MDOT Use Only
Checked _____
Loaded _____
Keyed _____

SM No. CLWO6032240061

PROPOSAL AND CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF

(STATE DELEGATED)

4
Site Improvements at Lyman Site - Utility Mainline Installation, known as State Project No. LWO-6032-24(006) / 502517301 in Harrison County.
Project Completion: October 10, 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.

(10/2012)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

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MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 901 - ADVERTISEMENT

Sealed bids will be received by the Mississippi Transportation Commission in the Office of the Contract Administration Engineer, Room 1013, Mississippi Department of Transportation Administration Building, 401 North West Street, Jackson, Mississippi, until 10:00 o'clock A.M., Tuesday, March 26, 2013, and shortly thereafter publicly opened on the Sixth Floor for:

Site Improvements at Lyman Site – Utility Mainline Installation, known as State Project No. LWO-6032-24(006) / 502517301 in Harrison County.

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

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

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

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

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

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

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

MELINDA L. MCGRATH
EXECUTIVE DIRECTOR

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 05/03/2004

SUBJECT: Governing Specifications

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 06/18/2004

SUBJECT: Gopher Tortoises

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 09/26/2005

SUBJECT: Fiber Reinforced Concrete

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 04/28/2006

SUBJECT: Payroll Requirements

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 03/15/2007

SUBJECT: ERRATA AND MODIFICATIONS TO THE 2004 STANDARD SPECIFICATIONS

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 04/14/2008

SUBJECT: Federal Bridge Formula

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

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

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

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

or

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 02/19/2009

SUBJECT: Clearing and/or Grubbing

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 10/01/2009

SUBJECT: Non-Quality Control / Quality Assurance Concrete

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 01/11/2010

SUBJECT: Reduced Speed Limit Signs

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 03/23/2010

SUBJECT: Alternate Asphalt Mixture Bid Items

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 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. 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. 4318 **CODE: (SP)**

DATE: 2/13/2013

SUBJECT: Contract Time

PROJECT: LWO-6032-24(006) / 502517301 – Harrison County

The calendar date for completion of work to be performed by the Contractor for this project shall be **October 10, 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 **April 9, 2013** and the effective date of the Notice to Proceed / Beginning of Contract Time will be **June 10, 2013**.

Should the Contractor request a Notice to Proceed earlier than **June 10, 2013** and it is agreeable with the Department for an early Notice to Proceed, the requested date will become the new Notice to Proceed / Beginning of Contract Time date. If an erosion control plan is required, the Contractor's erosion control plan will have to be approved prior to issuing an early Notice to Proceed.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4319 **CODE: (SP)**

DATE: 2/13/2013

SUBJECT: Cooperation Between Contractors

PROJECT: LWO-6032-24(006) / 502517301 – Harrison County

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

The Contractor shall cooperate in all respects and shall coordinate construction of all phases of work with the Contractors of the adjoining projects, BR-0008-01(076) / 102111302 & BWO-6208-24(001) / 502085301 & 302 in Harrison County.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4353 **CODE: (SP)**

DATE: 2/27/2013

SUBJECT: Tack Coat

PROJECT: LWO-6032-24(006) / 502517301 – Harrison County

Bidders are advised that a pay item for 907-407-A, Asphalt for Tack Coat, was inadvertently omitted from the plans and contract documents. Bidders are advised that an asphalt tack coat will be required with each lift of asphalt on this project. The asphalt tack coat shall be in accordance with the requirements of Section 407 of the Standard Specification and Special Provision No. 907-407-1. Costs associated with asphalt tack coat will not be measured for separate payment and should be included in the cost of other items bid.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 11/05/2008

SUBJECT: **Definitions**

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

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

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-102-8

DATE: 10/25/2012

SUBJECT: Bidding Requirements and Conditions

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 01/20/2011

SUBJECT: Bidding Requirements and Conditions

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 12/15/2009

SUBJECT: Award and Execution of Contract

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

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

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

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

Delete Subsection 103.05 on page 23 and substitute the following:

907-103.05--Contract Bonds.

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 03/01/2011

SUBJECT: Disposal of Materials

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-105-6

DATE: 12/12/2011

SUBJECT: Control of Work

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: **01/20/2011**

SUBJECT: **Control of Work**

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-107-9

DATE: 08/23/2011

SUBJECT: Legal Relations and Responsibility to Public

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 01/20/2011

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

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

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

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

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

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

907-107.14--Damage Claims and Insurance.

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

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

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

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

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

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

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

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

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

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

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

Coverage shall include:

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

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

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

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

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

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-107-10

DATE: 01/17/2013

SUBJECT: Contractor's Erosion Control Plan

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 03/14/2011

SUBJECT: Contractor's Erosion Control Plan

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

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

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

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

As a minimum, the plan shall include the following:

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

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

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

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

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

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

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

SITE INFORMATION

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

SEDIMENT AND EROSION CONTROLS

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

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

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

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

IMPLEMENTATION SEQUENCE

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

MAINTENANCE PLAN

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

_____ _____
Prime Contractor's Signature Date

_____ _____
Printed Name Title

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-108-24

DATE: 11/13/2012

SUBJECT: Prosecution and Progress

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

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

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

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

Schedule of Deductions for Each Day of Overrun in Contract Time

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 03/15/2011

SUBJECT: Prosecution and Progress

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

907-108.01--Subletting of Contract.

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

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

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

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

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

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

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

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

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

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

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

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

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

Delete the third paragraph of Subsection 108.03.2 on page 76.

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

907-108.06.1--Blank.

907-108.06.2--Based on Calendar Date Completion.

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

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

than is indicated by the money value.

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

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

TABLE OF ANTICIPATED PRODUCTIVE DAYS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-109-5

DATE: 05/15/2012

SUBJECT: Measurement and Payment

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 1/20/2011

SUBJECT: Measurement and Payment

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

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

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

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

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

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

907-109.06--Partial Payment.

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: **02/23/2012**

SUBJECT: **Grassing**

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

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

SECTION 907-225--GRASSING

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

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

907-225.02--Materials.

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

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

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

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

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

907-225.02.3--Mulch.

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

requirements of Subsection 215.02.

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

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

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

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

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

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

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

907-225.03--Construction Requirements.

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

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

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

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

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

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

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

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

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

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

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

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

All fertilizer should be incorporated within 24 hours following spreading.

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

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

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

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

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

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

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

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

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

Mulching should be performed as soon as practicable after seeding.

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

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

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

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

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

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

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

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

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

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

907-225.03.4.1--Vegetative Mulch.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Payment will be made under:

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-237-4 **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. 907-260-3 **CODE: (SP)**

DATE: 02/12/2013

SUBJECT: Lift Station

PROJECT: LWO-6032-24(006) / 502517301 -- Harrison County

Section 907-260, Lift Station, is hereby added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

SECTION 907-260 -- LIFT STATION

907-260.01--Description. This work shall consist of all labor, materials, equipment, tools and services required for the furnishing, installing and testing of precast wet well type sewage pump station, including but not limited to related controls, operation devices, emergency generator, piping, valves and related appurtenances, manhole and gravity line, dewatering, sheeting/shoring and all related site construction in accordance with these specifications and as shown in the Plans.

Pump station wet well shall be constructed of concrete unless otherwise directed by the Engineer or the Plans.

After completion of the Field Quality Control test, Contractor shall submit a certification from the pump manufacturer and the control manufacturer that their equipment is properly installed and is functioning properly.

907-260.02--Materials. Materials to construct the lift station and accessories shall meet the following requirements.

907-260.02.1--Wet Well. The wet well shall be a large diameter precast concrete round manhole and flat slab top conforming to ASTM C478. For superior resistance to sewer gases, cement shall be Portland Cement Type II, and course aggregates shall be crushed limestone. Wet Well shall be 72 inches (6 feet) in diameter.

Joints for the precast concrete sections shall be tongue and groove and shall be sealed with a preformed joint compound conforming to Federal Specification SS-S00210 (210-A) and AASHTO Specification M198.

Coating for all exterior surfaces of the wet well, including both joint surfaces between sections, shall be a coal tar epoxy or other approved sealant. All precast concrete sections shall be prepared, coated, and cured at the manufacturer's plant prior to shipping. Minimum dry-film thickness shall be 20 mils. Material shall be Indurall Right Stuff 2100, Americoat No. 78,

Koppers 300-M, or approved equivalent, applied in strict conformance with manufacturer's recommendations.

An interior protective coating system is to be field-applied to all interior surfaces of wet well, including all discharge piping inside the wet well. Coating shall be an approved 100% solids epoxy coating system which is specifically recommended by the coating manufacturer to protect concrete and other surfaces against corrosion from Hydrogen Sulfide gas and other substances common in raw domestic sewage.

1. The product must have the following minimum characteristics:
   a. Minimum Compressive Strength per ASTM D695 = 12,000 psi
   b. Minimum Tensile Strength per ASTM D638 = 7,200 psi
   c. Minimal Flexural Strength per ASTM D790 = 13,000 psi
   d. Minimum Bond Strength per ASTM D4541 = 900 psi
   e. Minimum Corrosion Resistance per ASTM D543 = pH 0.5 or higher

2. Product shall be Warren Environmental System 100% Solids Epoxy, Raven 405 Lining System, or approved equal.

Flexible watertight manhole pipe connectors shall be provided at all pipe openings and shall consist of a neoprene rubber boot designed to clamp securely into an opening in the manhole wall and to clamp around the barrel of the sewer pipe. Openings in the manhole wall shall be made by a coring machine or by a hole former during the manufacturing process. Rubber material shall conform to the requirements of ASTM C923 and be a minimum of 3/8 inches thick. External and internal clamps shall be all type 304 stainless steel conforming to ASTM A167. Gasket shall be similar to "Kor-N-Seal Boot" as manufactured by the National Pollution Control Systems, Inc., Milford, New Hampshire, or approved equal.

Water stops shall be commercially available rubber, employing ribs to engage the PVC pipe and large fins to engage the grout. The stop ring shall be clamped to the pipe by an all-stainless steel worm clamp.

Vent pipe assembly shall be 4-inch minimum stainless steel pipe with stainless steel screen or aluminum pipe with an aluminum screen.

Access hatch shall be aluminum frame of ¼-inch thick, one-piece extruded aluminum designed for embedment in a concrete slab. Door panel shall be 1/4" thick aluminum diamond plate, to withstand a live load of not less than 300 P.S.F., with a safety factor of 3. Hinges and all hardware shall be stainless steel. Doors shall hold open at 90 degrees and provisions shall be provided to lock the door in the closed position. Door shall close flush with the top of the frame, which shall be installed flush with the concrete slab, and provided with a locking mechanism in the closed position. Manufacturer shall apply bituminous coating to exterior of frame where in contact with concrete. Frame and cover shall be furnished with a written 10-year guarantee against defects in materials and/or workmanship. Door shall be similar to Type SD150 as manufactured by Halliday Products, Orlando, Florida, Type K as manufactured by the Bilco Company, New Haven, Connecticut, or approved equal.

Valve Pit: All discharge valves and check valves shall be in a valve pit. The valve pit will have a concrete bottom with concrete or masonry sides.

A drain from the bottom of the valve pit to the well pit will be installed to allow drainage of rainwater. The bottom of the valve pit will be sloped to allow for proper drainage.

The valve pit will be of sufficient size to allow for maintenance of the valves enclosed. This includes sufficient space to remove the check valve shaft from either side.

Access to the valve pit will be through a hatch meeting the same specifications of the wet pit hatch or 1" x 4" galvanized grating where allowed.

All hardware in the valve pit will be stainless steel unless specifically stated otherwise.

Concrete and Reinforcing Steel: Concrete (used where not exposed to sewer gases) shall conform to MDOT Class B, meeting Section 907-804.

Bar Reinforcement shall be Grade 60 billet steel conforming to AASHTO Designation: M31.

Steel wire fabric shall conform to the requirements of the Standard Specifications for Welded Steel Wire Fabric for Concrete Reinforcement, AASHTO Designation: M55.

Curing materials shall conform to the requirements set out in the Standard Specifications for Liquid Membrane Forming Compounds for Curing Concrete, AASHTO Designation: M148, Type 2 (White Pigmented).

Expansion joint material shall conform to Standard Specifications for Preformed Expansion Joint Fillers for Concrete (non-extruding and resilient types), AASHTO Designation M213.

Concrete Masonry Units (CMU) shall conform to ASTM C90, Grade N, Type I, shall be hollow, 8" X 16" blocks.

Mortar shall be one (1) part Portland Cement, three (3) parts Mortar Sand, Hydrated Lime in proportion of one-tenth (1/10) part of volume of the cement and sufficient water to provide consistency so that it can be easily handled and spread with a trowel.

Valve vault cover shall be as specified above for access hatch.

907-260.02.3--Fall Protection System / Emergency Extraction System. The wet well lid will have a 4-inch diameter hole either cast into the lid or made by a coring machine, for use with the fall protection / emergency evacuation system. The center of the hole will be no less than fifteen inches (15") from the edge of the wet well access hatch.

907-260.02.4--Pump(s). Each pump shall meet the following design requirements.

Two pumping units will be required. Each pump and motor unit shall be of the fully submersible type, capable of discharging raw, unscreened sewage at the rate, head conditions, maximum pump speed and motor horsepower as shown on the schedule below. Motors shall operate on 3 phase, 60 hertz, 240 volt A.C. current, unless otherwise designated in the Plans.

Lift Station Number	Flow Rate (gpm)	Total Dynamic Head (feet)	Pump Rotation Speed (rpm)	Discharge Diameter (inches)	Motor Size (horsepower)	Impeller Diameter (inches)	No. Of Pumps
1	100	98	1800	4	20	9.75	2

Each unit shall be equipped with a single hypalon jacketed type SPC electric cable suitable for submersible pump applications. The power cable shall be sized according to NEC and ICEA standards, and shall contain conductors for the power leads and all control functions.

The pump impeller shall be cast iron, dynamically balanced, and shall easily pass a 3-inch diameter solid sphere. The impeller shall be keyed to the motor shaft and secured by a bolt.

All internal case clearances shall equal the discharge pipe diameter so that any object which can enter the pump and pass through the discharge can pass through the pump without clogging.

Each pump shall be of the centerline flanged discharge type and shall be supplied with a mating cast iron discharge elbow and base, which shall be permanently installed in the wet well along with the discharge piping. The pump shall be simply and automatically connected to the discharge elbow when lowered into place without need for personnel to enter the wet well. Sealing of the pump to the discharge elbow shall be accomplished by a simple linear downward motion of the pump resulting in a tight metal-to-metal connection without reliance of diaphragms, O-rings, or other sealing devices. The pump shall be positively guided into position by two (2) stainless steel guide rails (minimum 1¼" diameter), extending from the pump base to the access hatch frame.

Major pump components shall be of gray cast iron, Class 30, without visible irregularities. All exposed hardware shall be of type 304 or 316 stainless steel. All surfaces in contact with wastewater shall be coated with an approved wastewater resistant coating. Watertight seals between pump sections shall be made with nitrile rubber O-rings between machined and fitted surfaces.

Each pumping unit shall include a large stainless steel pull-up lifting ball with a fixed connection to the motor housing and designed with adequate strength to lift the entire pumping unit.

The entire pump assembly shall be capable of continuous satisfactory operation submerged to a depth of 65 feet.

Pumping units which utilize and depend on recirculation of the pumped media for cooling purposes or provide connections for external cooling water are not acceptable.

Each pump shall be provided with a tandem mechanical shaft seal system, each of which shall be independently capable of sealing the pumped liquid from the stator housing. The upper seal shall

consist of a stationary tungsten carbon ring and a driven carbon ring. The lower seal shall consist of two (2) tungsten carbon rings. Each pump shall contain a detecting probe which shall activate its respective "moisture detect" pilot light on the control panel.

The pump motor shall be a squirrel-cage, induction, shell type design, without brushes or other arc-producing mechanisms, and shall be designed for submersible service in water or raw sewage. The unit shall be listed with Underwriters Laboratories for use in Class I, Group D, Division I locations (explosion proof). All electric parts shall be housed in an air-filled, watertight enclosure, separated from the outside with two (2) "O" ring seals and rabbet joints with a large overlap. One seal shall be inside an oil chamber, and one outside.

Two internal moisture sensing probes shall detect any leakage of a conductive liquid past the outer seal, to provide a warning of seal failure. Cable leads shall be sealed with epoxy.

The motor shaft and all external hardware including the motor nameplate shall be of stainless steel. Motor bearings shall be pre-lubricated at the factory for a long maintenance-free service life. Bearings shall be designed to resist high thrust loads.

Motor windings shall employ a Class B insulation with Class F materials. Automatically resetting thermal overloads shall be installed in adjacent phases of the motor winding for protection against overheating.

The pump manufacturer shall warrant to the Owner the pumping units against defects in workmanship and material for a period of five years or 10,000 hours under normal municipal use.

Sewage pumps shall be as manufactured by WEMCO, ESSCO, or approved equivalent, and shall meet each of the specified performance requirements stated in the Plans.

The actual pumping units to be furnished shall each be tested prior to shipment to the job site. Each pump shall be tested at a facility provided by the pump manufacturer in accordance with the standards of the Hydraulic Institute. Flow, head, motor current draw, and input KW shall be measured and recorded for operating conditions throughout the head/capacity range for the pump, including at "Shutoff", design flow with one pump operating, and minimum ("worst case") TDH (see system head curves tabulated in Plans). Certified test reports shall be furnished with each pump. The Owner and/or Engineer reserve the right to witness the pump tests and/or arrange for the services of an independent testing laboratory to witness the pump tests at the pump manufacturer's facility.

After field installation, the Contractor shall perform flow testing to verify that each pump performs according to its certified curve. The Contractor shall furnish all equipment and materials required for the flow test.

Full operation and maintenance manuals and parts lists shall be provided in triplicate.

907-260.02.5--Piping and Valves. Piping and Valves shall meet the following requirements.

Ductile iron pipe shall conform to ANSI A21.51 (AWWA C-151) thickness Class 50, cement mortar lined per ANSI A21.4 (AWWA C-104).

Ductile fittings shall conform to ANSI A21.10 (AWWA C-110), cement mortar lined per ANSI A21.4 (AWWA C-104).

Gaskets for ductile iron pipe shall conform to material requirements of ANSI A-21.11 mechanical joint gaskets, suitable for water working pressures of up to 350 psi.

Gate valves shall be of the resilient seat type, conforming to AWWA C-509, epoxy coated inside and outside to AWWA C-550. End connections shall be Class 125 flange. Valves shall be rated for zero leakage to 200 psi, and 400 psi hydrostatic test pressure. Valves shall be of the non-rising stem design, employing two O-ring stem seals. Gates shall be encapsulated in rubber where exposed to line velocity and shall be field replaceable. Hand wheels shall be provided.

Check valves shall be "Full-Flow", bronze clapper design utilizing outside lever and weight or spring, conforming to AWWA C-508. Check valves will have the ability to mount lever on either side. Check valves shall be positioned in the valve vault such that the flapper shaft may be removed without removing the check valve itself.

Isolation gate valves, not located in the valve vault shall have a valve box.

Plug Valves shall be of the tight closing, resilient faced, non-lubricating variety and shall be of eccentric design such that the valves pressure member (plug) rises off the body seat contact area immediately upon shaft rotation during the opening movement. Valves shall be drop-tight at the rated pressure (175 psi through 12-inch, 150 psi 14-inch and above) and shall be satisfactory for applications involving throttling service as well as frequent or infrequent on-off service. The valve closing member should rotate approximately 90 degrees from the full-open to full-close position and vice-versa. The valve body shall be constructed of cast iron (semi-steel) conforming to ASTM A126, Class B. Body ends shall be flanged with dimensions, facing, and drilling in full conformance with ANSI B 16.1, Class 125, including flange thickness. Mechanical Joint shall meet the requirements of AWWA C111/ANSI A21.11. Eccentric Plug Valves shall have a rectangular shaped port. Port areas for 3-inch through 20-inch valves shall be a minimum 80% of full pipe area. Valve seat surface shall be welded-in overlay, cylindrically shaped of not less than 90% pure nickel. Seat area shall be raised, with raised area completely covered with weld to insure proper seat contact. The machined seat area shall be a minimum of 0.125" thick and 0.500" wide. The valve plug shall be constructed of cast iron (semi-steel) conforming to ASTM A126, Class B. The plug shall have a cylindrical seating surface that is offset from the center of the plug shafts. The plug shafts shall be integral. The entire plug shall be 100% encapsulated with Buna-N rubber in all valve sizes. The rubber compound shall be approximately 70 (Shore A) durometer hardness. The rubber to metal bond must withstand 75-pound pull under test procedure ASTM D429, Method B.

