, quality control and acceptance shall be achieved through statistical evaluation of test results. For projects of more than 200 but less than 1000 cubic yards, quality control and acceptance shall be achieved by individual test results.

Add the following materials to the list of materials in Subsection 804.02.1 on page 847.

Blended Cement..... 907-701.01 and 907-701.04
 Ground Granulated Blast Furnace Slag (GGBFS)..... 907-714.06
 Silica Fume 907-714.07.2

907-804.02.8--Laboratory Accreditation. In Table 1 of Subsection 804.02.8 on page 849, substitute AASHTO: R 39 - Making and Curing Concrete Test Specimens in the Laboratory for AASHTO: T 126 - Making and Curing Concrete Test Specimens in the Laboratory.

907-804.02.9--Testing Personnel. Delete Table 2 in this subsection and replace it with the following.

Table 2

Concrete Technician's Tasks	Test Method Required	Certification Required**
Sampling or Testing of Plastic Concrete	AASHTO Designation:T 23, T 119, T 121, T 141, T 152, T 196, and ASTM Designation: C 1064	MDOT Class I certification
Compressive Strength Testing of Concrete Cylinders	AASHTO Designation: T 22 and T 231	MDOT Concrete Strength Testing Technician certification
Sampling of Aggregates	AASHTO Designation: T 2	Work under the supervision of an MDOT Class II certified technician

Testing of Aggregates	AASHTO Designation: T 19, T 27, T 84, T 85, T 248, and T 255	MDOT Class II certification
Proportioning of Concrete Mixtures*	AASHTO Designation: M 157 and R 39	MDOT Class III
Interpretation and Application of Maturity Meter Readings	AASHTO Designation: T 325 and ASTM Designation: C 1074	MDOT Class III or Two hours maturity method training

- * Technicians making concrete test specimens for meeting the requirements of Subsection 804.02.10.1.2 shall be MDOT Class I certified and under the direct supervision of an MDOT Class III certified technician.
- ** MDOT Class I certification encompasses the same test procedures and specifications as ACI Concrete Field Testing Technician Grade I. MDOT Class II certification encompasses the same test procedures and specifications as ACI Aggregate Testing Technician - Level 1. MDOT Concrete Strength Testing Technician encompasses the same test procedures and specifications as ACI Concrete Strength Testing certification.

For specifics about the requirements for each level of certification, please refer to the latest edition of the Department’s *Concrete Field Manual*. Technicians holding current MDOT Class I, MDOT Class II and/or MDOT Class III certifications shall be acceptable until those certifications expire. Upon a current certification expiration, recertification with the certifications listed in Table 2 shall be required. Technicians currently performing either specific gravity testing of aggregates or compressive strength tests shall be required to either:

- have the required MDOT certification listed in Table 2, or
- have a current MDOT Class III certification or work under the direct supervision of current MDOT Class III technician, and have demonstrated the specific gravity and/or compressive strength test during the inspection of laboratory equipment by the Materials Division, Concrete Section.

907-804.02.10--Portland Cement Concrete Mix Design. Delete the first sentence of the first paragraph of Subsection 804.02.10 on page 850 and substitute the following:

At least 30 days prior to production of concrete, the Contractor shall submit to the Engineer proposed concrete mixture designs complying with the Department’s *Concrete Field Manual*.

Delete the Notes under Table 3 of Subsection 804.02.10 on pages 850 & 851, and substitute the following:

- * Maximum size aggregate shall conform to the concrete mix design for the specified aggregate.
- ** The replacement limits of Portland cement by weight by other cementitious materials (such as fly ash, GGBFS, metakaolin, silica fume, or others) shall be in accordance with the values in Subsection 907-701.02. Other hydraulic cements may be used in accordance with the specifications listed in Section 701.

*** The slump may be increased up to eight (8) inches with :

- an approved water-reducing admixture,
- an approved water-reducing/set-retarding admixture, or
- a combination of an approved water-reducing admixture and an approved set-retarding admixture, in accordance with 907-713.02. Minus slump requirements shall meet those set forth in Table 3 of AASHTO Designation: M157.

**** Entrained air is not required except for concrete exposed to seawater. For concrete exposed to seawater, the total air content shall be 3.0 % to 6.0%. For concrete not exposed to seawater, the total air content shall not exceed 6.0%.

***** Class DS Concrete for drilled shafts shall have an 8±1-inch slump.

Delete the last paragraph of Subsection 804.02.10 on page 851 and substitute the following:

At least one water-reducing admixture shall be used in all classes of concrete in accordance with the manufacturer's recommended dosage range. Any combinations of admixtures shall be approved by the Engineer before their use.