Pressure gauges shall measure from 0 - 60 psi., and also in corresponding feet of water. Pressure gauges shall be oil filled.

All hardware in the wet well and valve vault shall be stainless steel unless specifically stated otherwise.

All stations will have emergency bypass piping installed. A Valve on the force main and bypass line will be installed and the bypass connection will be located above grade sealed with a blind flange.

Pressure gauges shall measure from 0 – 60 psi and also in corresponding feet of water. Gauges shall be oil filled.

Guide rails shall be schedule 40 stainless steel.

907-260.02.6--Pump Control System. An automatic Pump Control System shall be furnished to automatically operate the sewage pumps in accordance with variation in the level of the wet well.

The Control System shall employ four (4) float switches and a pump controller to detect level control points in the wet well and operate the pump motor starters. No pump controls using mechanical linkage, cables, tapes, etc., between the float and control or using sliding floats, shall be considered.

Float switches shall be of Type 316 stainless steel, 5½-inch diameter. Cable shall be forty feet (40') in length, Type SO with Nitrile PVC jacket, containing three (3) #14 AWG fine-stranded conductors for heavy flexing and underwater service. Floats shall contain a sealed mercury switch rated for 20 amps at 115 volts. Float switches shall be furnished complete with stainless steel clamp tube, bracket and bolts to clamp to vertical one (1) inch aluminum pipe, which is to be furnished and installed in wet well as detailed. Consolidated Model 9G float switch, Anchor Scientific Roto-Float-SS Type P, or an approved equal.

Floats will detect off, lead pump, lag pump and high level conditions. The high level float will work independently of all other floats and, if in the up position, the alarm light will flash and SCADA will send a high level alarm, and turn one pump on.

The aluminum pipe with the float switches installed will be suspended vertically from a hook in the wet well lid. It will be suspended from a hook with ½-inch stainless steel cable to permit extraction of the pole and float switches.

907-260.02.7--Pump Controller / Sequencer. A pump controller/sequencer module shall use the signals generated from the Float Switch System and shall incorporate the following features:

Manual-Off-Automatic selector switch, green running pilot light, red failure pilot light, and red seal failure pilot light for each pump on control panel.

A PUMP NO. 1 LEAD – ALTERNATE - PUMP NO. 2 LEAD sequence selector switch to select either pump as lead pump or select that the pumps alternate as lead pump on each call for cycle.

A field adjustable failure time delay for each pump. Controls to start the lag pump at the lead pump start level if the lead pump fails or if the lead pump selector switch is placed in the off position. If a pump fails, the remaining functional pump shall remain the lead pump on future cycles. The failure pump shall only be called to operate at the lag pump operating level. Normal pump alternation shall resume when failure condition is corrected and pump has been reset.

Soft stop feature to require the pumps to stop three (3) seconds apart during the condition that both pumps are running when signaled to stop to prevent water hammer. Soft start feature to require the pumps to start three (3) seconds apart during conditions that the lead and lag pumps are called for simultaneously.

Individual field adjustable time controls to delay starting each pump in the automatic mode after power failure or during initial startup.

Pump failure, pump seal failure and high water alarm red pilot lights shall flash when activated.

A vandal resistant common exterior alarm light with red Lexan lens shall be furnished and mounted on a suitable support to make it visible above the fence. It shall burn dimly during normal conditions to indicate power on the lamp good, and shall flash brightly during high water level, pump failure, or seal failure. An additional normally open common alarm output contact shall be energized by these alarm conditions. The light will NOT be mounted to the top of the electrical panel box.

Individual pump-run-time meters with a reading accuracy of 1/100 hour shall be provided for each pump.

Lightning arrestors and protection will be properly installed in all electrical control systems. Pump Station site will be tested and proper grounding methods utilized.

A power monitor with eight (8) pin base will be installed in all electrical control panel enclosures. For 240 volt systems, a Time Mark 258B or equivalent will be installed, for 480 volt systems, a Motor Saver 102A or equivalent will be installed.

Provide properly sized (per NEMA standards) circuit breaker combination starter with NEMA class ten (10) ambient compensated overload protection for each pump.

Circuit breakers will be of the line & load type with tabs/lugs for using lockout/tagout procedures. Starters will be of a type that has replaceable components such as contactors, coil, heaters, etc.

907-260.02.8--Controller Enclosure. The main controller enclosure shall be not less than 30"W x 36"H x 12"D to accommodate the system phase monitor, pump circuit breaker

combination starters, control components (except for float switch), GFI convenience receptacle, panel heater with thermostat, and related components. Lighting arrestors shall be provided to protect the pump control components. Additional space shall be provided for SCADA units or other future accessories.

The enclosure shall be sturdily constructed of stainless steel, rated, NEMA 4X, with a drip hood. A single lockable handle which simultaneously operates three (3) latches located at top, middle, and bottom of door (Three Point Latch) shall be provided. No penetrations through the top of the enclosure will be permitted.

All selector switches, pilot lights, hours meters, Dallas key reader and other controls shall be mounted on an interior anodized aluminum or stainless steel deadfront panel with a continuous aluminum or stainless steel hinge. Circuit breakers shall be operable through the deadfront panel.

An automatic fluorescent panel light and thermostatically controlled electric panel heater shall be installed within each enclosure.

A 110-volt, GFI duplex receptacle shall be provided inside the control panel and mounted through the interior dead front panel.

907-260.02.9--Automatic Alarm System. The equipment shall be MISSION Communications Model 110 RTU. Contractor's bid price shall include five (5) years of prepaid monitoring service, with no option for additional costs to be paid by MDOT during this five (5) year period.

Full operation and maintenance manuals and parts lists shall be provided in triplicate.

M-110 unit will report the following:

a. Individual Pump Runtime
b. Cumulative Pump Runtime
c. High Level Alarm
d. Pump Failure Alarm
e. AC Power Fault Alarm
f. Communications Failure Alarm

907-260.02.10--Automatic Transfer Switch (ATS). The applicable publications listed below form a Part of this specification to the extent referenced as though fully written herein. The Publications are referred to in the specifications by the basic designation only.

Institute of Electrical and Electronics Engineers (IEEE) Standard: 472-74 (79) Guide for Surge Withstand Capability (SWC) Tests.

National Electrical Manufacturers Association (NEMA) Standards:
ICS 1-83 General Standards for Industrial Control and Systems (Rev 1-3).
ICS 2-83 Standards for Industrial Control Devices, Controllers and Assemblies.

ICS 4-83 Terminal Blocks for Industrial Control Equipment and Systems.
ICS 6-83 Enclosures for Industrial Controls and Systems.

National Fire Protection Association (NFPA) Publication: National Electrical Code, latest edition.

Underwriters Laboratories, Inc. (UL) Publication: 1008-B4 Automatic Transfer Switches.

Submittals, for Automatic Transfer Switch (ATS):

1. Shop Drawings: Include a one-line diagram of ATS assembly, an elementary or schematic diagram, a wiring diagram of the unit, and an interface equipment connection diagram that shall show all conduit and wiring between ATS and other related equipment. Device and nameplate numbers and item numbers shown on the list of equipment and materials shall appear on drawings wherever the item of equipment or material appears. The one line diagram shall show interlocking provisions and cautionary notes, if any. Unless otherwise approved, the one-line and elementary or schematic diagram shall appear on the same drawings.

2. Manufacturer's Data: Submit a list of equipment and materials proposed, containing a description of each separate item of equipment or materials recommended for approval. The quantity of each item shall be indicated.

3. Certificates of Conformance: Submit for ATS as proof of compliance with UL and NEMA standards as specified. Certificates are not required if manufacturer's Published data submitted and approved reflect a UL listing and conformance with applicable publications of NEMA.

4. Certified Test Reports: Submit for each rating of ATS, the reports of tests required by UL 1008 and by the requirements listed below. The proof of listing by UL shall be submitted and will be acceptable evidence that the ATS conforms to UL requirements.

   UL or other certified test reports to demonstrate that the temperature rise test was conducted, following the conclusion of the endurance and overload tests.

   Test reports to demonstrate compliance with the withstand and closing rating provisions of these specifications, if those provisions exceed withstand and closing rating requirements in UL 1008.

   Test reports for withstand and closing rating tests shall be accompanied by oscillographic traces of each phase of voltage and current, to demonstrate that the main switch contacts did not separate and were not damaged during the performance of the withstand and closing rating tests.

   Test reports shall verify that the tested unit passed all tests without modification, or repair during a test period of not more than 90 days. The 90-day period does not include the

time required to perform additional testing necessary to demonstrate compliance with the withstand and closing rating provisions of these specifications, when the withstand and closing rating exceeds the requirements in UL 100B.

Factory Tests and Reports: Tests shall be performed on the assembled switch unit to be furnished. Factory test reports shall be certified and dated, shall demonstrate that the following tests were conducted as specified, and that tests were successfully completed prior to the shipment of the equipment. Reports shall be submitted within 14 days following completion of the tests.

Dielectric Tests: Tests shall be performed in accordance with NEMA ICS 1. Wiring of each control panel shall be subjected to voltage surge tests as stipulated in IEEE No. 472. Impulse withstand rating tests shall be performed in accordance with the requirements of NEMA ICS 1.

Operational Tests: Test shall be performed and shall demonstrate that the operational sequence of each ATS unit conforms to the requirements of the specifications with regard to operating transfer time, voltage, frequency, and timing intervals.

Operations and Maintenance Manual: Submit for ATS.

Service Conditions: ATS shall be suitable for performance under the following service conditions:

1. Altitude: 5000 feet above mean sea level.

2. Relative Humidity: 100% maximum, continuous.

3. Temperature: -10°F to 120°F.

Products and Materials: Automatic Transfer Switch (ATS) with number of poles, voltage and current ratings as shown on the plans and specified herein shall be provided. ATS shall consist of an inherently double throw power transfer switch unit and a control module interconnected to provide complete automatic operation.

When neutral conductors are to be solidly connected as shown on the plans, a neutral conductor terminal plate with full-rated Al-Cu pressure connectors shall be provided.

Mechanically-Held Transfer Switch: The power transfer module shall be mechanically held and electrically operated by a simple mechanism containing only one electrical single solenoid operator. If the electrical operator requires overcurrent protection, the device must be easily inspected and resettable. Main contacts shall be replaceable in the field without major disassembly or special tools. Components of the Power Transfer Module shall be designed and manufactured for the express purpose of transferring power, and not be components of molded case circuit breakers, contactors, linear operators, or parts thereof which have not been designed for repetitive load transfer and continuous duty. The automatic transfer switch shall be rated to

withstand the RMS symmetrical short circuit current specified at the switch terminals based on the let-through current of the overcurrent protection device ahead of the circuit breaker.

Microprocessor Control Module: The control module shall direct the operation of the transfer switch. The module's sensing and logic shall be controlled by a built-in microprocessor for maximum reliability, minimum maintenance and inherent digital communications capability. The control module shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the control module to be disconnected from the power transfer module for routine maintenance.

The control module shall be completely enclosed with a protective cover and be mounted separately from the transfer switch unit for safety and ease of maintenance. Sensing and control logic shall be provided on plug-in printed circuit boards for maximum reliability. Interfacing relays shall be industrial control grade plug-in type with dust covers. All relays shall be identical to minimize the number of unique parts.

The control panel shall meet or exceed the voltage surge withstand capability in accordance with IEEE Standard 4721974 (ANSI C37.90a-1974) and with the impulse withstand voltage test in accordance with the proposed NEMA Standard ICS 1-109.

Control Operation: The voltage of each phase of the normal source shall be monitored, with pickup adjustable from 85 to 100% and dropout adjustable from 75 to 98% of pickup setting, both in increments of 1% and shall be fully field-adjustable without the use of any tools, meters or power supplies. Repetitive accuracy of settings shall be +2% or better over an operating range of -20°C to +70°C. Factory set to pickup at 90% voltage and 95% frequency.

The control module shall include four time delays that are fully field adjustable in increments of at least 13 steps over the entire range as follows:

Time delay to override momentary normal source outages to delay all transfer switch and engine starting signals. Adjustable from 0 to six seconds. Factory set at one second.

Transfer to emergency time delay. Adjustable from 0 to 5 minutes. Factory set at six minutes unless indicated otherwise on the Plans.

Retransfer to normal time delay. Time delay is automatically by passed if emergency source fails and normal source is acceptable. Adjustable from 0 to 30 minutes. Factory set at ten minutes.

Unloaded running time delay for engine generator cooldown. Adjustable from 0 to 60 minutes. Factory set at five minutes.

A set of DPDT gold-flashed contacts rated ten amps, 32 VDC shall be provided for low-voltage engine start signal when the normal source fails. The start signal shall prevent dry cranking of the generator by requiring the generator to reach proper output and to run for the duration of the cooldown setting, regardless of whether the normal source restores before the load is transferred.

A momentary-type test switch shall be provided to simulate a normal source failure. Also, terminals for a remote contact which opens to signal the ATS to transfer to emergency and terminals for remote contacts which open to inhibit transfer to emergency and/or retransfer to normal shall be provided.

Output terminals to signal the actual availability of the normal and emergency sources, as determined by the voltage sensing pickup and dropout settings for each source, shall be provided.

One set of auxiliary contacts shall be provided rated ten amps 480 volts, AC. One contact shall be closed when the ATS is connected to normal and one contact shall be closed when the ATS is connected to emergency. Also, one set of signal lights to indicate when the ATS is connected to normal source and when the ATS is connected to emergency shall be provided.

Each switch shall be furnished with an operator's manual providing installation and operating instructions.

An optional timer (accessory 11C) shall be provided in ATS to exercise the engine with or without load. Function keys, along with a LED display, allow for the setting of the desired exercise periods. A built-in rechargeable battery allows the timer to function for two weeks without external power.

Automatic Transfer Switch (ATS) shall be manufactured by Asco Cat. with Accessories Exercisor Clock, in-phase monitor, four poles, approved equal.

Service Conditions: The ATS shall be installed on the electrical panel and rated for 200 amps. The ATS enclosure shall be NEMA 3R.

Execution and Installation: Automatic transfer switch shall be furnished and installed as indicated on the Drawings.

907-260.02.11-Emergency Generator. The Contractor shall furnish and install one stand-by diesel engine emergency generator complete with all accessories, exhaust duct, fuel piping, muffler, levelometer, buck fuel tank connections and leak detection system.

All fuel oil piping installations, final connections and testing shall be installed by qualified mechanical contractors. Complete responsibility shall be by the Contractor for installation, service and warranty period. Extended warranty period beyond one (1) year shall be the responsibility of the engine generator supplier.

Compliance with all EPA regulations, permits, etc. shall be the responsibility of the Contractor. A copy of the latest EPA regulations shall be obtained by the Contractor and submitted with manufacturer's data sheets. Where regulations require different piping connections, the Contractor shall be responsible for all changes at no additional cost to the contract.

Related Sections: Automatic Transfer Switch.

Submittals: The Contractor shall submit complete shop drawings, manufacturer's data, test data, installation drawings, operation and maintenance manuals. The Contractor shall submit elevation views with overall and interconnection point dimensions, fuel consumption rate curves at various loads, ventilation and combustion air requirements and electrical diagrams.

The Contractor shall submit product data showing dimensions, weights, ratings, interconnection points and internal wiring diagrams for engine, generator, control panel, battery, battery rack, battery charger, exhaust silencer, vibration isolators, skid-mounted fuel tank, radiator and annunciator.

The Contractor shall submit manufacturer's installation instructions.

Project Record Documents: The Contractor shall accurately record all test data, date, time and names of personnel performing test. The Contractor shall submit certification by supplier that generator is installed in strict compliance with manufacturer's recommendations and is operating as specified.

Operation: Upon power failure, the automatic transfer switch located as indicated on the Drawings shall operate within a 3 second time delay causing engine to start automatically and generator brought to full voltage and frequency to pick up the electrical service within ten seconds after normal power failure occurs. When power is restored, transfer switch shall revert to normal position and engine shall stop automatically up to ten minutes time delay.

Qualifications of Manufacturer: The company supplying the generator shall have a minimum 10-years documented experience in packaged engine generator systems.

Supplier: The supplier of the generator system shall be an authorized distributor of engine generator manufacturer with service facilities within 200 miles of project site.

Delivery, Storage and Handling: Packaged engine generator set and accessories shall be accepted on-site in crates without damage.

The equipment shall be proptected from dirt and moisture by securely wrapping in heavy plastic.

Warranty: The product must be supplied with a five-year warranty including parts and labor.

Maintenance Service: Service and maintenance of packaged engine generator system shall be for two years from date of substantial completion.

Extra Materials: One set of tools required for preventative maintenance of the engine generator system shall be supplied. Tools shall be packed in adequately sized metal tool box.

Two additional sets of each fuel, oil and air filter element required for the engine generator system shall be furnished.

Products and Manufacturers: The complete engine generator package, including skid mounted fuel tank muffler, levelometer, and all other similar items shall be assembled and shipped by a single source supplier.

Engine generator shall be as manufactured by Caterpillar, Onan, Kohler or equal. Any manufacturer or supplier submitting under the approved equal requirement shall submit a complete computer analysis showing starting load stages for electrical loads shown on the drawings and contained herein with actual voltage dip, efficiency, motor starter types, loads in KW, NEMA code of motors, locked rotor amps, actual SKVA, KW started at each step, % tap-on starter, effective SKVA and SKVA multiplier.

Rating of Generator: 125 KW (minimum).

Generator shall meet UL 2200 standards.

Engine Type: Engine shall be a water-cooled, four-stroke, spark ignited diesel. The cylinder block shall be cast iron with replaceable wet liners and have four valves per cylinder.

Engine Rating: The generator set manufacturer shall verify the diesel engine as capable of driving the generator with all accessories in place and operation, at the generator set KW rating after derating for range of temperatures expected in service area and the altitude of the installation.

The diesel engine-generator set shall be capable of single step load pick up of 100% of nameplate Kw and power factor less applicable derating factors, with the engine generator at operating temperature.

The engine shall be capable of starting and running the following load stages with an actual voltage dip of 20% or less:

Lyman Shop Building

1.	10 KW	Miscellaneous	--
2.	20 HP	Pump 1	Across the line
3.	20 HP	Pump 2	Across the line

Fuel System: Appropriate for use of No. 2 fuel oil.

Engine Speed: 1,800 RPM.

Governor: Manufacturer's standard.

Safety Devices: Engine shall shutdown on high water temperature, low oil pressure, overspeed, low coolant level and engine overcrank. Limits shall be selected by manufacturer.

Engine Starting: The system shall be a DC starting system with positive engagement, number and voltage of starter motors in accordance with manufacturer's instructions. System shall

include remote starting control circuit with MANUAL-OFF-REMOTE selector switch on engine-generator control panel.

Engine Jacket Heater: The system shall have a thermal circulation type water heater with integral thermostatic control, sized to maintain engine jacket water at 90°F and suitable for operation on 120 volts AC, and shall be supplied with a suitable contactor to automatically disconnect the heater when not required.

Radiator: Radiator shall use glycol coolant, with blower type fan, sized to maintain safe engine temperature in ambient temperature of 110° F.

Radiator Air Flow Restriction: 0.5 inches of water (9.34 mm of mercury), maximum.

Engine Accessories: Engine shall have a fuel filter, lube oil filter, intake air filter, lube oil cooler, fuel transfer pump, fuel priming pump, gear-driven water pump and alternator. It shall also include a fuel pressure gauge, water temperature gauge and lube oil pressure gauge on engine-generator control panel.

Mounting: The unit shall have a suitable spring-type vibration isolators and mounted on structural steel base as recommended by manufacturer.

Generator: Generator shall be an ANSI/NEMA MG 1, three-phase, four-pole, 12-lead, reconnectible brushless synchronous generator with solid state exciter, PMG excited single bearing close coupled.

Rating: Generator shall be rated at 125 KW (minimum rating), 156 KVA at 0.8 power factor, 240 Delta three phase, 60 Hz at 1,800 RPM.

Insulation: Insulation shall be ANSI/NEMA MG 1, Class F.

Temperature Rise: 130□C. standby.

Enclosure: ANSI/NEMA MG 1, open drip-proof.

Voltage Regulation: System shall include generator-mounted volts per Hertz exciter-regulator to match engine and generator characteristics, with voltage regulation +/-0.5% from no load to full load. Include manual controls to adjust voltage drop +/-5% voltage level and voltage gain.

Line Circuit Breaker: Line circuit breaker shall be a NEMA AB 1 molded case circuit breaker on generator output with integral thermal and instantaneous magnetic trip in each pole, number and rating as indicated with ground fault protection. It shall include a battery-voltage operated shunt trip, connection to open circuit breaker on engine failure. Unit shall be mounted in enclosure to meet ANSI/NEMA 250, Type one requirements.

Engine-Generator Control Panel: Engine-Generator control panel shall be ANSI/NEMA 250, Type one, generator mounted control panel enclosure with engine and generator controls and

indicators and vibration isolators. It shall include provision for padlock and the following equipment and features.

1. Digital or analog AC Voltmeter, dual range, 90°scale, 2% accuracy.

2. Digital or analog AC Voltmeter, dual range, 90° scale, 2% accuracy.

3. Digital or analog Frequency/RPM Meter, 45-65 HZ, 1350-1950 RPM, 90° scale, +/-0.6 HZ accuracy.

4. Analog AC kilowatt meter, 90° scale, 2% accuracy (on 200 KW only).

5. Four-position, phase-selector switch with off position to allow meter display of current and voltage in each generator phase.

6. The control shall include a cycle cranking function. The cranking cycle, nonadjustable, shall consist of an automatic crank period of approximately 15 seconds duration followed by a rest period of approximately 15 seconds duration. Cranking shall cease upon engine starting and running. Crank termination shall be per the manufacturer's standard control system, and visually indicate an overcrank shutdown on the panel.

7. The control shall shut down and lock out the engine upon: failing to start after the specified time (overcrank), overspeed, low lubricating oil pressure, high engine temperature.

8. The control shall provide an engine monitor. A panel mounted switch shall reset the engine monitor and test all the lamps. Lamp indications on the control panel shall include:

    a. Overcrank shutdown.
    b. Overspeed shutdown.
    c. Low oil pressure shutdown.
    d. High engine temperature shutdown.
    e. High engine temperature pre-alarm.
    f. Low engine oil pressure pre-alarm.
    g. Low coolant temperature.
    h. Low fuel.
    i. Run.
    j. Not in automatic start.
    k. Auxiliary (two each) (Customer identified).
    l. The engine-generator set starting battery(ies) shall power the monitor. The control shall include surge suppression for protection of solid state components. Operation of shut down circuits shall be independent of indication and pre-alarm circuits. Individual relay signals shall be provided for each indication for external circuit connections (not to exceed ½ amp draw) to a remote annunciator. A common alarm contact for external connection to an audible alarm shall be provided.

9. DC Voltmeter.

10. Voltage adjusting rheostat, locking screwdriver type, to adjust +/- 5% from rated value.

11. Engine start/stop selector switch.

12. Engine running time meter non-resettable.

13. Oil pressure gauge.

14. Water temperature gauge.

15. Auxiliary Relay: 3PDT, operates when engine runs, with contact terminals prewired to terminal strip.

16. Remote Alarm Contacts: Pre-wire SPCT contacts to terminal strip for remote alarm functions in terminal cabinet required by ANSI/NFPA 99.

Lubrication Oil System shall have the following features:

1. Pressurized type.

2. Pump shall be built-in, gear-driven-by-engine, positive-displacement type.

3. Full-flow strainer and full-flow or bypass filters.

4. Filters shall be cleanable or replaceable type and shall remove particles as small as 12 microns without removing the additives in the oil.

5. Incorporate an extended lube oil sump drain line passing out through the skid base. Terminate this line with a drain valve and plug.

Fuel Oil System shall have the following features:

1. Injection pump(s) and nozzles.

2. Plungers shall be carefully lapped for precision fit and shall not require any packing.

3. Filters or screens which require cleaning or replacement will not be permitted in the injection system assemblies.

4. Return surplus oil from the injectors to the main storage tank by gravity.

5. Filter System

a. Dual primary filters shall be located between the main fuel oil storage and skid-mounted fuel tank.
b. Secondary filters (engine mounted) shall be located so the oil will be thoroughly filtered before it reaches the injection system assemblies.
c. Filters shall be cleanable or replaceable type and shall entrap and remove any water from oil before any damage is done as recommended by the engine manufacturer.

Fuel Tank shall have the following features:

1. Capacity of the skid-mounted fuel tank shall be for 24 hours operating time at 100% load.

2. Shall be welded steel, UL-approved, double wall.

3. Secure pipe and connect the tank suitably and adequately for maximum protection from fire hazards, including oil leaks.

4. Incorporate a vent, drain cock, shutoff cocks and gauge. Terminate the vent piping with a mushroom vent cap.

5. Incorporate a low-level switch to alarm at 50% of tank level.

Piping System: Install necessary piping and valves between:

1. The engine and tank.

2. Fuel filters and gauges.

3. Flexible pipe connections where required or directed by the ENGINEER.

Pipe shall have the following features: Black steel, standard weight, Fed. Spec. WW-P-404: At connection points to the engine, install a section of flexible piping.

Jacket Water Cooling System Radiator Heat Dissipation shall have the following features:

1. Heat shall be dissipated through a radiator with a fan. The fan shall be engine driven unless indicated otherwise on the drawings.

2. Cooling capacity shall be not less than the cooling requirements of the engine-generator set and its lubricating oil while operating continuously at 110% of its specified rating.

3. Water circulating pumps shall be the centrifugal type driven by engine. It shall incorporate a pressure relief devices where required to prevent excessive pressure increase after the engine stops.

The following shall be performed in accordance with the recommendations of the manufacturer of the diesel engine:

1. Use softened water.

2. Add corrosion inhibitor to the softened water.

3. Add permanent type glycol anti-freeze liquid to protect the cooling system from the lowest temperature recorded by the U.S. Weather Bureau for the construction site during the preceding ten years.

Air Intake and Exhaust Systems shall have the following features:

1. System shall be located so the exhaust gases will not contaminate the fresh air intake.

2. Where turbo-chargers are required, they shall be engine-mounted, driven by the engine gases, securely braced against vibration and adequately lubricated by the engine's filtered lubrication system.

3. Exhaust Muffler shall have the following features:

   a. Shall be approved for residential areas.
   b. Shall be a residential grade type capable of the following approximate noise attenuation:

Octave Band Hertz (Mid Frequency)	**Minimum db Attenuation (.002 Microbar db reference)**
31	5
63	10
125	27
500	37
1,000	31
2,000	26
4,000	25
8,000	26

4. Pressure drop in the complete exhaust system shall be small enough for satisfactory operation of the engine-generator set while it is delivering 110% of its specified rating.

5. Diameter of engine exhaust pipe, from the connection point at the engine to the connection point at the muffler, shall be as recommended by the engine manufacturer.

6. Connection of the engine exhaust outlet to the exhaust piping system shall be made with a flexible exhaust section. Provide bolted type pipe flanges welded to each end of the flexible section.

Exhaust Piping shall have the following features: Black steel pipe. Fed. Spec. WW-P-404, standard weight, with welded fittings.

Engine Starting System, Electric Type, shall have the following features:

1. Shall start the engine at any position of the flywheel.

2. Electric cranking motor:
   a. Shall be engine-mounted.
   b. Shall crank the engine via a gear drive.
   c. Rating shall be adequate for cranking the cold engine at the voltage provided by the battery system and at the required RPM during five consecutive starting attempts of ten seconds cranking each at ten second intervals, for a total of 50 seconds of actual cranking without damage.

Battery System shall have the following features:

1. Batteries:
   a. Batteries shall be lead acid storage batteries, heavy-duty diesel starting type.
   b. Each battery cell shall have electrolyte minimum and maximum level indicators and flip top flame arrestor vent cap.
   c. Batteries shall have connector covers for protection against external short circuits.
   d. With the charger disconnected, the battery system shall have sufficient capacity so that the total system voltage does not fall below 85% of nominal system voltage with the following demands:
      Five consecutive starting attempts of ten seconds cranking each at ten-second intervals for a total of 50 seconds of actual cranking (the fifth starting attempt will be manually initiated upon failure of a complete engine cranking cycle).
      Twelve hours of operation of the control and supervisor panels.
   e. Battery racks shall be metal with an alkali-resistant finish and secured to the floor.

2. Battery Charger shall be a trickle charger with a nominal float voltage of 1.4 vpc. Trickle charger may be installed in Automatic Transfer Switch.

Factory Production Model Tests shall meet the following requirements: Before shipment of the equipment, the generator sets, transfer switches, and system components shall be tested under rated load and power factor for proper functioning, including control and interfacing circuits.

Other tests shall include a single step load pickup per NFPA 110 Pg. 5-13.6 100% nameplate rating less derating factors for altitude or temperature.

Weatherproof Enclosure shall have the following features: An outdoor weatherproof shelter shall completely enclose each engine generator set, battery rack and charger, and other appurtenances. The enclosure shall be a Askin-tight@ factory-produced type spacious enough to permit adjustment and troubleshooting of the equipment during bad weather. Wiring of all equipment and devices within the enclosure shall be included. Equipment inside the enclosure shall be factory wired. Complete as-built conduit and wiring diagrams shall be submitted for approval.

Construction shall include the following features:

1. Welded and bolted reinforced sheet steel, minimum 14 gauge.

2. Weatherproof, tamperproof and rodent-proof construction.

3. Hinged doors on sides and one door in rear for easy access and servicing. Door handles key lock design.

Surface Preparation and Shop Painting shall include the following features: Surface preparation and shop painting is required for all ferrous metals, equipment and accessories. Stainless steel shall not be painted.

All ferrous metal surfaces shall be cleaned and provided with two coats of priming paint. All prime coat materials shall be compatible with the finish coat materials. All ferrous metal surfaces may be given two coats of the manufacturer's standard paint system in lieu of the priming paint, provided that the total mil thickness of paint is equal to that specified for the priming paint. Minimum acceptable surface preparation for any equipment furnished with the manufacturer's standard paint system shall include cleaning with a Commercial Sandblast (SSPC-SP6) except that motors and like items that may be damaged by sandblasting may be prepared by other approved means.

Gears, bearing surfaces, and other unpainted surfaces shall receive a heavy application of a rust-resistant coating which shall be maintained during storage and until the equipment is placed into operation.

Color of finish paint shall be manufacturer's standard color.

Examination: Contractor shall verify that surfaces are ready to receive work and field dimensions are as shown on drawings or modified in accordance with approved shop drawings.

Contractor shall verify that required utilities are available in proper location and ready for use.

Installation shall be in accordance with manufacturer's instructions.

Contractor shall provide one complete filling of fuel tank in addition to fuel used for fuel testing.

Field Quality Control: Full load test shall be provided utilizing portable test bank for four hours continuously with load bank connected to its output; load shall not exceed 100% of generator set rating for first one-half hour, during first initial run for proper engine break-in. Power failure shall be simulated including operation of transfer switch, automatic starting cycle and automatic shutdown and return to normal after all loads are connected and operating.

During test, the following shall be recorded at 15 minute intervals:

1. Kilowatts.
2. Amperes.
3. Voltage.
4. Coolant temperature.
5. Room temperature.
6. Frequency.
7. Oil pressure.

There shall be a ten minute unloaded run at the conclusion of the test to allow engine to cool before shut-down. Three copies of the field test data shall be furnished to the Engineer. The Contractor shall make all necessary hook-ups to accomplish field tests and shall furnish all fuel necessary for field test. The generator supplier shall provide a load bank with sufficient capacity to allow full load testing of the system.

Simulated power failure test generator set shall be made ready for automatic operation and started by means of the test transfer switch on the automatic transfer switch. Unit shall run for the duration of all time delays and then automatically shut down.

Required Manufacturer's Services: A qualified factory trained serviceman shall be retained to perform the following services:

1. Supervise installation of the equipment specified herein.
2. Inspect and adjust the equipment after installation and insure that it operates properly.
3. Instruct Owner's personnel in the operation and maintenance of the equipment.

Field Tests shall meet the following requirements:

1. Field testing to be supervised by a factory trained serviceman.
2. Apply the actual load banks necessary to total full load.
3. Verify the following:
   a. That the entire installation has been made in accordance with the approved manufacturer's drawings, and that the unit and all auxiliaries are ready for operation.
   b. That fuel and lubrication systems are complete, clean and filled with the proper grades of fuel and lubricants.

c. That the units and all subsystems start, operate, and shutdown as specified herein and in accordance with manufacturer's specifications.
d. That all safeties, alarms and shut-downs function at the correct set point and sequence.
e. That the unit accepts load, governs speed and regulates voltage as specified.
f. That fuel consumption under field operation is within 5% of manufacturer's specifications.
g. Provide all equipment, fuel, lubricants and material required for the field testing.
h. Adjust and leave equipment in proper working order.

The generator output voltage and engine speed shall be adjusted.

Cleaning: Engine and generator surfaces shall be cleaned.

Demonstration(s): The following demonstrations shall be given.

1. Provide systems demonstration to Owner for time required.

2. Describe loads connected to emergency system and restrictions for future load additions.

3. Simulate power outage by interrupting normal source and demonstrate that system operates to provide standby power under full load conditions.

907-260.02.12--Electrical. All electrical devices and wiring shall conform to applicable National, State, and Local electrical codes. All equipment shall be new and shall bear the inspection label of the Underwriter's Laboratories, Inc.

Primary power shall be either 240 or 480-volts, 3-Phase, as designated in the Plans, with sufficient ampacity to power all electrical equipment without objectionable voltage drop.

All wiring shall be within rigid PVC conduit of adequate size to freely receive the wiring without binding. Conduit in concrete slabs or underground may be schedule 40 PVC (equipment ground conductor required).

Separate conduit will be used for the motor leads and float switch/transducer leads. Motor lead conduit will be a minimum of 2.0" diameter, float switch/transducer conduit will be minimum of 2.0" diameter.

Each conduit will have a seal off between the control panel and wet well. All electrical connections will terminate in the control panel. Junction boxes are not allowed.

All conductors shall be copper with 600 volt, THW insulation or better. Minimum conductor size shall be #12 AWG for lighting and power circuits and #14 AWG for control wiring. All motor leads, float switch leads and transducer leads will terminate in the control panel.

All wiring device cover plates shall be stainless steel or PVC and weatherproof. Outside security lights shall be 50 watt, 110 volt high pressure sodium fixtures designated for surface mounting, complete with photo-cell. The outside security light will have a separate circuit breaker located in the electrical panel box and will be accessible through the deadfront panel.

Service pole shall be Southern Yellow Pine, 25 feet minimum length, Class 5, treated with Chromated Copper Arsenate (CCA) to not less than 0.60 pounds per cubic foot by ASSAY, with penetration not less than four (4) inches. Should service line to the pole span more than fifty (50) feet, a guy wire will be applied to the service pole.

907-260.02.13--Sitework. The pump station site will have a 2-inch water service terminating within twenty (20) feet of the wet pit. The stand pipe shall be a flush valve type stand pipe. The water service will terminate with a 2-inch cam lock type fitting and a ¾-inch hose bib.

Water service tubing shall be polybutylene plastic conforming to ASTM 2666, or polyethylene plastic conforming to ASTM 2737, NSF approved, dimensions to fit standard CTS fittings, SDR 9, 250 psi.

Crushed limestone will be used as driveway material and surface at the pump station site and will cover the entire area enclosed by the fence and as detailed in the Plans. Crushed limestone shall be dense-graded crushed domestic limestone, plant-mixed to conform to Size No. 610 or 825A, MDOT Specifications. A geotextile fabric shall be place under all limestone surfaces. The geotextile fabric shall be 600X as manufactured by Marifi or an approved equivalent.

Chain link fence will be minimum of six feet (6') high with three (3) strands of barbed wire or razor wire. All posts and framing shall conform to schedule 20 galvanized steel. Steel wire shall be zinc coated fabric (galvanized after weaving) #9 gauge, 2-inch mesh required. Concrete shall be MDOT Class B.

907-260.03--Construction Requirements. All pump station construction shall be performed in accordance with the specification and as shown on the Plans which includes pumps and control. Manufacturer's procedures, which are more stringent than those specified, shall be strictly followed.

All workmanship and materials throughout shall be of the highest quality.

Upon completion of work at site, excess excavation shall be removed and disturbed areas restored in such a manner as to insure positive drainage. All disturbed areas shall be seeded and maintained to insure living growth of vegetation.

Contractor shall guarantee all materials, equipment, controls and structures for a period of one year against defects in materials and workmanship.

Operation and maintenance manuals shall be provided in triplicate, for pumps, motors, controls, and valves.

907-260.03.1--Excavation. Excavation shall include the clearing of the site of the work, the loosening, loading, removing, transporting and disposing of all materials, wet or dry, above or below ground necessary to be removed for all construction included in this contract to the lines, grades and locations shown on the Plans.

Mechanical excavation shall be stopped above the foundation base elevation so that the concrete foundation may be constructed to a firm, undisturbed native earth bed.

The Contractor shall, at his own expense furnish and install all temporary sheeting, timbering and bracing required to maintain the excavation in a condition to furnish safe working conditions and to permit the safe and efficient installation of all items of contract work. The Contractor shall further, at his own expense, shore up or otherwise protect all fences, buildings, walls, walks, curbs, or other property adjacent to any excavation which might be disturbed during the progress of the work.

Temporary supports must be removed by the Contractor at his own expense after or concurrently with the completion of the permanent facility.

The Contractor shall do all ditching, pumping, well pointing and bailing, build all drains, and do all other work necessary to keep the excavation clear of ground water, sewage or storm water during the progress of the work and until the finished work is safe from injury. Where the excavation is wet sand, and suitable construction conditions cannot be obtained by other methods, the Contractor shall install and operate, at his own expense, a pumping system connected with well points, so as to drain the same effectually. All well point holes shall be backfilled with sand after removal. No masonry or pipe shall be laid in water, and water shall not be allowed to rise over masonry until concrete or masonry has set at least 48 hours. All water pumped or drained from the work shall be disposed of in a manner that will not damage adjacent property or other work under construction. Necessary precautions shall be taken to protect all construction against flooding.

Whenever the excavation is carried beyond the lines and grades shown on the Plans, the Contractor shall, at his own expense, refill all such excavated space with such material and in such manner as may be directed.

Unsuitable and surplus excavated material not incorporated in the work shall be disposed of by the Contractor at his own expense.

In the event that any existing gas pipe, water pipes, conduits, sewers, tile drains or poles are blocked or interfered with by the excavation required on this project, the Contractor shall maintain them in continuous operation. In case of unavoidable or accidental damage, notify utility owner. Water and sewer lines must be repaired by Contractor.

907-260.03.2--Installation of Wet Well. Reinforcement shall conform accurately to the dimensions and details indicated on the Plans. Before being placed in any concrete work, it shall be thoroughly cleaned of all rust, mill scale, mortar, oil, dirt or coating of any character which would be likely to destroy, reduce or impair its proper bonding with the concrete.

Concrete shall conform accurately to the dimensions and details indicated on the Plans. Concrete shall not be permitted to fall more than six feet (6') without the use of pipes or tremmies at least six inches (6") in diameter. Concrete shall be thoroughly consolidated in a manner that will encase the reinforcement and inserts, fill the forms, and produce a surface of even texture free of rock pockets and excessive voids.

Wet pit (concrete pipe), wet pit top, valve vault, equipment, piping and related appurtenances shall be installed in accordance with the details in the Plans and as specified herein.

All openings cut into the walls of the wet pit liner for piping and conduit shall be carefully grouted and sealed so that there is no visible evidence of infiltration. A rubber water stop ring shall be provided at all points where PVC pipes penetrate the wet well wall.