907-804.02.10.1.1--Proportioning on the Basis of Previous Field Experience of Trial Mixtures. Delete the first sentence of the first paragraph of Subsection 804.02.10.1.1 on page 851, and substitute the following:

Where a concrete production facility has a record, based on at least 10 consecutive strength tests from at least 10 different batches within the past 12 months from a mixture not previously used on Department projects, the standard deviation shall be calculated.

907-804.02.10.3--Field Verification of Concrete Mix Design. Delete the first sentence of the third paragraph of Subsection 804.02.10.3 on page 853 and substitute the following:

For all Classes of concrete, the mixture shall be verified to yield within 2.0% of the correct volume when all the mix water is added to the batch.

For all Classes of concrete other than DS, F, and FX, the mixture shall produce a slump within a minus 1½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of three inches (3") or less or within a minus 2½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of greater than three inches (3"), and producing a total air content within a minus 1½ percent tolerance of the maximum allowable air content in Table 3.

For Class DS, the slump shall be within the requirements in Note ***** below Table 3. For Class DS exposed to seawater, the total air content shall be within a minus 1½ percent tolerance of the maximum allowable air content in Note **** below Table 3. For Class DS not exposed to seawater the total air content shall be within the requirements in Note **** below Table 3.

For Classes F and FX, the slump shall be within a minus 1½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of three inches (3") or less or within a minus 2½-inch tolerance of the maximum permitted for mixtures with a maximum permitted

slump of greater than three inches (3"). For Classes F and FX exposed to seawater, the total air content shall be within a minus 1½ percent tolerance of the maximum allowable air content in Note **** below Table 3. For Classes F and FX not exposed to seawater the total air content shall be within the requirements in Note **** below Table 3.

Delete the third sentence of the third paragraph of Subsection 804.02.10.3 on page 853, and substitute the following:

If the requirements of yield, slump, or total air content are not met within three (3) production days after the first placement, subsequent field verification testing shall not be permitted on department projects, and the mix design shall not be used until the requirements listed above are met

907-804.02.10.4--Adjustments of Mixture Proportions. Delete the paragraph in Subsection 804.02.10.4 on page 854, and substitute the following:

The mixture may be adjusted by the Class III Certified Technician representing the Contractor in accordance with the allowable revisions listed in the Department's Concrete Field Manual, paragraph 5.7. Written notification shall be submitted to the Engineer a minimum of seven (7) days prior to any source or brand of material change, aggregate size change, allowable material type change, or decrease in any cementitious material content. Any adjustments of the concrete mixture design shall necessitate repeat of field verification procedure as described in Subsection 804.02.10.3 and approval by the Engineer.

907-804.02.11--Concrete Batch Plants. Delete the first three paragraphs of Subsection 804.02.11 on page 854, and substitute the following:

The concrete batch plant shall meet the requirements of the National Ready Mixed Concrete Association *Quality Control Manual, Section 3, Plant Certification Checklist* as outlined in the latest edition of the Department's *Concrete Field Manual*. The Contractor shall submit a copy of the approved checklist along with proof of calibration of batching equipment, i.e., scales, water meter, and admixture dispenser, to the Engineer 30 days prior to the production of concrete.

For projects with 1000 cubic yards and more, the concrete batch plant shall meet the requirements for an automatic system capable of recording batch weights. It shall also have automatic moisture compensation for the fine aggregate. For projects of more than 200 but less than 1000 cubic yards the plant can be equipped for manual batching with a fine aggregate moisture meter visible to the plant operator.

The concrete batch plant shall have available adequate facilities to cool concrete during hot weather.

Mixer trucks to be used on the project are to be listed in the checklist and shall meet the requirements of the checklist.

907-804.02.12--Contractor's Quality Control. Delete the fourth paragraph of Subsection 804.02.12 on page 854 & 855, and substitute the following:

The Contractor's Quality Control program shall encompass the requirements of AASHTO Designation: M 157 into concrete production and control, equipment requirements, testing, and batch ticket information. The requirement of AASHTO Designation: M 157, Section 11.7 shall be followed except, on arrival to the job site, a maximum of 1½ gallons per cubic yard is allowed to be added. Water shall not be added at a later time. If the maximum permitted slump is exceeded after the addition of water at the job site, the concrete shall be rejected.