907-260.03.3--Mechanical. Pumps, piping, and fittings shall be fitted, assembled, and supported in a manner to avoid strain upon the components.

Flanged connections shall be made up with full-sized bolts, without resorting to prying to achieve proper alignment.

Installation of pumps and auxiliary equipment shall be as recommended by the pump manufacturer.

907-260.03.4--Electrical. All electrical installation shall fully conform to all requirements of the National Electrical Safety Code, the National Electrical Code and all other applicable codes, as well as the requirements specified herein.

Exposed conduit shall be run parallel or perpendicular to supporting structure. Support shall be installed at intervals of five feet (5') minimum. Underground installation shall be buried with a minimum cover of 12".

No splices will be permitted in any conductors except within junction boxes.

Slack loops of at least 18" in length shall be left in each conductor at each splice. Slack loops of not less than six inches (6") shall also be provided in each conductor within the pump controller enclosure.

Flexible electrical cables within the wetwell shall be supported by a suitable strain relief device to allow disconnection from outside the wetwell. The pump power cable shall conform to the requirements of the Mine Safety and Health Administration for trailing cables. Ground fault interruption protection shall be used.

All galvanized steel conduit in contact with the earth shall be painted with approved asphaltic paint.

907-260.03.5--Concrete and Masonry. The concrete used in construction, where not exposed to sewer gases shall be proportioned, mixed and placed in accordance with the provisions and requirements in the MDOT Class C, meeting the requirements of Section 907-804.

Forms shall be of wood or metal, straight, free from warp, of sufficient strength to resist the pressure of the concrete without springing, and shall be cleaned thoroughly and oiled before concrete is placed against them. Bracing and staking of forms shall be such that the forms remain in both horizontal and vertical alignment until their removal.

Reinforcement shall be placed in exact positions shown on the plans and firmly held during the placing and setting of concrete. Metal devices in contact with exterior surface of the structure shall be galvanized. The use of gravel, pieces of broken stone or brick, metal pipe and wooden blocks as spacers will not be permitted.

Surfaces shall receive a broom finish. After the final finish, but before the concrete has taken its initial set, all edges shall be worked with an approved tool.

Curing shall be with white pigmented liquid membrane, sprayed uniformly at a rate of one gallon to not more than 150 square feet by mechanical sprayer immediately after finishing operation is completed.

Mortar not used within forty-five (45) minutes after water has been added will be wasted.

907-260.03.6--Driveway. Crushed limestone for use in driveway and access road areas shall be size 610 crushed stone and placed upon a prepared base and compacted to 95% Standard Proctor Density to a uniform thickness of six (6) inches. The surface shall be graded and shaped to drain.

907-260.03.7--Fence. Installation of fence shall be by skilled and experienced workmen in accordance with the details in the Plans.

All fencing shall be installed plumb. The top of the fence shall be level throughout. All items to be set in ground shall be set in concrete.

907-260.04--Method of Measurement. Lift station will be measured for payment as a lump sum unit price per lift station.

907-260.05--Basis of Payment. Lift station, measured as prescribed above, will be paid for at the contract lump sum price, which price shall include all labor, materials, and incidentals necessary to complete the work as shown in the Plans, and as specified herein. Partial payments will be allowed based upon Engineer's estimation of the value of work completed.

Payment will be made under:

907-260-A: Lift Station - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-263-3 **CODE: (SP)**

DATE: 02/12/2013

SUBJECT: Sewer Force Main

PROJECT: LWO-6032-24(006) / 502517301 -- Harrison County

Section 907-263, Force Main Pipe, 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 907-263--FORCE MAIN PIPE

907-263.01--Description. This work shall consist of all labor, materials, equipment, tools and services required to furnish and install a sewage force main, fittings, valves, thrust blocks and restrained joints at sites and locations as designated in these specifications and in reasonably close conformity with the lines and grades specified in the Plans.

907-263.02--Materials.

907-263.02.1--Pipe. Piping shall meet the following requirements unless otherwise designated on the plans.

Polyvinyl Chloride pipe (for nominal sizes up to and including 12 inches), with integral expanded bells shall conform to ASTM D2241, SDR 26, 160 psi working pressure. Couplings or joints shall be an integral part of the pipe barrel. It shall consist of an expanded bell with grooves to retain a rubber sealing ring conforming to the requirements of ASTM D1869.

Polyvinyl Chloride pipe (for nominal sizes up to and including 12 inches), shall conform to AWWA C-900. Standard dimension ratio shall be not more than 25. Pipe shall be made to cast iron O.D.'s. Each length of pipe shall be stamped with approval of Underwriter's Laboratories, Inc. Pipe couplings or joints shall be an integral part of the pipe barrel, consisting of an expanded bell with a groove to retain a rubber sealing ring. Gaskets shall be factory bonded into the groove.

Ductile Iron Pipe shall conform to ANSI A-21.51 (AWWA C-151) Grade 60-42-10 Ductile Iron, thickness Class 50. Pipe interior shall be cement mortar lined per ANSI A.21.4 (AWWA C-104). Rubber gasket joints shall be per ANSI A-21.11 (AWWA C-111).

Gate valves (16" and smaller) shall be of the "resilient seat" type, conforming to AWWA C-509, epoxy coated inside and outside to AWWA C550. End connections shall be standard mechanical joint, complete with restrained glands as specified herein. Valves shall be rated for zero leakage to 200 psi and 400 psi hydrostatic test pressure. Valves shall be of the non-rising stem (NRS) design. Gates shall be encapsulated in rubber where exposed to line velocity and shall be field

replaceable. Each valve shall have a 2-inch square operating nut and shall open to the left. The entire valve shall be designed and recommended by the manufacturer for application with raw sewage.

Valve boxes shall be supplied for all buried valves. Valve boxes shall be made of good quality cast iron and shall be of the sectional type. The lower section shall be a minimum of five inches (5") in diameter, enlarged to fit around the bonnet of the valve if a two section box is used, or to fit a circular or oval base section if a three section box is used. The upper section shall be arranged to slide or screw down over the adjoining lower section and shall be provided with cast iron lids or covers. Lids or covers shall be marked "Sewer".

907-263.02.2--Fittings. Fittings for pipes four inches (4") in size or greater may meet any one of the following specifications, at Contractor's option:

Cast Iron conforming with ANSI A-21.10 (AWWA C-110), 250 psi rated.

Ductile Iron conforming with ANSI A-21.10 (AWWA C-110), 350 psi rated.

Compact Ductile Iron Fittings conforming with ANSI A-21.53 (AWWA C-153), 350 psi rated.

All fittings shall be cement mortar lined per ANSI A21.4 (AWWA C-104). All fittings shall be of the mechanical joint type.

907-263.02.3--Air Release Valves. Combination Air Valves shall be Single Body, Automatic Float Operated Valve. The valve shall be designed to release accumulated air from pipeline (force main) during system operation and designed to allow large quantities of air to exhaust the pipeline during filing and admit air during draining. Valve must be designed for use with wastewater applications. The Valve Body shall be 316 stainless steel. Body shall have a conical shape to maintain maximum air gap and a spring loaded float and seal plug connection shall combine to ensure no contact between the sewage and the seal. Valve shall have a funnel shaped lower body to ensure sewage will not come in contact with working parts of valve and sewage matter will fall back into the system. The top internal float shall be foamed polypropylene. The bottom internal float and all other internal parts shall be 316 stainless steel. Valve shall be supplied with a rolling resilient seal to provide smooth positive opening, closing and leak free sealing over a wide range of pressure differentials. Combination air valves shall be model no. D-020 (or model no. D-025 for limited height locations) as manufactured by ARI, or an approved equivalent.

A 5-year warranty shall be provided for combination air valve assemblies regardless of other project or contract warranties.

Combination Air Valves two inches (2") and smaller shall be connected to the force main pipe with a double strap ductile or malleable iron saddle, designed and recommended for use with the type of pipe used. Combination air valves larger than two inches (2") shall be connected to the force main pipe with a flanged connection which will require a tee on the force main pipe.

Pipe and fittings shall be stainless steel, Schedule 40. Pipe and fittings in contact with the earth or washed gravel fill shall be field coated with approved asphaltic paint.

Precast concrete base sections, risers, flat slab tops and adjusting rings shall conform to the requirements of ASTM Designation C478.

Joints shall be sealed with either a pre-formed joint compound or a rubber gasket. Pre-formed joint compound shall meet Federal Specification SS-S00210 (210-A) and AASHTO Specification M198. Rubber gaskets shall meet ASTM Designation C443

Manhole frame and cover sets shall conform to the requirements of ASTM Designation: A48 for "Gray Iron Castings", Class 30. Bearing surfaces between frame and cover shall be machined to seat firmly without rocking. Frames shall provide a minimum inside dimension of 22 inches. Covers shall read "SEWER". The cover shall have vent holes with a total area not less than the inlet size of the air valve, or be of the open grate type.

Coating for both the interior and exterior surfaces of all vault walls, including both joint surfaces between sections, shall be a coal tar epoxy or other approved sealant. All precast concrete sections shall be prepared, coated, and cured at the manufacturer's plant prior to shipping. Minimum dry-film thickness shall be 16 mils.

907-263.02.4--Joints. Mechanical Joint Retainer Glands shall be used for all connections of pipe to fittings and shall be made with a suitable restrained joint system, meeting any one of the following specifications:

For Ductile or PVC Pipe, the joint shall be a suitable ductile iron retainer gland, designed and recommended by the gland manufacturer. Gland shall be manufactured entirely of 60-42-10 ductile iron conforming to ASTM A536-80. Glands shall attach to the pipe barrel through a plurality of individually activated gripping surfaces (wedges). It shall be EBAA Iron "Megalug" series or equal.

For PVC Pipe, the joint shall be a heavy ductile iron or fused epoxy coated structural steel (ASTM A36) clamp which employs serrations on its inside surface to firmly grip the outside of the PVC pipe barrel. Clamp shall be specifically designed and recommended for use with the size and thickness class of pipe used. All hardware shall be ductile iron. It shall be Uni-flange Series 1300 or approved equal.

For Ductile Pipe only, the joint shall be a ductile iron mechanical joint retainer gland employing cupped-end threaded set screws which conform with the pipe manufacturer's guidelines as to number of set screws and torque to be applied to properly restrain the joint to a rating of not less than 250 psi

Pipe Joint Restraint shall be applicable only for pipe joints within specified distances from fittings -- See Schedule in Plans. Two glands shall be used similar in design and materials to the joint retainer glands previously specified, one immediately behind the joint bell and one on the pipe spigot, connected by two or more ductile iron rods spanning across the pipe joint. For

ductile pipe, it is also permissible to use mechanical joint pipe with restrained retainer gland, or special "lock-ring" pipe joints.

907-263.02.5--Buried Pipe Line Identification. Detectable underground utility marker tape for burial with PVC pipe shall be a minimum of 5 mils thick and 3 inches in width. Minimum tensile strength shall be 35 pounds and tape shall elongate not less than 80 percent before breaking. Tape shall be permanently imprinted with an appropriate legend to identify the contents of the pipe (e.g. "Sewer Force Main Below".)

907-263.02.6--Concrete. Concrete shall conform to requirements for Class B concrete, per Section 907-804.

907-263.02.7--Reinforcement. Bar Reinforcement shall be Grade 60 billet steel conforming to AASHTO Designation: M31.

907-263.03--Construction Requirements.

907-263.03.1--Excavation. Excavation shall include the clearing of the site of the work, the loosening, loading, removing, transporting and disposing of all materials, wet or dry, above or below ground necessary to be removed to construct the force main included in this contract to the lines, grades and locations shown on the Plans. No burying or burning of trees, stumps, roots, or other debris will be allowed.

Where required, the Contractor shall remove with care all shrubbery, plants, flower planters, flower bed borders, set aside, watered, and kept alive and reset as before construction work. The Contractor shall furnish and install replacement plants which die as a result of construction operations.

In areas where force main will be installed in close proximity to trees designated to remain, the major root systems of the trees shall be protected from damage. Where necessary, Contractor shall install force main by tunneling underneath the tree roots.

The Contractor shall, at his own expense, furnish and install all temporary sheeting, timbering and bracing required to maintain the excavation in a condition to furnish safe working conditions and to permit the safe and efficient installation of all items of contract work. The Contractor shall further, at his own expense, shore up or otherwise protect all fences, buildings, walls, walks, curbs, or other property adjacent to any excavation which might be disturbed during the progress of the work, except for such facilities which are within the allowable trench limits and are designated for removal and restoration.

Temporary supports must be removed by the Contractor at his own expense after or concurrently with the completion of the permanent facility.

The Contractor shall do all ditching, pumping, well pointing, and bailing, build all drains, and do all other work necessary to keep the excavation clear of ground water, sewage or storm water

during the progress of the work, and until the finished work is safe from injury. Where the excavation is wet sand, and suitable construction conditions cannot be obtained by other methods, the Contractor shall install and operate, at his own expense, a pumping system connected with well points, so as to drain the same effectually. All well point holes shall be backfilled with sand after removal. No masonry or pipe shall be laid in water, and water shall not be allowed to rise over masonry until concrete or masonry has set at least 48 hours. All water pumped or drained from the work shall be disposed of in a manner that will not damage adjacent property or other work under construction. Necessary precautions shall be taken to protect all construction against flooding.

Whenever the excavation is carried beyond the lines and grades shown on the Plans, the Contractor shall, at his own expense, refill all such excavated space with such material and in such manner as may be directed.

Unsuitable and surplus excavated material not incorporated in the work shall be disposed of by the Contractor at his own expense.

In the event that any existing gas pipe, water pipes, conduits, sewers, tile drains or poles are blocked or interfered with by the excavation required on this project, the Contractor shall maintain them in continuous operation, and restore them to the same condition as they were prior to the start of construction of this project. Gas pipes or electrical power distribution facilities which are disturbed in any way shall be inspected and repaired (if necessary) by the utility owner, all at no additional compensation.

Any culvert pipe joint exposed by excavation shall be wrapped with an approved geotextile filter fabric, three feet (3') in width, before backfilling, at no additional compensation.

907-263.03.2--Trench Excavation. The ground shall be excavated in open trenches, of sufficient width and depth to provide ample room within the limits of the excavation, or lines of sheeting and bracing, for the proper construction of the force main.

Mechanical excavation of trenches shall be stopped above the final invert grade elevation so that the pipe may be laid on a firm, undisturbed native earth bed.

The width of the trench at the top of the pipe shall not exceed the outside diameter of the pipe plus two feet (2'). The maximum allowable trench width at the ground surface shall not exceed the outside diameter of the pipe, plus twice the depth of cut. Restoration of disturbed facilities as a pay item will only be allowed within these limits.

907-263.03.3--Bedding. When the native bedding material encountered in the trench bottom consists of a material deemed by the Engineer to be unsuitable for pipe bedding, the Contractor shall over excavate to a depth as specified in the Plans and replace with bedding material. Should over excavation occur where a suitable native soil exists for bedding purposes, the Contractor shall fill the area of over excavation with an acceptable bedding material as specified, but at Contractor's expense.

Trenches shall be dry when the trench bottom is prepared. A continuous trough shall be pared or excavated to receive the bottom quadrant of the pipe barrel. In addition, bell holes shall be excavated so that after placement, only the barrel of the pipe receives bearing pressure from the trench bottom.

Preparation of the trench bottom and placement of the pipe shall be carefully made so that when in final position, the pipe is true to line and grade.

Bedding material equal to Classes I, II, or III, as described in ASTM D2321 shall be used for all flexible pipe bedding, haunching and initial backfill provided the proper strength pipe is used with the specified bedding to support the anticipated load.

907-263.03.4--Laying Pipe. Pipe shall be protected during handling against impact shocks and free fall. Pipe shall be clean at all times, and no pipe shall be used in the work that does not conform to the appropriate specifications.

Pipe shall be laid accurately, to the line and grades with fittings and valves at the required locations as designated in the Plans. Preparatory to making pipe joints all surfaces of the portions of the pipe to be jointed or of the factory-made jointing material shall be clean and dry. Lubricants, primers, adhesives, etc., shall be used as recommended by the pipe or joint manufacturer's specifications. The jointing materials or factory fabricated joints shall then be placed, fitted, joined, and adjusted in such a workmanlike manner as to obtain the degree of water-tightness required.

Trenches shall be kept water-free and as dry as possible during bedding, laying, and jointing and for as long a period as required. As soon as possible after the joint is made, sufficient backfill material shall be placed along each side of the pipe to offset conditions that might tend to move the pipe off line and grade.

Wherever necessary to deflect pipe from a straight line, either in the horizontal or vertical plane, the degree of deflection shall not exceed maximum permissible deflections as recommended by pipe manufacturer.

Where force mains cross water mains, adjust force main laying lengths so that sewer joints are equidistant and as far as possible from the water main joints.

907-263.03.5--Backfilling. All trenches and excavation shall be backfilled as soon as the work has developed sufficient strength to resist backfilling loads and forces and the work shall be prosecuted expeditiously after it has commenced.

No pipe shall be backfilled above the top of the pipe until the pipe elevations, alignment and the pipe joints have been checked, inspected and approved by the Engineer.

All pipes as soon as laid shall have the space between the pipe and the bottom and the sides of the trench backfilled to the spring line of the pipe with a select sandy material. This material shall be thoroughly compacted by hand or mechanical means.

Backfill shall then proceed with the placement of select sandy material in 6-inch layers to one foot above the top of the pipe. This backfill shall be compacted by mechanical compactor to not less than 90% Standard Proctor Density.

907-263.03.6--Compaction of Pipe Trenches. In areas where pipe trenches are not under or immediately adjacent to existing or proposed structures, roads, driving surfaces, or sidewalks, the material will be compacted to 90% Standard Proctor Density.

In areas where pipe trenches are under or immediately adjacent to existing or proposed structures, roads, driving surfaces, or sidewalks, the material will be compacted to 95% Standard Proctor Density.

The select sandy backfill referred to in paragraphs above shall be a sandy, cohesionless material, no more than 20 percent (by weight) of which shall pass the No. 200 sieve. The materials shall be well-graded to make it easily compactable. The moisture content when placed in the trench shall be reasonably close enough to optimum so as to not adversely affect proper compaction.

Where the native excavated soil does not meet the requirement for select sandy backfill, the Engineer may authorize the replacement for such unsuitable material with Contractor furnished select sandy backfill. All surplus or unsuitable material not used in backfilling shall be disposed of off-site by Contractor.

All PVC pipe installations require that metalized tape and 12 gauge tracer wire be buried in the backfill approximately 12 inches above the pipe.

Gate valves, with valve boxes, shall be installed on force mains in the locations and as detailed in the Plans, and in strict accordance with manufacturer's recommendations.

907-263.03.7--Air Release Valves. Air valves shall be installed at or slightly downstream of each high point in the force main, approximately where indicated in the Plans.

If pipeline grade line changes are directed by the Engineer, additional air valves may be authorized and paid for at the unit prices bid. If grade line changes are made for Contractor's convenience or due to Contractor's error, additional air valves shall be furnished and installed at resulting new high point locations at Contractor's expense.

Teflon tape shall be used to lubricate all threaded pipe connections.

Excavation and backfill for air valve vaults shall conform to the same requirements as apply for force main pipe.

907-263.03.8--Connections to Existing Facilities. Connections to existing facilities and force mains shall conform with the Plans.

All pump stations shall remain in continuous operation throughout the construction period, except possible brief periods, during which time the necessary new piping connections may possibly be made. Contractor must coordinate these shut-down periods at least 24 hours in advance with the Owner's operating personnel and accurately determine the duration of the possible shut-down for each affected pump station.

All work affecting the operation of existing pump stations, force mains, or other facilities must be scheduled so that interruption of the normal operation of the existing system occurs during a sustained dry weather period, so that overflows or bypasses do not occur at upstream pump stations or systems. The Contractor shall provide, as necessary, temporary pumping equipment, force mains, and/or pumping trucks to maintain continual service. All by-pass pumping around portions of the system will be performed in a manner to insure all sewage is contained within the sanitary sewer system.

907-263.03.9--General Requirements. All connections between pipe and fittings shall be made with an approved restrained joint system. In addition, all pipe joints within a distance which is tabulated in the Plans from a fitting must also employ an approved restrained joint system. The assembly and installation of each restrained joint system shall be in strict accordance with the manufacturer's printed instructions and in the presence of a representative of the Engineer.

Concrete thrust blocks shall also be installed in addition to any type of joint restraint system. Concrete thrust blocks are to be installed according to the plan dimensions and details, placed between the fittings and undisturbed earth. Thrust blocks are also required at all bends of 11½ degrees or more, unless specifically waived by the Engineer because of unusual conditions at a specific fitting.

For all pipe sizes and types, install only full lengths of pipe adjacent to fittings, except in unusual circumstances.

907-263.03.10--Testing. Pressure testing shall be conducted on all pipe and fittings by the Contractor at his expense and in the presence of the Engineer or his representative. The test shall be conducted by filling the pipe with water from an approved source under a pressure of not less than 100 psi as measured at the average elevation of the pipe to be tested. There shall be no visible leakage at any point, and the total amount of leakage shall not exceed 20 gallons per 24 hours per inch diameter per mile as measured over a period of two hours.

907-263.03.11--Separation Between Sewer and Water Lines. The force main shall be laid at least 10 feet horizontally and 18 inches vertically from any existing or proposed water main. The distance shall be measured edge to edge. Sewer lines should always be installed below water lines and the bottom of the water line should be at least 18 inches from the top of the sewer line.

Special Conditions. Where local conditions prevent adequate horizontal and vertical separation, the appropriate reviewing agency may allow the sewer line to be laid closer to the water line if supported by adequate data from the design engineer. Each situation will be reviewed on a case by case basis. In this situation, all three of the following conditions must be met:

If the 10 foot horizontal separation between water and sewer lines cannot be maintained then the water line should be ductile iron with water joints located at the maximum distance possible from sewer line joints. PVC pipe may be used if it is protected by a steel casing. Also the water and sewer lines must be in separate trenches with adequate space for maintenance. In some cases, special sewer line construction procedures may be required.

Where the 10-foot horizontal and 18-inch vertical separation cannot be maintained, condition in previous paragraph must be met and the sewer line shall be constructed according to water main standards.

Where sewer lines cross under water lines, the pipe segments should be centered to provide maximum spacing of joints of both water and sewer lines. A vertical separation of at least 18 inches should be maintained (water over sewer).

907-263.04--Method of Measurement. Force main pipe of the size and type specified will be measured from end to end by the linear foot along their center lines.

907-263.05--Basis of Payment. Force main pipe, measured as prescribed above, will be paid for by the contract unit price per linear foot, which price shall include the costs for all labor, materials, testing, and all incidentals necessary to complete the work.

Payment will be made under:

907-263-A: __" Diameter _____ Force Main Pipe - per linear foot

907-263-C: Air Release Valve - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-265-5 **CODE: (SP)**

DATE: 02/12/2013

SUBJECT: Potable Water System

PROJECT: LWO-6032-24(006) / 502517301 -- Harrison County

Section 907-265, Potable Water System, 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 907-265-- POTABLE WATER SYSTEM

907-265.01--Description. This work shall consist of all labor, materials, equipment, tools and services required to furnish and install water mains, fittings, thrust blocks and related appurtenances at sites and locations as designated in these specifications and in reasonably close conformity with the lines and grades specified in the plans.

907-265.02--Materials.

907-265.02.1--Pipe. Pipe components shall meet the following requirements:

Polyvinyl Chloride (PVC) Pipe shall conform to AWWA C-900, Class 150, SDR-18. Pipe shall be made to cast iron O.D.'s. Each length of pipe shall be stamped with approval of National Sanitation Foundation and Underwriters Laboratories, Inc. for transporting potable water. Pipe couplings or joints shall be an integral part of the pipe barrel, consisting of an expanded bell with a groove to retain a rubber sealing ring conforming to the requirements of AWWA C-111. Gaskets shall be factory bonded into the groove. At least 85 percent of pipe shall be in standard 20 foot lengths. Remaining random lengths shall not be less than 10 feet long.

Ductile Iron Pipe shall conform to ANSI A-21.51 (AWWA C-151) Grade 60-42-10 Ductile Iron, thickness Class 52. Pipe interior shall be cement mortar lined per ANSI A-21.4 (AWWA C-104). Rubber gasket joints shall be per ANSI A-21.11 (AWWA C-111).

907-265.02.2--Fittings: Fittings for pipes four inches (4”) in size or greater may meet any one of the following specifications, at Contractor's option:

a. Cast Iron conforming to ANSI A-21.10 (AWWA C-110), 250 psi rated.
b. Ductile Iron conforming to ANSI A-21.10 (AWWA C-110), 350 psi rated.
c. Compact Ductile Iron Fittings conforming to ANSI A-21.53 (AWWA C-153), 350 psi rated.

All fittings shall be cement mortar lined per ANSI A21.4 (AWWA C-104). All fittings shall be of the mechanical joint type.

907-265.02.3--Gate Valves. Gate valves shall be of the "resilient seat" type, conforming to AWWA C-509, epoxy coated inside to AWWA C550. End connections shall be mechanical joint, except that valves used in fire hydrant stubs shall be flange by Mechanical Joint. Valves shall be rated for zero leakage to 200 psi, and 400 psi hydrostatic test pressure. Valves shall be of the non-rising stem (NRS) design. Gates shall be encapsulated in rubber where exposed to line velocity and shall be field replaceable. Each valve shall have a 2-inch square operating nut and shall open to the left. Retainer glands shall conform with the requirements specified for water main pipe. Gate valves shall be "Mueller," or an approved equivalent.

Valve boxes shall be supplied for all buried valves. Valve boxes shall be made of good quality cast iron and shall be of the sectional type. The lower section shall be a minimum of five inches (5") in diameter, enlarged to fit around the bonnet of the valve if a two section box is used, or to fit a circular or oval base section of a three section box is used. The upper section shall be arranged to slide or screw down over the adjoining lower section and shall be provided with cast iron lids or covers marked "WATER".

907-265.02.4--Nipples. Nipples shall be the same as the pipe, except threaded nipples shall be Schedule 80.

907-265.02.5--Gaskets. Gaskets shall be full faced, 1/8-inch thick, fabricated from ethylene propylene rubber (EPR). When mating flange has raised face, flat ring gasket shall be used and filler gasket provided between outside diameter of raised face and flange outside diameter to protect PVC flange from bolting moment.

907-265.02.6--Joint Restraint. Pipe joint restraint shall be applicable only for pipe joints within specified distances from fittings -- See Schedule in Plans: Two glands shall be used similar in design and materials to the joint retainer glands previously specified, one immediately behind the joint bell and one on the pipe spigot, connected by two or more ductile iron rods spanning across the pipe joint. For ductile pipe, it is also permissible to use mechanical joint pipe with restrained retainer gland, or special "lock-ring" pipe joints.

907-265.02.7--Joint Retainer. Mechanical joint retainer glands shall be used for all connections of pipe to fittings and shall be made with a suitable restrained joint system, meeting any one of the following specifications:

For Ductile or PVC Pipe, the joint shall be a suitable ductile iron retainer gland, designed and recommended by the gland manufacturer, for the type of pipe used. Gland shall be manufactured entirely of 60-42-10 ductile iron conforming to ASTM A536. Glands shall attach to the pipe barrel through a plurality of individually activated gripping surfaces (wedges). It shall be EBAA Iron "Megalug" series or equal.

For PVC Pipe, the joint shall be a heavy ductile iron or fused epoxy coated structural steel (ASTM A36) clamp which employs serrations on its inside surface to firmly grip the outside of the PVC pipe barrel. Clamp shall be specifically designed and recommended for use with the

size and thickness class of pipe used. All hardware shall be ductile iron. It shall be Uni-flange Series 1300 or approved equal.

For Ductile Pipe only, the joint shall be a ductile iron mechanical joint retainer gland employing cupped-end threaded set screws which conform with the pipe manufacturer's guidelines as to number of set screws and torque to be applied to properly restrain the joint to a rating of not less than 250 psi

907-265.02.8--Directional Drilling. Directional drilling shall be as addressed in Special Provision 907-603 entitled "Direction Drilling".

907-265.02.9--Casing Pipe. Casing pipe shall be as addressed in Special Provision 907-603 entitled "Pipe Casing".

907-265.02.10--Buried Pipe Line Identification. Detectable underground utility marker tape shall be provided for burial with PVC pipe. It shall be a minimum of five (5) mils thick and three inches (3") in width. Minimum tensile strength shall be 35 pounds and tape shall elongate not less than 80 percent before breaking. Tape shall be permanently imprinted with an appropriate legend to identify the contents of the pipe (e.g. "Water Main Below".)

Detectable underground utility marker wire shall be provided for burial with PVC pipe. It shall be a minimum of 12 gauge wire.

Electronic Ball Markers shall be provided in a standard frequency and color coded (blue) to APWA standards for water systems. The markers shall be readable with proper instrumentation to a bury depth of five feet (5'). The markers shall be a 4- inch diameter sphere, weighing 0.77 pound and having a high-density, watertight polyethylene shell. Electronic ball markers shall be model no. 1423-XR/iD as manufactured by 3M, or an approved equivalent.

907-265.02.11--Automatic Flushing Assemblies. Automatic Flushing Assemblies shall be provided in lockable, corrosion resistant box, shall be provided with freeze protection apparatus and shall be Eclipse model no. 9600 as manufactured by Kupferle Foundry Company, St. Louis, MO, (314) 231-8738, or an approved equivalent. Automatic flushing assemblies shall be provided with a 6-inch PVC drain and P-trap connected to the sewer collection system.

907-265.02.12--Connection to Existing Water Mains. Tapping sleeves shall be fabricated from heavy Type 304 stainless steel, with a full circumferential seal to the run pipe provided by a rubber gasket resistant to water, salt solutions, mild acids, gases, and sewage. Multiple stainless steel bolts shall ensure uniform sealing. Outlet flange shall conform with ANSI 150 pound drilling, recessed for tapping valve per MSS-SP 60. A ¾-inch NPT test plug shall be provided. O.D. range of body shall match the actual measured O.D. of the pipe being tapped.

Tapping valves shall conform to the requirements for Gate Valves and Valve Boxes on Water Mains, except that the inlet shall be Class 125 Flange and the outlet, Mechanical Joint. The valve opening shall be oversized to permit a cutter head to pass which is ½ inch smaller than the nominal branch pipe size. Valves shall be furnished complete with cast iron sectional valve box,

as is specified above for Gate Valves. A retainer gland, as is specified above for Joint Retainer, is required for the connection of the new pipe to the tapping valve.

907-265.02.13--Fire Hydrant. All fire hydrants shall comply with AWWA Specifications C-502 and the following design specifications.

Fire hydrants shall be of the compression type closing with the line pressure. The valve opening shall be 5 1/4 inches. The friction loss though the hydrant shall not exceed 2.5 psi at 1,000 GPM flowing through the pumper nozzle.

The bonnet section of all hydrants shall be designed so the bearing surfaces and stem threads are sealed in a cone shaped lubricant reservoir and automatically lubricated each time the hydrant is operated.

The hydrant shoe shall have at least two drain outlets. Size of shoe shall be six inches (6") and of the mechanical joint type. A retainer gland as specified for water main pipe is required.

Hydrants shall be furnished with two 2½-inch hose nozzles and one 4½-inch pumper nozzle. The type and size of threads shall be National Standard. The distance from the ground line to the center line of the pumper nozzle shall be not less than 17 inches, nor more than 26 inches. The operating nut shall be pentagonal, 1½ inches from point to flat, and shall open in the counter-clockwise direction.

Hydrants shall be furnished with a breakable feature designed to break cleanly two inches (2") above the ground line upon contact. This feature shall consist of a two part breakable safety flange with a torque diverting breakable stem coupling. Flangible bolt construction will not be accepted.

The design of the hydrant shall permit easy installation of top extensions and a full 360 rotation of the upper barrel without shutting off the water.

Hydrants shall be M & H 129 or Mueller A-423 model.

Gravel shall be No. 57 crushed stone or washed gravel.

Paint shall conform to requirements of AWWA C-502, and shall be yellow.

Valve shall be installed with each fire hydrant and shall be a 6-inch gate valve located on the hydrant stub as detailed in Plans, complete with cast iron valve box. This valve and box shall conform to the specifications for gate valves and valve boxes on water mains, except that the end connections shall be flange x Mechanical Joint. The cost of these shall be included under this Item.

907-265.03--Construction Requirements.

907-265.03.1--General Excavation. Excavation shall include the clearing of the site of the work, the loosening, loading, removing, transporting and disposing of all materials, wet or dry, above or below ground necessary to be removed to construct all pipes included in this contract to the lines, grades and locations shown on the Plans. No burying or burning of trees, stumps, roots, or other debris will be allowed.

Where required, the Contractor shall remove with care all shrubbery, plants, flower planters, flower bed borders, set aside, watered, and kept alive and reset as before construction work. The Contractor shall furnish and install replacement plants which die as a result of construction operations.

In areas where water main will be installed in close proximity to trees designated to remain, the major root systems of the trees shall be protected from damage. Where necessary, contractor shall install water main by tunneling underneath the tree roots.

The Contractor shall, at his own expense, furnish and install all temporary sheeting, timbering and bracing required to maintain the excavation in a condition to furnish safe working conditions and to permit the safe and efficient installation of all items of contract work. The Contractor shall further, at his own expense, shore up or otherwise protect all fences, buildings, walls, walks, curbs, or other property adjacent to any excavation which might be disturbed during the progress of the work, except for such facilities which are within the allowable trench limits and are designated for removal and restoration.

Temporary supports must be removed by the Contractor at his own expense after or concurrently with the completion of the permanent facility.

The Contractor shall do all ditching, pumping, well pointing and bailing, build all drains, and do all other work necessary to keep the excavation clear of ground water, sewage or storm water during the progress of the work and until the finished work is safe from injury. Where the excavation is wet sand, and suitable construction conditions cannot be obtained by other methods, the Contractor shall install and operate, at his own expense, a pumping system connected with well points, so as to drain the same effectually. All well point holes shall be backfilled with sand after removal. No masonry or pipe shall be laid in water, and water shall not be allowed to rise over masonry until concrete or masonry has set at least 48 hours. All water pumped or drained from the work shall be disposed of in a manner that will not damage adjacent property or other work under construction. Necessary precautions shall be taken to protect all construction against flooding.

Whenever the excavation is carried beyond the lines and grades shown on the Plans, the Contractor shall, at his own expense, refill all such excavated space with backfill material as specified in the plans or as directed by the Engineer.

Unsuitable and surplus excavated material not incorporated in the work shall be disposed of by the Contractor at his own expense.

In the event that any existing gas pipe, water pipes, conduits, sewers, tile drains or poles are blocked or interfered with by the excavation required on this project, the Contractor shall maintain them in continuous operation, and restore them to the same condition as they were prior to the start of construction of this project. Gas pipes or electrical power distribution facilities which are disturbed in any way shall be inspected and repaired (if necessary) by the utility owner. (cost absorbed)

Any culvert pipe joint exposed by excavation shall be wrapped with an approved geotextile filter fabric, three feet in width, before backfilling, at no additional compensation.

907-265.03.2--Trench Excavation. The ground shall be excavated in open trenches, of sufficient width and depth to provide ample room within the limits of the excavation, or lines of sheeting and bracing, for the proper construction of the water main.

Mechanical excavation of trenches shall be stopped above the final invert grade elevation so that the pipe may be laid on a firm, undisturbed native earth bed.

The width of the trench at the top of the pipe shall not exceed the outside diameter of the pipe plus two feet (2'). The maximum allowable trench width at the ground surface shall not exceed the outside diameter of the pipe, plus twice the depth of cut. Restoration of disturbed facilities as a pay item will only be allowed within these limits.

The minimum depth of excavation shall be as required for a cover over the completed water main of not less than 30 inches. Where water pipes cross under existing drainage ways, provide not less than 24 inches cover under ditches or 12 inches clearance under storm drain pipes.

907-265.03.3--Bedding. When the native bedding material encountered in the trench bottom consists of a material deemed by the Engineer to be unsuitable for pipe bedding, the Contractor shall over excavate the trench to a depth as specified in the Plans and replace with bedding material. Should over excavation occur where a suitable native soil exists for bedding purposes, the Contractor shall fill the area of over-excavation with an acceptable bedding material, but at Contractor's expense.

Trenches shall be dry when the trench bottom is prepared. A continuous trough shall be pared or excavated to receive the bottom quadrant of the pipe barrel. In addition, bell holes shall be excavated so that after placement, only the barrel of the pipe receives bearing pressure from the trench bottom.

Preparation of the trench bottom and placement of the pipe shall be carefully made so that when in final position, the pipe is true to line and grade.

907-265.03.4--Laying Pipe. Pipe shall be protected during handling against impact shocks and free fall. Pipe shall be clean at all times, and no pipe shall be used in the work that does not conform to the appropriate specifications.

Pipe shall be laid accurately, to the line and grades with fittings and valves at the required locations as designated in the Plans. Preparatory to making pipe joints all surfaces of the portions of the pipe to be jointed or of the factory-made jointing material shall be clean and dry. Lubricants, primers, adhesives, etc., shall be used as recommended by the pipe or joint manufacturer's specifications. The jointing materials or factory fabricated joints shall then be placed, fitted, joined, and adjusted in such a workmanlike manner as to obtain the degree of water-tightness required.

If dirt enters the pipe, it shall be removed and the interior pipe surface swabbed with a 1 percent hypochlorite disinfecting solution.

Trenches shall be kept water-free and as dry as possible during bedding, laying, and jointing and for as long a period as required. As soon as possible after the joint is made, sufficient backfill material shall be placed along each side of the pipe to offset conditions that might tend to move the pipe off line and grade.

If pipe and fittings are not kept dry during installation, Contractor shall ensure that any water entering the pipe contains an available-chlorine concentration of approximately 25 mg/l by adding calcium hypochlorite granules or tablets to each length of pipe.

Wherever necessary to deflect pipe from a straight line, either in the horizontal or vertical plane, the degree of deflection shall not exceed maximum permissible deflections as recommended by pipe manufacturer.

Gate Valves shall be installed as detailed in the Plans and in strict accordance with manufacturer's recommendations. Valve Boxes shall be installed as detailed in the Plans and in strict accordance with manufacturer's recommendations. Installation of thrust blocks will be as detailed in the Plans.

907-265.03.5--Backfilling. All trenches and excavation shall be backfilled as soon as the work has developed sufficient strength to resist backfilling loads and forces and the work shall be prosecuted expeditiously after it has commenced.

No pipe shall be backfilled above the top of the pipe until the pipe elevations, alignment and the pipe joints have been checked, inspected and approved by the Engineer.

All pipes as soon as laid shall have the space between the pipe and the bottom and the sides of the trench backfilled to the spring line of the pipe with a select sandy material. This material shall be thoroughly compacted by hand or mechanical means.

Backfill shall then proceed with the placement of specified select backfill material in 6-inch layers to one foot above the top of the pipe. This backfill shall be compacted by mechanical compactor to not less than 90 percent Standard Proctor Density.

907-265.03.6--Compaction of Pipe Trenches. In areas where pipe trenches are not under or immediately adjacent to existing or proposed structures, roads, driving surfaces, or sidewalks, the material will be compacted to 90% Standard Proctor Density.

In areas where pipe trenches are under or immediately adjacent to existing or proposed structures, roads, driving surfaces, or sidewalks, the material will be compacted to 95% Standard Proctor Density.

The select sandy backfill referred to in paragraphs above shall be a sandy, cohesionless material, no more than 20 percent (by weight) of which shall pass the No. 200 sieve. The materials shall be well-graded to make it easily compactible. The moisture content when placed in the trench shall be reasonably close enough to optimum so as to not adversely affect proper compaction.

Where the native excavated soil does not meet the requirement for select sandy backfill, the Engineer may authorize the replacement for such unsuitable material with contractor-furnished select sandy backfill. All surplus or unsuitable material not used in backfilling shall be disposed of off-site by Contractor.