907-804.02.12.3--Documentation. After the second sentence of the second paragraph of Subsection 804.02.12.3 on page 856, add the following:

Batch tickets and gradation data shall be documented in accordance with Department requirements. Batch tickets shall contain all the information in AASHTO Designation: M157, Section 16 including the additional information in Subsection 16.2 with the following exception: the information listed in paragraphs 16.2.7 and 16.2.8 is not required. Batch tickets shall also contain the concrete producer's permanent unique mix number assigned to the concrete mix design.

907-804.02.12.5--Non-Conforming Materials. In Table 4 of Subsection 804.02.12.5 on page 857, delete “/ FM” from the requirements on line B.3.a.

In Table 4 of Subsection 804.02.12.5 on page 857, replace “One set (two cylinders) for 0-100 yd³ inclusive” with “A minimum of one set (two cylinders) for each 100 yd³,”

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 than 40°F, an approved maturity meter may be used to determine concrete strengths by inserting probes into concrete placed in a structure. The minimum number of maturity meter probes required for each structural component shall be in accordance with Table 7. An approved insulating blanketing material shall be used to protect the work when ambient temperatures are less than 40°F and shall remain in place until the required concrete strength in Table 6 is achieved. 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.

SECTION 905 -- PROPOSAL (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.

Utility improvements and site work for the shop building at the MDOT Materials Laboratory, known as State Project No. LWO-9023-25(002)/ 502350303 in Hinds County.

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
					Roadway Items
0010	201-A001		1	Lump Sum	Clearing and Grubbing
0020	202-B005		1,655	Square Yard	Removal of Asphalt Pavement, All Depths
0030	202-B017		488	Linear Feet	Removal of Concrete Combination Curb & Gutter
0040	202-B035		155	Square Yard	Removal of Concrete Sidewalk
0050	202-B077		1	Each	Removal of Trees Greater Than 6"
0060	202-B086		41	Each	Removal of Guard Post
0070	202-B098		6	Each	Removal of Inlet and Junction Box, All Types & Sizes
0080	202-B106		226	Linear Feet	Removal of Pipe, All Sizes
0090	202-B232		286	Linear Feet	Removal of Gravity Sewer Line, All Sizes, All Types
0100	202-B233		1	Each	Removal of Gravity Sewer Manhole, All Sizes, All Types
0110	203-EX040	(E)	8,000	Cubic Yard	Borrow Excavation, AH, LVM, Class B9-6
0120	203-G004	(E)	7,230	Cubic Yard	Excess Excavation, LVM, AH
0130	206-A001	(S)	1,750	Cubic Yard	Structure Excavation
0140	211-B001	(E)	250	Cubic Yard	Topsoil for Slope Treatment, Contractor Furnished
0150	212-B001		2,250	Square Yard	Standard Ground Preparation
0160	216-B004		2,250	Square Yard	Solid Sodding, Bermuda
0170	219-A001		45	Thousand Gallon	Watering [\$20.00]
0180	234-A001		1,742	Linear Feet	Temporary Silt Fence
0190	235-A001		93	Bale	Temporary Erosion Checks
0200	602-A001	(S)	18,950	Pounds	Reinforcing Steel
0210	603-A047	(S)	70	Linear Feet	36" Steel Pipe, Jacked or Bored, Wall Thickness 0.500"
0220	603-CA003	(S)	312	Linear Feet	24" Reinforced Concrete Pipe, Class III
0230	603-CA003	(S)	264	Linear Feet	24" Reinforced Concrete Pipe, Class III (State Furnished)
0240	603-CA005	(S)	318	Linear Feet	36" Reinforced Concrete Pipe, Class III
0250	603-CA107	(S)	40	Linear Feet	24" Reinforced Concrete Pipe, Class V, Jacked or Bored
0260	603-CB002	(S)	1	Each	24" Reinforced Concrete End Section (State Furnished)
0270	604-B001		520	Pounds	Gratings
0280	604-B001		1,155	Pounds	Gratings (State Furnished)
0290	608-B001	(S)	154	Square Yard	Concrete Sidewalk, With Reinforcement
0300	609-D001	(S)	51	Linear Feet	Combination Concrete Curb and Gutter Type 1
0310	618-A001		1	Lump Sum	Maintenance of Traffic
0320	619-D1001		171	Square Feet	Standard Roadside Construction Signs, Less than 10 Square Feet