All PVC pipe installations require that electronic marker balls, metalized marker tape and approved tracer wire be buried in the backfill approximately 12 inches above the pipe. The detectible tracer wire and the metalized tape shall be attached to fittings, valves, hydrants, etc. to provide a location above ground to transmit the signal to the wire or tape without having to dig down to the pipe.

907-265.03.7--Fire Hydrant. Hydrants shall be installed as shown in the detailed Plans and in a manner that will provide complete accessibility and will prevent damage from vehicles. All hydrants shall be vertical and shall have their pumper connections at right angles to the curb line. Thrust block backings shall be constructed in strict accordance with manufacturer's recommendations.

Hydrants shall be tested in conjunction with entire system.

No. 57 crushed stone or washed gravel shall be placed at the base of the hydrant to provide drainage.

After installation and prior to final acceptance the fire hydrants shall be painted above the ground line in accordance with AWWA Standard C-502. Multiple coats may be required to achieve uniform appearance if the hydrants are supplied by the manufacturer in a different color than desired.

It is anticipated that some hydrants designed for bury depths greater than the standard 36 inches will be required, due to existing utility lines and/or roadside ditches. For this reason, provisions are made in the contract for different depths of fire hydrants. However, the Contractor is cautioned that the exact number of hydrants of each depth may vary from the contract quantity. To avoid possible complications due to the slow delivery of hydrants, the Contractor may choose to utilize manufactured hydrant barrel extensions for some or all of the long-barrel hydrants.

907-265.03.8--General Requirements. All connections between pipe and fittings shall be made with an approved restrained joint system. In addition, all pipe joints within a distance which is tabulated in the Plans from a fitting must also employ an approved restrained joint system. The assembly and installation of each restrained joint system shall be in strict accordance with the manufacturer's printed instructions and in the presence of a representative of the Engineer.

Concrete thrust blocks shall also be installed in addition to any type of joint restraint system. Concrete thrust blocks are to be installed according to the plan dimensions and details, placed between the fittings and undisturbed earth. Thrust blocks are also required at all bends of 11½ degrees or more, unless specifically waived by the Engineer because of unusual conditions at a specific fitting.

For all pipe sizes and types, install only full lengths of pipe adjacent to fittings, except in unusual circumstances.

Contractor must use care to prevent the entry of ground water or other contaminants into the water pipe, fittings, valves and appurtenances, either before, during, or after construction. Pipe delivered for construction shall be stored so as to minimize the entrance of foreign materials. All openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped.

Connections to existing distribution system shall be made in a manner approved by the Engineer and shall be scheduled during times with the least inconvenience to customers and shall be accomplished in a timely manner with a minimum interruption of service. Contractor will be required to provide a minimum of 48 hours advance notification to customers where service will be interrupted. Contractor shall also provide advance notification to the Owner's water department and fire department.

Where the project requires connection, removal, or any type of contact with existing asbestos cement pipe, Contractor shall comply with all local, state and federal requirements for cutting, handling and disposal of asbestos cement pipe.

Contractor must coordinate the use of domestic water with the Owner. The Owner will allow Contractor to utilize water from the distribution system for the filling of the new water mains and a reasonable amount of water for initial flushing, without compensation. If in the opinion of the Engineer and Owner, the Contractor did not take proper precautions in preventing debris and contaminants from entering the new system during construction or does not follow proper disinfection procedures as described in the latest revision of AWWA C651, the Owner reserves the right to assess charges to the Contractor for any excessive use of domestic water.

The new water mains shall be kept isolated from the active distribution system by physical separation until satisfactory bacteriological testing has been completed and the disinfected water flushed out. Water required to fill the new water mains for hydrostatic pressure testing, disinfection and flushing shall be supplied through a temporary connection between the distribution system and the water main and shall include an appropriate cross-connection control device.

Contractor shall be responsible for the proper handling and disposal of water discharged during flushing operations. All water discharged from the water system shall be disposed of in a manner that will not damage adjacent property, other work under construction, or adversely affect traffic or the general public. No water shall be discharged to the sanitary sewer collection system. Contractor shall advise and coordinate flushing of water mains with the Owner's water department and fire department and shall be performed in a manner that will not result in less than acceptable water pressure in the existing system. In case of fire or emergency, Contractor shall temporarily cease flushing operations.

907-265.03.9--Hydrostatic Testing. Pressure and leakage tests shall be completed in conformance with AWWA C-600, Section 4, latest revision, and in the presence of the Engineer or his representative.

Pressure Test: After the pipe has been laid, all newly laid pipe or any valved section thereof, including hydrants, shall be subjected to a hydrostatic pressure of at least 1½ times the working pressure at the point of testing.

Test pressures shall:

1. Not be less than 1.25 times the working pressure at the highest point along the test section;
2. Not exceed pipe or thrust-restraint design pressures;
3. Be of at least 2-hour duration;
4. Not vary by more than ±5 psi (0.35 Bar) for the duration of the test;
5. Not exceed twice the rated pressure of the valves or hydrants when the pressure boundary of the test section includes closed gate valves or hydrants; and
   NOTE: Valves shall not be operated in either direction at Differential pressure exceeding the rated pressure.
6. Not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed resilient seated gate valves or butterfly valves.

Pressurization. Each valved section of pipe shall be filled with water slowly 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 Owner. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. It is good practice to allow the system to stabilize at the test pressure before conducting the leakage test.

Air Removal. Before applying the specified test pressure, air shall be expelled completely from the pipe, valves and hydrants. If permanent air vents are not located at all high points, Contractor shall install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been evacuated, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place at the discretion of the Engineer.

Examination. Any exposed pipe, fittings, valves, hydrants and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves or hydrants that are discovered following the pressure test, shall be repaired or replaced with sound material, and the test shall be repeated until it is satisfactory to Engineer.

Leakage Test: The leakage test shall be conducted concurrently with the pressure test.

Leakage Defined. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi (0.35 Bar) of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

Allowable Leakage. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD * P}{133{,}200}$$

in which L is the allowable leakage, in gallons per hour; S is the length of pipe tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. This formula is based on an allowable leakage of 11.65 gpd, per mile, per inch nominal diameter, at a pressure of 150 psi.

When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal/hr/inch of nominal valve size shall be allowed.

When hydrants are in the test section, the test shall be made against the closed hydrant.

Acceptance of installation: Acceptance shall be determined on the basis of allowable leakage. If any test of laid pipe discloses leakage greater than that specified, Contractor shall, at his own expense, locate and make repairs as necessary until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

Disinfection: After completion of the construction and pressure testing of water distribution lines, they shall be flushed and disinfected using at least a 50 mg/l free chlorine solution for 24 hours or as described in the latest revision of AWWA C651, Standard for Disinfecting Water Mains, and in a manner acceptable to the Mississippi State Department of Health. Disposal of heavily chlorinated water may require the Contractor to obtain a permit from the Department of Environmental Quality/Office of Pollution Control.

After final flushing and before the new water mains are connected to the distribution system, the Contractor shall arrange for water samples to be collected and tested for bacteriological quality by a laboratory certified by the Mississippi State Department of Health. At least one set of samples shall be collected from every 1200 feet of looped lines and from every dead-end line.

No hose or fire hydrant shall be used in the collection of samples. The costs for all bacteriological sampling and testing shall be the responsibility of the Contractor.

Water being collected for testing shall not have a chlorine residual higher than is normally maintained in other parts of the distribution system. No chlorine shall be present which is a result of line disinfection. A sample showing "No Coliform Present" shall constitute a satisfactory sample when analyzed by Mississippi Department of Health Laboratory or a laboratory certified by the Mississippi State Department of Health. This sterilization and sampling procedure shall be repeated until two consecutive acceptable samples (taken at least 24 hours apart) are obtained from each sample point.

If trench water has entered the new mains during construction or, if in the opinion of the Engineer, excessive quantities of dirt or debris have entered the new mains, bacteriological samples shall be taken at intervals of approximately 200 feet. Samples shall be taken of water that has stood in the new mains for at least 16 hours after final flushing has been completed.

If the initial disinfection fails to produce satisfactory bacteriological results, the new mains shall be re-flushed and resampled. If check samples also fail to produce acceptable results, the mains shall be re-chlorinated by the continuous-feed or slug method of chlorination as described in the latest revision of AWWA C651 until satisfactory results are obtained.

The testing and disinfection operations shall be coordinated with local water utility. Chlorine tablets shall not be used. Chlorine granules, gas, or liquid are acceptable.

907-265.03.10--Separation Between Sewer and Water Lines. Water mains shall be laid at least 10 feet horizontally and 18 inches vertically from any existing or proposed sanitary sewer or manhole (including force mains). The distance shall be measured edge to edge. Water lines should always be installed above sewer lines and the bottom of the water line should be at least 18 inches from the top of the sewer line.

Special Conditions: Where local conditions prevent adequate horizontal and vertical separation, the appropriate reviewing agency may allow the water line to be laid closer to the sewer line if supported by adequate data from the design engineer. Each situation will be reviewed on a case by case basis. In this situation, all three of the following conditions must be met:

If the 10 foot horizontal separation between water and sewer lines cannot be maintained then the water line should be ductile iron with water joints located at the maximum distance possible from sewer line joints. PVC pipe may be used if it is protected by a steel casing. Also, the water and sewer lines must be in separate trenches with adequate space for maintenance. In some cases, special sewer line construction procedures may be required.

Where the 10-foot horizontal and 18-inch vertical separation cannot be maintained, condition in previous paragraph must be met and the sewer line shall be constructed according to water main standards.

Where water lines cross over sewer lines, the pipe segments should be centered to provide maximum spacing of joints of both water and sewer lines. A vertical separation of at least 18 inches should be maintained (water over sewer).

907-265.03.11--Connection to Existing Water Mains. The new segments of water mains be constructed and pressure tested prior to connecting them to existing pipes. Temporary plugs and water service-type connections will be required to allow this.

After the new pipe segments are complete and tested, connections will be made to the existing pipes. All abandoned pipes shall be capped.

Installation of tapping sleeves shall fully conform to manufacturer's recommendations. The pipe barrel to be tapped shall be fully and carefully cleaned. Connections to existing asbestos cement pipe shall be smoothed with a wire brush to ensure a tight seal of the gaskets against the pipe.

Before each sleeve is installed, the pipe barrel to be tapped shall be measured and the actual measured pipe O.D. shall be within the range recommended for the sleeve used.

The actual size of the hole cut in the pipe barrel shall be not more than 1/2 inch smaller than the nominal size of the branch connection (e.g., not less than 5½ inches for a 6-inch tap). The drilling machine and shell cutter head used shall be specifically recommended for the type of pipe being tapped.

After the tap is complete and the tapping valve closed, the sleeve shall be bled of air and then visually checked for leakage before backfilling.

Connections made to existing pipe shall be made as specified. Necessary adapter fittings, glands, or special gaskets shall be furnished as needed to properly connect to the type of existing pipe or fitting encountered.

The Owner will assist Contractor by locating existing valves necessary to turn off the water pressure for a short period necessary to make the connection. Contractor shall provide a minimum 24-hour notice to the Owner for any outages. The Contractor may be requested to schedule some connections for a specific time of day or night, to reduce inconvenience to customers.

907-265.03.12--Concrete: Concrete shall be Class B, as addressed in Special Provision 907-804.

907-265.03.13--Reinforcement: Bar Reinforcement shall be Grade 60 billet steel conforming to AASHTO Designation: M31.

907-265.04--Method of Measurement: Pipe of the size and type specified will be measured by the linear foot.

Ductile iron fittings will be measured by the pound.

Gate Valve, Flushing Valve, Automatic Flushing Valve, Connection to Existing Water Line & Fire Hydrant Assembly will be measured per each.

Initial Testing, of the type specified, will be measured per each. Only the initial test will be measured for payment in each specific section (isolation section). Any re-testing will not be measured for payment.

907-262.05--Basis of Payment. Pipe measured as prescribed above, will be paid for at the contract bid price per the linear foot, which price shall include the cost of all labor, materials, tools, and incidentals necessary to complete the work.

Ductile iron fittings, measured as prescribed above, will be paid for at the contract unit price per pound, which price shall be full compensation for furnishing all labor, materials, tools, and incidentals necessary to complete the work.

Gate Valve and Valve Box, Flushing Valve, Fire Hydrant Assembly, Connection to Existing Water Line, and other Valves, measured as prescribed above, will be paid for at the contract bid price per each, which price shall include the costs for all labor, materials, and all incidentals necessary to complete the work.

Testing, measured as prescribed above, will be paid for at the contract bid price per each, which price shall include the costs for all labor, materials, necessary repairs required by the failed testing and any additional testing required of an isolated section, and all incidentals necessary to complete the work.

Payment will be made under:

907-265-A:	___" _____ Pipe, Water	- per lineal foot
907-265-C:	Ductile Iron MJ Fittings	- per pound
907-265-D:	___" Gate Valve and Valve Box	- per each
907-265-F:	Fire Hydrant Assembly	- per each
907-265-H:	Initial Testing	- per each
907-265-I:	Initial Disinfection Testing	- per each
907-265-J:	Connection to Existing Water Line	- per each
907-265-L:	_____ Valve	- per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-304-13 **CODE: (SP)**

DATE: **06/06/2012**

SUBJECT: **Granular Courses**

Section 907-304, Granular Courses, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-304.02--Materials. After the first paragraph of Subsection 304.02.1 on page 183, add the following.

Crushed concrete meeting the requirements of Subsection 907-703.04.3 may be used in lieu of granular courses or crushed stone courses specified in the contract. This applies to base courses, shoulders, or other required construction on a prepared foundation.

907-304.03--Construction Requirements.

907-304.03.5--Shaping, Compacting and Finishing. Delete the sixth paragraph of Subsection 304.03.5 on page 185.

Delete the first table in Subsection 304.03.5 on page 186 and substitute the following.

Granular Material Class	Lot Average	Individual Test
7,8,9 or 10	97.0	93.0
5 or 6	99.0	95.0
3 or 4	100.0	96.0
1 or 2	102.0	98.0
Crushed Courses*	99.0	95.0

* When placed on filter fabric on untreated subgrade, the individual tests and the average of the five (5) tests shall equal or exceed the following values.

Lot Average	Individual Test
96.0	92.0

907-304.05--Basis of Payment. Add the "907" prefix to the pay items listed on page 187.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-401-2

DATE: **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 40ºF, regardless of compacted lift thickness.

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-403-4

DATE: **01/08/2013**

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

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

907-403.03--Construction Requirements.

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

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

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

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

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

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

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

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

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

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

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

Delete Subsection 403.03.5.5 on page 273 and substitute the following:

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

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

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

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

$$Tp = Tw$$

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

$$Tp = Tw((100-(((Gmm*A*B)-C)/(Gmm*A*B))*100))/100$$

Where:

Tp = Total tonnage for payment
Tw = Total tonnage weighed, used and accepted

Gmm = Maximum Specific Gravity of the approved composite asphalt mixture
A = 46.725 lbs/yd^2/in
B = 0.93 = 93% density
C = 110.374 lbs/yd^2/in = Theoretical density at 2.540 Gmm

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) Type, (2) Mixture - per ton

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-407-1 **CODE: (SP)**

DATE: 02/26/2008

SUBJECT: Tack Coat

Section 407, Tack Coat, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-407.02.1--Bituminous Material. Delete the second sentence of the first paragraph of Subsection 407.02.1 on page 281, and substitute the following:

When not specified, the materials shall be as specified in Table 410-A on page 293.

907-407.03.3--Application of Bituminous Material. Delete the first paragraph of Subsection 407.03.3 on page 281, and substitute the following.

Tack coat shall be applied with a distributor spray bar. A hand wand will only be allowed for applying tack coat on ramp pads, irregular shoulder areas, median crossovers, turnouts, or other irregular areas. Bituminous materials and application rates for tack coat shall be as specified in Table 410-A on page 293. Tack coat shall not be applied during wet or cold weather, after sunset, or to a wet surface. Emulsions shall be allowed to "break" prior to superimposed construction.

907-407.05--Basis of Payment. Delete the pay item at the end of Subsection 407.05 on page 282, and substitute the following:

907-407-A: Asphalt for Tack Coat * - per gallon

* Grade may be specified

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-501-5 **CODE: (SP)**

DATE: 09/14/2011

SUBJECT: Portland Cement Concrete Pavement

Section 907-501, Portland Cement Concrete Pavement, of the 2004 Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-501.03--Construction Requirements.

907-501.03.6.1--Concrete Saw. Delete the sentence in Subsection 501.03.6.1 on page 304, and substitute the following.

When sawing joints is elected or specified, the Contractor shall provide sawing equipment adequate in number of units and power to complete the sawing to the required dimensions using an "early entry" dry cut saw approved by the Engineer.

907-501.03.14--Test Specimens. Delete the second sentence of Subsection 501.03.14 on page 310, and substitute the following.

The specimens shall be made and cured as specified in Subsection 907-804.02.13.1.1 thru Subsection 907-804.02.13.1.5 at the frequency in TMD 20-04-00-000. Testing personnel shall meet the requirements in Subsection 907-804.02.9. Laboratory and test equipment shall meet the requirements in Subsection 907-804.02.8.

After Subsection 501.03.24.2 on page 325, add the following.

907-501.03.24.3--Pavement Cracking. Concrete pavement with full-depth cracks or misplaced joints shall be removed and replaced at no additional expense to the Department. Load transfer devices shall be established in these replaced panels in a manner sufficient to meet the designed load transfer requirements of the original pavement.

Any partial depth surface cracking or other surface distress shall be immediately repaired by the Contractor at no additional expense to the Department. The Contractor shall submit to the Engineer for concurrence, a plan describing the materials and methods to be used when making these repairs. Concurrence with the plan does not relieve the Contractor from providing a satisfactory repair at the time of final inspection of the project. Should the repair fail to produce satisfactory results prior to the final inspection of the project, the Contractor shall develop and submit a new plan for repairing the cracked or distressed areas.

907-501-05--Basis of Payment.

907-501-05.1--General. Delete pay item nos. 501-A, 501-B & 501-C on page 326, and substitute the following.

907-501-A: ___" Reinforced Cement Concrete Pavement, _____ Finish - per square yard

907-501-B: ___" Plain Cement Concrete Pavement, _____ Finish - per square yard

907-501-C: ___" Continuously Reinforced Cement Concrete Pavement, _____ Finish - per square yard

907-501-05.2--Price Adjustment for Thickness. Delete the table in Subsection 501.05.2 on page 327 and substitute the following:

Thickness Deficiency Inches	Proportional Part of Contract Price Allowed
0.0, 0.1, 0.2	100 percent
0.3	80 percent
0.4	72 percent
0.5	68 percent
0.6, 0.7, 0.8	57 percent
0.9, l.0	50 percent

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-603-14 **CODE: (SP)**

DATE: 02/12/2013

SUBJECT: Directional Drilling - Utilities

PROJECT: LWO-6032-24(006) / 502517301 -- Harrison County

Section 603, Culverts and Storm Drains, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as modified by this special provision is applicable to Directional Drilling of Utilities Only.

907-603.01--Description. This work consists of install directionally drilled pipe to the lines and grades at the location(s) shown on the Plans.

The Contractor shall submit a set of Contractor's Construction Drawings which indicated the method in which the Contractor proposes to construct, operate, build, etc., the referenced item. The submission of these drawings shall be required for the sole purpose of providing sufficient details to verify that the Contractor's work is in accordance with the intent of the design.

The Contractor shall be responsible for means and methods of directional drilling construction and shall ensure the safety of the work, the Contractor's employees, the public, and adjacent property, whether public or private.

When directional drilling is performed on State highways, the Contractor shall be responsible for complying with all requirements of the Mississippi Department of Transportation.

When directional drilling is performed on railroad right-of-way, the Contractor shall be responsible for complying with all requirements of the railroad company.

Permits and easements are available for review at the Engineer's office.

907-603.01.1--General Directional Drilling Requirements. Boring must use techniques of creating or directing a borehole along a predetermined path to a specified target location. This must involve use of mechanical and hydraulic deviation equipment to change the boring course and must use instrumentation to monitor the location and orientation of the boring head assembly along a predetermined course.

Drilling must be accomplished with fluid-assist mechanical cutting. Boring fluids shall be a mixture of bentonite and water or polymers and additives. Bentonite sealants and water will be used to lubricate and seal the mini-tunnel. It is mandatory that minimum pressures and flow rates be used during drilling operation as not to fracture the sub-grade material around and or above the bore.

The mobile drilling system shall utilize small diameter fluid jets to fracture and mechanical cutters to cut and excavate the soil as the head advances forward.

Steering shall be accomplished by the installation of an offset section of drill stem that causes the cutter head to turn eccentrically about its centerline when it is rotating. When steering adjustments are required, the cutter head offset section is rotated toward the desired direction of travel and the drill stem is advanced forward without rotation.

The mobile drilling system must be capable of being launched from the surface at an inclined angle and drilling a 2-inch to 3-inch diameter pilot hole. The pilot hole will then be enlarged with reamers as required.

907-603.01.2--Construction Site Requirements. Methods used for marking utilities shall minimize impact on other construction or maintenance activities, including mowing operations, which may be conducted throughout the project on a cyclic basis. Marking shall be limited to painting unless approved by the Engineer. When and where flagging of existing utilities is required, flagging shall be limited to an area for which construction can be accomplished in no more than 14 consecutive days, unless approved by the Engineer.

When and where installations temporarily eliminate the use of sidewalk areas for periods exceeding two consecutive work days, an alternate route that meets the American With Disabilities Act requirements shall be provided.

The Contractor shall carry out excavation for entry, exit, recovery pits, auger slurry sump pits, or any other excavation. Unless approved by the Engineer, sump pits shall be used to contain auger fluids if vacuum devices are not operated throughout the boring operation.

Within 48 hours of completing installation of the boring, the Contractor shall ensure that the work site is cleaned of all excess auger fluids or spoils. Removal and final disposition of excess fluids or spoils shall be the responsibility of the Contractor and the work site shall be restored to pre-construction conditions or as identified on the plans.

Excavated areas shall be restored in accordance with the specifications and Plans.

Equipment shall not impede the visibility of the roadway user without taking the necessary precautions of proper signing and maintenance of traffic operations.

All sites shall be investigated for the possibility of having to manage groundwater problems that may occur due to seasonal changes or natural conditions.

When ground water level must be controlled, a system and equipment shall be used that is compatible with the properties, characteristics, and behavior of the soils as indicated by the soil investigation report.

Any damage caused by the jacking and boring operation (heaving, settlement, separation of pavement, escaping boring fluid, etc.) shall be restored at no cost to the MDOT/Owner.

When required by the Engineer, detailed plans shall be provided that show how damage to any roadway facility will be remedied. These details shall become part of the As-Built Plans. When remediation plans are required, they shall be approved by the Engineer before any work proceeds.

907-603.01.3--Submittals. The following shall be submitted in sufficient detail to show full compliance with the specification.

Contractor shall submit Construction Drawings and/or written description of the proposed method of construction and the sequence of operation to be performed

The drawings and descriptions shall be sufficiently detailed to demonstrate to the Engineer whether the proposed materials and procedures will meet the requirements of this specification.

Contractor's Construction Drawings and/or written description shall be submitted on the following items.

Complete details shall be submitted of the equipment, methods and procedures to be used, including but not limited to primary lining installation, timing of installation in relation to the excavation plan and sequence, bulkheads, etc.

Method of installing detection wire shall be submitted.

Grouting techniques, including equipment, pumping procedures, pressure grout types, mixtures and plug systems shall be submitted.

Method of controlling line and grade of excavation shall be submitted.

Details of muck removal, including equipment type, number, and disposal location shall be submitted.

Proposed contingency plans for critical phases and areas of directional drilling shall be submitted.

Quality Control Methods: At least 10 days prior to the start of directional drilling, Contractor shall submit a description of his quality control methods he proposes to use in his operations to the Engineer. The submittal shall describe:

Procedures for controlling and checking line and grade shall be submitted.

Field forms for establishing and checking line and grade shall be submitted.

Safety: Procedures including, but not limited to, monitoring for gases encountered shall be submitted.

Engineer will base review of submitted details and data on the requirements of the completed work, safety of the work in regards to the public, potential for damage to public or private utilities and other existing structures and facilities, and the potential for unnecessary delay in the execution of the work.

Contractor shall not commence work on any items requiring Contractor's Construction Drawings or other submittals until the drawings and submittals are reviewed and accepted by the Engineer.

Directional Drilling Documentation Requirements:

A "Drilling Path Report" shall be furnished to the Engineer within 14 days of the completion of each bore path. Submit the As-Built-Plans to the Engineer within 30 calendar days. No payment will be made for directional drilling work until the Drilling Path Report has been delivered. Include the following information in the report:

Location of project and any assigned project number shall be submitted.

Name of person collecting data, including title, position and company name shall be submitted.

Investigation site location (Contract plans station number or reference to a permanent structure within the project right-of-way) shall be submitted.

Identification of the detection method used shall be submitted.

Elevations and offset dimensions shall be submitted.

As-Built Plans: The Engineer shall be provided with a complete set of As-Built-Plans showing all bores (successful and failed) within 30 calendar days of completion of the work. Plans shall be dimensionally correct copies of the Contract plans. Specific plans content include but may not be limited to the following.

The Contract plan view shall show the centerline location of each bore path, installed or installed and placed out of service, accurately to within one inch at the ends and other points physically observed.

Aa profile plan shall be provided for each bore path. It shall show the ground surface at each bore path, installed, or installed and placed out of service, accurately to within one inch at the ends and other points physically observed. It shall show the remainder of the vertical alignment of each casing installed, or installed and placed out of service and note the accuracy with which the installation was monitored. On profile plans for bore paths crossing, the contract plans shall show the stationing. On the profile plans for bore paths paralleling the roadway, the contract plans shall show the stationing. If the profile plan for the bore path is not made on a copy of one of the Project Drawing profile or cross-section sheets, a 10 to 1 vertical exaggeration shall be used.

If, during boring, an obstruction is encountered which prevents completion of the installation in accordance with the design location and specification, and the pipe line is left in place and taken out of service, the failed bore path along with the final bore path shall be shown on the plans. The failed bore path shall be shown as "Failed Bore Path - Taken Out of Service". Also, the name of the Utility owner, location and length of the drill head and any drill stems not removed from the bore path shall be shown.

The top elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation shall be shown. For all other obstructions encountered during a subsoil investigation or the installation, the type of material, horizontal and vertical location, top and lowest elevation observed, and note if the obstruction continues below the lowest point observed shall be shown.

907-603.01.4--Quality Assurance. A representative who is thoroughly knowledgeable of the equipment and boring procedures shall be present at the job site during the entire installation and available to address immediate concerns and emergency operations. The Engineer shall be advised 48 hours in advance of starting work. The installation shall not begin until the Engineer is present at the job site and agrees that proper preparations have been made.

907-603.01.5--Project / Site Conditions. Contractor shall comply with all local, state and federal laws, rules and regulations at all times to prevent pollution of the air, ground and water.

Adequate secondary containment shall be provided for any and all portable storage tanks.

Contractor shall certify to the Engineer in writing that any chemical to be added to the drilling fluid is environmentally safe and not harmful or corrosive to the environment.

Directional drilling operations shall be conducted by methods and with equipment, which will positively control dust, fumes, vapors, gases or other atmospheric impurities in accordance with applicable safety requirements.

907-603.02--Materials.

907-603.02.1--HDPE Pipe. Certified lab reports shall be provided from the pipe manufacturer to verify that the physical properties of the materials supplied meet these specifications.

Certification shall be provided that the personnel responsible for the pipe fusion operation are certified / qualified to perform the work. This certification must be provided a minimum 10 working days before start of pipe fusion work.

The pipe shall be fabricated from ultra-high molecular weight HDPE and shall have an ASTM D3350 Classification of Type III, Class C, Category 5, Grade P34.

The resin used to fabricate the pipe shall have a Plastic Pipe Institute (PPI) recommended hydrostatic stress rating of at least 800 psi at 73.4ºF and a PPI material designation of PE 3408. The material shall be of virgin quality, shall have a melt flow of less than 5.0 gms/10 minutes as

determined by ASTM D1238 and shall exceed 1000 hours on environmental stress crack resistance as per ASTM D1693.

The pipe shall be Polypipe as manufactured by Polypipe Industries, Gainesville, Texas; Driscopipe as manufactured by Performance Pipe, Plano, Texas; or an approved equal.

Fittings shall be molded or fabricated from high density polyethylene. Fittings shall be molded in accordance with ASTM D1248, Type III, Class C, Category 5, Grade P34. Fabricated fittings shall be prepared from polyethylene pipe with a manufacturer recommended HDS rating of at least 730 psi based on material with 1460 psi design in accordance with ASTM D2837.

All pipe joints and fittings shall be joined together by Thermal Butt Fusion. Polyethylene pipe lengths, fittings and fanged connection to be used shall be of the same type, grade and class of polyethylene compound and shall be supplied by the same raw material supplier.

Diameter and standard dimension ratio for each application is given on the Project Drawings

Casing Pipe shall meet the provisions in Special Provision 907-603 entitled “Pipe Casing”.

907-603.02.1.1--Fabrication. The inside and outside surface of all material shall be free from nicks, scratches, and other surface defects and blemishes. The pipe shall be homogeneous throughout, free of any bubbles, voids, or inclusions. The jointing areas of each length of pipe shall be free from dents and gouges.

907-603.02.1.2--Source Quality Control. HDPE pipe shall have a minimum burst pressure at 73.4° F (ASTM D1599) determined according to the following equation:

$$t = \frac{PD}{2S+P}$$

Where t = minimum thickness, in inches
P = burst pressure, in psi
D = outside diameter, in inches
S = hoop stress, in psi (1600)

The pipe shall not fail, balloon, burst or weep as defined in ASTM D1598 when tested in accordance with Section 6(g) of ASTM D2239 and under the following conditions:

Temperature (ºF)	Time (Hours)	Hoop Stress (psi)
73.4	1000	1500
150	1000	800
190	300	500

907-603.02.2--Drilling Fluid. The Contractor shall use a mixture of bentonite clay or other approved stabilizing agent mixed with potable water with a minimum pH of 6.0 to create the drilling fluid for lubrication and soil stabilization.

The fluid viscosity shall be varied to best fit the soil conditions encountered.

Any other chemicals or polymer surfactants shall not be used in the drilling fluid without written consent from the Engineer.

The source of water for mixing the drilling fluid shall be identified.

Approvals and permits are required for obtaining water from such sources as streams, rivers, ponds or fire hydrants.

Any water source used other than a potable water may require a pH test.

907-603.02.3--Flowable Fill. Flowable fill shall meet the requirements of Section 623 of the Standard Specifications.

907-603.02.4--Detection Wire. Detection wire shall be TW, THW, THWN or HMWPE, insulated copper, 10 gauge or thicker wire.

907-603.02.5--Equipment. Diesel, electric, or air-powered equipment will be acceptable, subject to applicable federal and state regulations.

The Contractor shall employ equipment matched to the size of the pipe being installed. The following table gives general guidelines.

System Description	Pipe Diameter, inches	Bore Length feet	Torque, foot-pounds	Trust / Pullback pounds
Mini directional drill equipment	Up to 6	Up to 600	Up to 1,899	Up to 20,000
Medium directional drilling equipment	Up to 16	Up to 1000	1,900 to 9,999	20,001 to 69,999
Maximum directional drilling equipment	18 & >	1000 +	10,000 +	70,000 +

Drill rod shall meet the bend radius required for the proposed installation.

The Contractor shall employ equipment that will be capable of handling the various anticipated ground conditions. In addition, the equipment shall:

The Contractor shall be capable of minimizing loss of ground ahead of and around the machine and providing satisfactory support of the excavated face at all times.

The Contractor shall provide a system to indicate whether the amount of earth material removed is equivalent to that displaced by the advance of the machine such that the advance rate may be controlled accordingly.

Drilling equipment shall have an alarm system capable of detecting electrical current as it approaches electric lines.

907-603.03--Construction Requirements.

907-603.03.1--Control Of Tunnel Line And Grade. The Contractor shall establish and be fully responsible for the accuracy of control for the tunnel line and grade.

The Contractor shall establish control points sufficiently far from the tunnel operation not to be affected by construction operations.

The Contractor shall maintain daily records of alignment and grade and shall submit three copies of these records to the Engineer. However, the Contractor shall be fully responsible for the accuracy of the work and the correction of it, as required.

907-603.03.2--Bore Hole Diameter. The Contractor shall minimize potential damage from soil displacement / settlement by limiting the ratio of the bore hole diameter to the pipe diameter.

The size of the back reamer bit or pilot bit, if no back reaming is required, shall be limited relative to the pipe diameter to be installed as follows

Maximum Pilot or Back-Reamer Bit Diameter When Rotated 360 Degrees

Nominal Inside Pipe Diameter Inches	Bit Diameter Inches
2	4
3	6
4	8
6	10
8	12
10	14
12 and greater	Maximum Product OD plus 6

907-603.03.3--Failed Bore Path. If conditions warrant removal of any materials installed in a failed bore path, as determined by the Engineer, it shall be at no cost to the MDOT/Owner.

The Contractor shall promptly fill all voids by injecting all taken out of service products that have any annular space with flowable fill.

Dewatering required during the course of the project to lower water table, to remove standing water, surface drainage seepage, or to protect ongoing work against rising waters or floods shall be considered incidental to the work being performed.

907-603.04--Method of Measurement. Directional drilling of the size and type specified will be measured by the linear foot of actual installation, measured in place along the surface of the

ground. No additions or deductions will be made, for sweeps in either the vertical or horizontal direction to complete the installation. No payment shall be made on abandoned bore.

907-603.05--Basis of Payment. Directional drilling, measured as prescribed above, will be paid for at the contract unit price per linear foot, which price shall include all cost of labor, materials and incidentals necessary to complete the work.

Payment will be made under:

907-603-DD: Directional Bore, ___" HDPE Pipe, SDR 11 - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-603-15 **CODE: (SP)**

DATE: 02/12/2013

SUBJECT: Pipe Casing - Utilities

PROJECT: LWO-6032-24(006) / 502517301 -- Harrison County

Section 603, Culverts and Storm Drains, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as modified by this special provision is applicable to Pipe Casing of Utilities Only.

907-603.01--Description. This work consists of install pipe casing to the lines and grades at the location(s) shown on the Plans.

907-603.02--Materials. Unless specifically shown otherwise on Plans, casing pipe shall be straight, unpainted, 40S, carbon steel pipe meeting the requirements of ASTM Designation: A139, Grade B.

907-603.03--Construction Requirements.

907-603.03.1--General. The Contractor shall ensure that methods used for marking utilities minimizes impact on other construction or maintenance activities, including mowing operations, which may be conducted throughout the project on a cyclic basis. The Contractor shall limit marking to painting unless approved by the Engineer. When and where flagging of existing utilities is required, the Contractor shall limit flagging to an area for which construction can be accomplished in no more than 14 consecutive days, unless approved by the Engineer.

When and where installations temporarily eliminate the use of sidewalk areas for periods exceeding two consecutive work days, an alternate route that meets the American With Disabilities Act requirements shall be provided.

The Contractor shall carry out excavation for entry, exit, recovery pits, auger slurry sump pits, or any other excavation. Unless approved by the Engineer, sump pits will be required to contain auger fluids if vacuum devices are not operated throughout the boring operation.

Within 48 hours of completing installation of the boring, the Contractor shall ensure that the work site is cleaned of all excess auger fluids or spoils. Removal and final disposition of excess fluids or spoils shall be the responsibility of the Contractor and the Contractor shall ensure that the work site is restored to pre-construction conditions or as identified on the plans.

Excavated areas shall be restored in accordance with the specifications and Plans.

The Contractor shall ensure that equipment does not impede visibility of the roadway user

without taking the necessary precautions of proper signing and maintenance of traffic operations.

All sites shall be investigated for possibility of having to manage groundwater problems that may occur due to seasonal changes or natural conditions.

When ground water level must be controlled, a system and equipment shall be used that is compatible with the properties, characteristics, and behavior of the soils as indicated by the soil investigation report.

Damage Restoration: Any damage caused by the Jacking and Boring (J&B) operation (heaving, settlement, separation of pavement, escaping boring fluid, etc.) shall be restored at no cost to the MDOT/Owner.

Remediation Plans: When required by the Engineer, the Contractor shall provide detailed plans which show how damage to any roadway facility will be remedied. These details will become part of the As-Built Plans. When remediation plans are required, they shall be approved by the Engineer before any work proceeds.

The plans shall include where the leading edge of the casing is located with respect to line and grade and the intervals for checking line and grade. Indication may be provided by using a water gauge or electronic transmitting and receiving devices. Other methods shall have prior approval. The Contractor shall maintain a record of the progress at the job site.

The plans shall include equipment of adequate size and capability to install the product and including the equipment manufacturer's information for all power equipment used in the installation.

The plans shall include a means for controlling line and grade.

The plans shall include a means for centering the cutting head inside the borehole.

The plans shall include provide a means for preventing voids by assuring:

The rear of the cutting head shall not advance in front of the leading edge of the casing by more than 1/3 times the casing diameter and in stable cohesive conditions not to exceed eight inches.

In unstable conditions, such as granular soil, loose or flowable materials, the cutting head shall retract into the casing a distance that permits a balance between pushing pressure, pipe advancement and soil conditions.

The plans shall include the development of and maintaining of a log of the volume of spoil material removal relative to the advancement of the casing.

The plans shall include provide adequate casing lubrication.

The plans shall include an adequate band around the leading edge of the casing to provide extra

strength in loose unstable materials when the cutting head has been retracted into the casing to reduce skin friction as well as provides a method for the slurry lubricant to coat the outside of the casing.

The plans shall include at least 20 feet of full diameter auger at the leading end of the casing. Subsequent auger size shall be reduced, but the reduced auger diameter must be at least 75 percent of the full auger diameter.

The plans shall include water to be injected inside the casing to facilitate spoil removal. The point of injection shall be no closer than two feet from the leading edge of the casing.

J&B Documentation Requirements:

Boring Path Report: The documents shall provide for a Bore Path Report to the Engineer within 14 days of the completion of each bore path. The Contractor shall submit the As-Built-Plans to the Engineer within 30 calendar days. No payment shall be made for J&B work until the Bore Path Report has been delivered. The Report shall include the following information in the report:

- Location of project and any assigned project number.
- Name of person collecting data, including title, position and company name.
- Investigation site location (Contract plans station number or reference to a permanent structure within the project right-of-way).
- Identification of the detection method used.
- Spoils removal log.
- As-built placement plans showing plan and profile, cross-section, boring location and subsurface conditions. Reference the shown plan elevations to Project grid system. Submittal of electronic plans data in lieu of hard copy plans may be approved by the Engineer if compatible with the Engineers software.

As-Built Plans: The Contractor shall provide the Engineer with a complete set of As-Built-Plans showing all bores (successful and failed) within 30 calendar days of completion of the work. Plans must be dimensionally correct copies of the Contract plans. The plans shall include notes on the plans stating the final bore path diameter, casing diameter, size and type of carrier pipes placed within the casing, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and casing or bore path placed out of service. The plans shall address as follows.

On the Contract plan view, the plan shall show the centerline location of each bore path, installed or installed and placed out of service, accurately to within one inch at the ends and other points physically observed.

The plans shall provide a profile plan for each bore path. The plans shall show the ground surface at each bore path, installed, or installed and placed out of service, accurately to within one inch at the ends and other points physically observed. The plans shall show the remainder of the vertical alignment of each casing installed, or installed and placed out of service and note the accuracy with which the installation was monitored. On profile plans for bore paths crossing, the plans shall show the contract plans stationing. On the profile plans for bore paths paralleling the roadway, the plans shall show the contract plans stationing. If the profile plan for the bore path is not made on a copy of one of the Project Drawing profile or cross-section sheets, a 10 to 1 vertical exaggeration shall be used.

If a bore path is not completed, the plans shall show the failed bore path along with the final bore path. The failed bore path shall be noted as "Failed Bore Path." Also, the location and length of the cutting head and any product not removed from the bore path shall be shown.