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
0330	619-D2001		48	Square Feet	Standard Roadside Construction Signs, 10 Square Feet or More
0340	619-E1001		3	Each	Flashing Arrow Panel, Type C
0350	619-F1001		407	Linear Feet	Concrete Median Barrier, Precast
0360	619-F1005		36	Linear Feet	Portable Median Barrier, Less Than or Equal to 45 MPH
0370	619-G4001		48	Linear Feet	Barricades, Type III, Single Faced
0380	619-G5001		160	Each	Free Standing Plastic Drums
0390	619-G6001		4	Each	Warning Lights, Type "A"
0400	619-G8001		160	Each	Warning Lights, Type "C"
0410	619-J1001		3	Unit	Impact Attenuator, 40 MPH
0420	620-A001		1	Lump Sum	Mobilization
0430	625-D001		226	Linear Feet	Traffic Stripe, Continuous Yellow
0440	625-F001		24	Square Feet	Legend
0450	627-C001		11	Each	Red-Clear Reflective Raised Markers
0460	627-D001		12	Each	Two-Way Yellow Reflective Raised Markers
0470	907-230-A045		6	Each	Shrub Planting, Clara Indian Hawthorn
0480	907-230-C001		120	Linear Feet	Bed Edging
0490	907-234-D001		11	Each	Inlet Siltation Guard
0500	907-237-A003		333	Linear Feet	Wattles, 20"
0510	907-242-PP001		1	Lump Sum	Water and Sewer Improvements, Per Plans
0520	907-246-A001		1,000	Linear Feet	Sandbags
0530	907-246-B001		1,000	Linear Feet	Rockbags
0540	907-307-C003	(M)	150	Square Yard	6" Soil-Lime-Water Mixing, Class C
0550	907-307-D001		5	Ton	Lime
0560	907-321-A001		3,535	Square Yard	8" In-Grade Preparation
0570	907-407-A001	(A2)	8	Gallon	Asphalt for Tack Coat
0580	907-601-B001	(S)	121	Cubic Yard	Class "B" Structural Concrete, Minor Structures, Per Plans
0590	907-611-PP003	(S)	16	Square Feet	Detectable Warning, Per Plans
0600	907-619-L001		100	Linear Feet	Construction Safety Fence
0610	907-626-A004		250	Linear Feet	6" Thermoplastic Traffic Stripe, Skip White
0620	907-626-E003		482	Linear Feet	6" Thermoplastic Traffic Stripe, Continuous Yellow
0630	907-626-G004		193	Linear Feet	Thermoplastic Detail Stripe, White
0640	907-626-H005		169	Square Feet	Thermoplastic Legend, White
0650	907-631-B001		15	Cubic Yard	Flowable Fill, Non-Excavatable
0660	907-699-A002		1	Lump Sum	Roadway Construction Stakes

ALTERNATE GROUP AA NUMBER 1

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
0670	907-403-A012	(BA1)	60	Ton	Hot Mix Asphalt, ST, 19-mm mixture ALTERNATE GROUP AA NUMBER 2
0680	907-403-M004	(BA1)	60	Ton	Warm Mix Asphalt, ST, 19-mm mixture ALTERNATE GROUP BB NUMBER 1
0690	907-403-A015	(BA1)	5	Ton	Hot Mix Asphalt, ST, 9.5-mm mixture ALTERNATE GROUP BB NUMBER 2
0700	907-403-M001	(BA1)	5	Ton	Warm Mix Asphalt, ST, 9.5-mm mixture

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).

<u>Project No.</u>	<u>County</u>	<u>Project No.</u>	<u>County</u>
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. _____	_____ _____	_____ _____	_____ _____	_____ _____	

SECTION 905 - COMBINATION BID PROPOSAL (Continued)

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

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. **LWO-9023-25(002)/ 502350303** _____.

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. **LWO-9023-25(002)/ 502350303** _____.

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 LWO-9023-25(002)/ 502350303

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:
(names and addresses of witnesses)

Executive Director

Secretary to the Commission

Award authorized by the Mississippi Transportation Commission in session on the ____ day of _____, _____, Minute Book No. _____, Page No. _____.

S E C T I O N 9 0 3
PERFORMANCE AND PAYMENT BOND

CONTRACT BOND FOR: LWO-9023-25(002)/ 502350303

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 **Utility improvements and site work for the shop building at the MDOT Materials Laboratory, known as State Project No. LWO-9023-25(002)/ 502350303 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)

(Witness)

By: _____
(Name) (Title)

(Surety) (Seal)

(Witness)

By: _____
(Attorney-in-Fact)

MS Agent

Mississippi Insurance ID Number