The plans shall show the diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during subsoil investigation or the installation, the plans shall show the type of material, horizontal and vertical location, top elevation and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

907-603.03.2--Quality Assurance. The Contractor shall have a representative who is thoroughly knowledgeable of the equipment and boring procedures present at the job site during the entire installation and available to address immediate concerns and emergency operations. The Engineer shall be notified 48 hours in advance of starting work. The installation shall not begin until the Engineer is present at the job site and agrees that proper preparations have been made.

907-603.03.3--Project Site Conditions.

Temporary Service: The Contractor shall be responsible for providing water to the site if required. The Contractor shall also be responsible for providing sewer facilities (chemical toilets).

The Contractor will provide for temporary power at the site.

The casing pipe must be straight seam pipe or seamless pipe.

All steel pipe may be bare inside and out, with the manufacturer's recommended minimum nominal wall thicknesses to meet the greater of either installation, loading or carrier requirements.

The Contractor shall ensure that steel pipe casing of insufficient length achieves the required length through fully welded joints. The Contractor shall ensure that joints are air-tight and continuous over the entire circumference of the pipe with a bead equal to or exceeding the minimum of either that required to meet the thickness criteria of the pipe wall for jacking and

loading or service life. A qualified welder must perform all welding.

Carrier Pipe Spacers: Wood shall be Southern pine S4S medium grade or better, minimum 24 inches long, conforming to AASHTO M168. Skids shall be treated in accordance with AWPA C2. Ends of strapping shall be notched to allow placement of strapping.

Strapping shall be ½-inch wide by 0.02-inch thick, 304 stainless steel.

Other types shall be any design that is essentially corrosion proof and provides insulating protection from possible electrical shorting between casing pipe and carrier pipe.

Runner length shall be a minimum of two inches

Spacing between spacers shall be in accordance with the pipe manufactures recommendations. As a minimum place spacer within one foot of each side of joint and but not to exceed eight feet on centers

Casing Pipe Seals: End seals shall be manufactured from styrene-butadiene rubber, 3/8-inch thick to resist damage from backfill and compaction with ½-inch stainless steel banding and non-magnetic work gear mechanism. Specification based on Advanced Products System Inc. but approved equals will be accepted.

Drilling Fluid: Drilling fluid shall be water and polymer surfactant with approximately 61 percent diesel fuel, 15 percent sodium carboxyl methyl cellulose, 21.5 percent water and 2.5 percent anionic surfactant.

907-603.03.4--Installation. Casing pipe shall be installed by either the dry bore method or by drilling fluid bore method.

Dry Bore Method: The drilling hole shall not be larger than one inch (1") greater than the outside circumference of the casing.

Water bearing sand and mucky soils will be well pointed as necessary prior to commencing the bore.

All bores will be accomplished with the auger inside the casing with the cutting edges positioned just ahead of the pipe.

Care should be exercised at all times to keep the auger properly positioned within the encasement pipe and to maintain sufficient forward pressure upon the encasement pipe to quickly pass through any areas of loose soil.

Boring will be carefully observed for comparison between the amount of cuttings removed from the hole and the diameter of the bore together with the distance the auger has traveled in the bore. Excessive amounts of cuttings removed from the bore may indicate caving or spalling of the bore wall and the bore shall be stopped until a method for completing the bore acceptable to the Engineer

has been agreed upon.

Drilling Fluid Bore Method: Drilling fluid bore method shall be one of the following two methods:

Method Number 1: The casing shall be installed by drilling a hole of a size not larger than 1-inch around the outside circumference of the casing with an open type bit that leaves the cuttings in place. A gel-forming colloidal drilling fluid consisting of at least 10 percent by weight of aqua-gel, or the equivalent of other gel-forming types, shall be used when boring in sandy subsoils, fine sands, water bearing sands or any soils which easily spall or cave and a gel-forming colloidal drilling fluid consisting of at least five percent (5%) by weight of aqua-fel, or the equivalent of other gel-forming types, shall be used when boring in dense consolidated soils, to consolidate the cuttings, seal the wall of the bore and furnish lubrication for subsequent removal of the cuttings and installation of the casing immediately thereafter. The percentage of gel-forming agent will be increased as required by soil conditions. All information necessary to establish the quality or equivalency of other gel-forming types will be furnished by the Contractor. When boring sandy subsoils, fine sands, water bearing sand or any soil which easily spalls or caves, the bore entrance will be plugged in order to retain the drilling fluid and the cuttings within the bore until immediately before the casing is installed. Water bearing sands and mucky soils will be well pointed as necessary prior to commencing the bore. When drilling through dense consolidated soils the cuttings may be partially removed from the hole in approximately 3-foot plugs by use of compressed air or by retraction of the cutter or reamer. No cutter or reamer larger than 3-inches in diameter shall have holes therein larger than 5/16 inch in diameter through which drilling fluid is forced during boring.

Method Number 2: The casing shall be installed by drilling a hole of a size not larger than 1-inch around the outside circumference of the casing with an open type bit that leaves the cutting in place. Drilling fluid composed of water and polymer-surfactant of approximately 61 percent diesel fluid, 15 percent sodium carboxyl methyl cellulose of same quality as drispac, 21.5 percent water and 2.5 percent anionic surfactant will be used to consolidate the cuttings, seal the wall of the bore and furnish lubrication for subsequent removal of the cuttings and installation of the casing immediately thereafter. When boring sandy subsoils, fine sands, water bearing sand or any soil which easily spalls or caves, the bore entrance will be plugged in order to retain the drilling fluid and the cuttings within the bore until immediately before the casing is installed. Water bearing sands and soils will be well pointed as necessary prior to commencing the bore. When drilling through dense consolidated soils the cuttings may be partially removed from the hole in approximately three foot plugs by use of compressed air. The polymer-surfactant mixture or drilling fluid when used in dense consolidated soils will consist of not less than 2 percent of polymer-surfactant by volume and when used in sandy subsoils, fine sands or any soil which easily caves will consist of at least 4 percent of polymer-surfactant by volume. The percentage of polymer-surfactant will be increased as required by soil conditions. All information necessary to establish the quality or equivalency of any ingredient will be furnished by the Contractor.

When pulling HDPE and PE carrier pipe in casing pipe, either a pulling head or a suitable wraparound sleeve with rubber protective coating shall be used to prevent the pulling cables from damaging the pipe. Never pull HDPE or PE pipe by the flange end. Lubricants (flax soap or drilling mud) shall be used between casing spacers and casing to ease installation.

When pulling PVC Casing Pipe in casing pipe in casing pipe, a bell joint restraint shall be required at any bell connection within the encasement. PVC pipe may be installed in the casing using a winch drawn cable or jacking. In both methods, care must be exercised to avoid damage to pipe or bell joints. Lubricants (flax soap or drilling mud) between skids or casing spacers and casing shall be used to ease installation.

Petroleum products shall not be used as prolong exposure to this type of material could damage the carrier pipe gaskets.

After completion of installation and line testing, the casing ends shall be sealed as shown on Plans.

All cased crossings shall be marked with signs in accordance with the details shown on the drawings.

Failed Bore Path: If conditions warrant removal of any materials installed in a failed bore path, as determined by the Engineer, it shall be at no cost to the MDOT/Owner. All voids shall be promptly filled by injecting all taken out of service products that have any annular space with flowable fill.

Removal of Abandoned Carrier Pipe: Contractor shall remove the existing water and gas carrier pipe from the existing pipe casing and fill by injecting flowable fill.

907-603.04--Method of Measurement. Steel Pipe of the size and type specified will be measured by the linear foot.

907-603.05--Basis of Payment. Steel pipe, measured as prescribed above, will be paid for at the contract unit price per linear foot, which price thus paid shall be full compensation for completing the work.

Payment will be made under:

907-603-A: ___" Steel Pipe, Jacked or Bored * - per linear foot

* Optional Description

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-699-4 **CODE: (IS)**

DATE: 02/15/2012

SUBJECT: Construction Stakes

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

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

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

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

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

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

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

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

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

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

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

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

907-699.03.1--Automated Machine Guidance.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-701-4 **CODE: (IS)**

DATE: 11/09/2010

SUBJECT: Hydraulic Cement

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

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

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

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

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

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

The temperature of bulk hydraulic cement shall not be greater than l65°F at the time of incorporation in the mix.

Acceptance of hydraulic cement will be based on the certification program as described in the Department's Materials Division Inspection, Testing, and Certification Manual and job control sampling and testing as established by Department SOP.

Retests of hydraulic cement may be made for soundness and expansion within 28 days of test failure and, if the hydraulic cement passes, it may be accepted. Hydraulic cement shall not be rejected due to failure to meet the fineness requirements if upon retests after drying at 212°F for one hour, it meets such requirements.

Delete Subsection 701.02 on page 596, and substitute the following:

907-701.02--Portland Cement.

907-701.02.1--General.

907-701.02.1.1--Types of Portland Cement. Portland cement (cement) shall be either Type I or Type II conforming to AASHTO Designation: M85 or Type I(MS), as defined by the description below Table 1. Type III cement conforming to AASHTO Designation: M85 or Type III(MS), as defined by the description below Table 1, may be used for the production of precast or precast-prestressed concrete members.

907-701.02.1.2--Alkali Content. All cement types in this Subsection shall meet the Equivalent alkali content requirement for low-alkali cements listed in AASHTO Designation: M85, Table 2.

907-701.02.2--Replacement by Other Cementitious Materials. The maximum replacement of cement by weight is 25% for fly ash or 50% for ground granulated blast furnace slag (GGBFS). The minimum tolerance for replacement shall be 5% below the maximum replacement content. Replacement contents below this minimum tolerance by fly ash or GGBFS may be used, but shall not be given any special considerations, like the maximum acceptance temperature for Portland cement concrete containing pozzolans. Special considerations shall only apply for replacement of cement by fly ash or GGBFS.

907-701.02.2.1--Portland Cement Concrete Exposed to Soluble Sulfate Conditions or Seawater. When Portland cement concrete is exposed to moderate or severe soluble sulfate conditions, or to seawater, cement types and replacement of cement by Class F fly ash, GGBFS, or silica fume shall be as follows in Table 1.

Table 1- Cementitious Materials for Soluble Sulfate Conditions

Sulfate Exposure	Water-soluble sulfate (SO_4) in soil, % by mass	Sulfate (SO_4)in water, ppm	Cementitious material required*
Moderate and Seawater	0.10 - 0.20	150 - 1,500	Type II **, ***, **** cement, or Type I cement with one of the following replacements of cement by weight: 25% Class F fly ash, 50% GGBFS, or 8% silica fume
Severe	0.20 - 2.00	1,500 - 10,000	Type I cement with a replacement by weight of 50% GGBFS, or Type II ** cement with one of the following replacements of cement by weight: 25% Class F fly ash, 50% GGBFS, or 8% silica fume

* The values listed in this table for replacement of Portland cement by the cementitious materials listed are maximums and shall not be exceeded. The minimum tolerance for replacement shall be 0.5% below the maximum replacement content. Replacement contents below this minimum tolerance by the cementitious materials listed in this table do not meet the requirements for the exposure conditions listed and shall not be allowed.

** Type I cement conforming to AASHTO Designation: M85 with a maximum 8% tricalcium aluminate (C_3A) may be used in lieu of Type II cement; this cement is given the designation "Type I(MS)". Type III cement conforming to AASHTO Designation: M85 with a maximum 8% tricalcium aluminate (C_3A) may be used in lieu of Type II cement as allowed in Subsection 907-701.02.1; this cement is given the designation "Type III(MS)".

*** Blended cement meeting the sulfate resistance requirements of Subsection 907-701.04 may be used in lieu of Type II as allowed in Subsection 907-701.04. No additional cementitious materials shall be added to or as a replacement for blended cement.

**** Class F fly ash or GGBFS may be added as a replacement for cement as allowed in Subsection 907-701.02.2.

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

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

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

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

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

907-701.04--Blended Hydraulic Cement.

907-701.04.1--General.

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-702-3 **CODE: (SP)**

DATE: 05/08/2012

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-703-10

DATE: 1/08/2013

SUBJECT: Aggregates

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-703-10 **CODE: (SP)**

DATE: 06/06/2012

SUBJECT: Aggregates

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

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

907-703.04--Aggregate for Crushed Stone Courses.

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

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

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

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

Delete the third paragraph of Subsection 703.04.2 on page 612.

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

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

907-703.06--Aggregates for Hot Mix Asphalt.

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

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

PERCENT PASSING BY WEIGHT

Square Mesh Sieves	Shell	Coarse			Medium	Fine
		Size I	Size II Note (1)	Size III Note (3)		
3 inch				100		
2 1/2 inch	90-100			90-100		
2 inch		100				
1 1/2 inch		90-100	100	25-60		
1 inch		80-100	97-100			
3/4 inch		55-100	55-100	0-10		
1/2 inch		35-85	35-85	0-5	100	
3/8 inch		12-65	12-65		97-100	
No. 4, Note (2)		0-30	0-30		92-100	
No. 10		0-8	0-8		80-100	100
No. 40					10-40	80-100
No. 60					0-20	30-100
No. 100						15-80
No. 200	0-5	0-4	0-4		0-5	0-30
PI Material Passing No. 40					6 or less	0

Note (1): Size II is intended for use in bases in which portland cement is used.
Note (2): Ground shell shall contain at least 97% passing the No. 4 sieve.
Note (3): Size III is intended for use in stabilized construction entrances.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-708-5

DATE: 04/11/2012

SUBJECT: Non-Metal Drainage Structures

After Subsection 907-708.02.1.2 on page 1, add the following.

907-708.02.1.4--Coarse Aggregate. Delete the last sentence of Subsection 708.02.1.4 on page 639.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-708-5 **CODE: (IS)**

DATE: 05/12/2008

SUBJECT: Non-Metal Drainage Structures

Section 708, Non-Metal Structures and Cattlepasses, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-708.02.1.2--Fly Ash. In the first sentence of Subsection 708.02.1.2 on page 639, change "20 percent" to "25%".

907-708.02.3.2--Marking. Delete the second sentence of Subsection 708.02.3.2 on page 640, and substitute the following:

Machine made pipe shall be marked in accordance with one of the following methods: 1) the pipe shall be inscribed on the outside of the pipe and stenciled on the inside of the pipe, or 2) the pipe shall be inscribed on the inside of the pipe, only. All other pipe may be stenciled.

907-708.17--Corrugated Plastic Pipe Culverts.

907-708.17.1--Corrugated Polyethylene Pipe Culverts. Delete the first sentence of the first paragraph of Subsection 708.17.1 on page 645 and substitute the following.

Corrugated polyethylene pipe shall conform to the requirements of AASHTO Designation: M 294, Type S and/or SP, as applicable, and shall have soil tight joints, unless otherwise specified.

Delete the last sentence of the second paragraph of Subsection 708.17.1 on page 645.

After Subsection 708.17.1 on page 645, add the following:

907-708.17.1.1--Inspection and Final Acceptance of Corrugated Polyethylene Pipe Culverts. Approximately 50% of the installed length of corrugated polyethylene pipe shall be inspected for excess deflection no sooner than 30 days after the embankment material over the pipe is placed to the required subgrade elevation or the maximum required fill height. The inspection shall be performed using either electronic deflectometers, calibrated television or video cameras, or a "go, no-go" mandrel that has an effective diameter of 95% of the nominal inside diameter of the pipe.

Pipe found to have deflection values greater than 5% shall be removed and replaced at no cost to the State.

907-708.17.2--Corrugated Poly (Vinyl Chloride) (PVC) Pipe Culverts. Delete the first sentence of the first paragraph of Subsection 708.17.2 on page 645 and substitute the following.

Corrugated poly (vinyl chloride) (PVC) pipe shall conform to the requirements of AASHTO Designation: M 304 and shall have soil tight joints, unless otherwise specified. Non-perforated PVC pipe used in underdrains shall either be manufactured with an ultra-violet light inhibitor or be fully coated with an ultra-violet light inhibitor.

After Subsection 708.17.2 on page 645, add the following:

907-708.17.2.1--Inspection and Final Acceptance of Poly (Vinyl Chloride) (PVC) Pipe Culverts. Approximately 50% of the installed length of PVC pipe shall be inspected for excess deflection no sooner than 30 days after the embankment material over the pipe is placed to the required subgrade elevation or the maximum required fill height. The inspection shall be performed using either electronic deflectometers, calibrated television or video cameras, or a "go, no-go" mandrel that has an effective diameter of 95% of the nominal inside diameter of the pipe.

Pipe found to have deflection values greater than 5% shall be removed and replaced at no cost to the State.

907-708.18--Sewer Pipe Used for Underdrains.

907-708.18.1--General. After the second paragraph of Subsection 708.18.1 on page 645 add the following:

In lieu of the pipe listed in this subsection, pipe meeting the requirements of Subsection 708.19 may also be used for plastic underdrain pipe.

907-708.18.3--Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe. After the first sentence of Subsection 708.18.3 on page 645, add the following.

Non-perforated PVC pipe shall either be manufactured with an ultra-violet light inhibitor or be fully coated with an ultra-violet light inhibitor.

907-708.18.4--Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe. Delete the paragraph in Subsection 708.18.4 on page 645 and substitute the following.

This pipe shall conform to the following requirements. For pipe sizes less than or equal to six inches (≤ 6"), the pipe shall be Class PS46 meeting the requirements of AASHTO Designation: M 278. For pipe sizes greater than six inches (> 6"), the pipe shall meet the requirements of AASHTO Designation: M 304. Non-perforated PVC pipe shall either be manufactured with an ultra-violet light inhibitor or be fully coated with an ultra-violet light inhibitor.

Delete Subsection 708.19 on page 645 and substitute the following:

907-708.19--Corrugated Polyethylene Pipe. This pipe shall be high density polyethylene pipe or drainage tubing meet the requirements of AASHTO Designation: M 294, Type S or SP, or

AASHTO Designation: M 252, Type S or Type SP, as applicable.

907-708.22.2--Exceptions to AASHTO. Delete the sixth paragraph of Subsection 708.22.2 on page 647.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-709-1 **CODE: (IS)**

DATE: 05/05/2008

SUBJECT: Metal Pipe

Section 709, Metal Pipe, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

After Subsection 709.02 on page 649, add the following:

907-709.02.1--Aluminized Corrugated Metal Culvert Pipe and Pipe Arches. All aluminized metal pipe and arches shall be manufactured from Type 2 corrugated metal pipe and arches in accordance with the requirements of Subsection 709.02.

907-709.03--Bituminous Coated Corrugated Metal pipe and Pipe Arches.

907-709.03.1--Materials. Delete the first sentence of the first paragraph of Subsection 709.03.1 on page 649, and substitute the following:

Bituminous coated corrugated metal pipe and arches shall conform to the requirements of AASHTO Designation: M 190 and be completely coated inside and out with an asphalt cement which will meet the performance requirements hereinafter set forth.

907-709.05--Polymer Coated Corrugated Metal Pipe and Pipe Arches. Delete the first sentence of the first paragraph of Subsection 709.05 on pages 649 and 650, and substitute the following:

Polymer coated corrugated metal pipe and arches shall conform to the requirements of AASHTO Designation: M 245, except the minimum gauge thickness shall be as shown on the plans or in the contract; however, corrugated metal pipe manufactured from sheets thicker than that specified will be acceptable when approved by the Engineer. The internal diameter of corrugated metal pipe will be determined by inside measurement between the crests of the corrugations. Corrugations greater than 3" x 1" will not be allowed in arch pipe.

907-709.06--Corrugated Metal Pipe for Underdrains. Delete the sentence in Subsection 709.06 on page 650, and substitute the following:

Corrugated metal pipe shall conform to AASHTO Designation: M 36, Type III. Type I pipe which has been perforated to permit the in-flow or out-flow of water may be used in lieu of Type III pipe.

907-709.06.1--Aluminized Corrugated Metal Culvert Pipe For Underdrains. All aluminized corrugated metal pipe for underdrains shall be manufactured from Type 2 corrugated metal pipe

and arches in accordance with the requirements of AASHTO Designation: M 36, Type III. Manufacturer must repair any damaged coating caused from perforating the pipe.

907-709.07--Bituminous Coated Corrugated Metal Pipe for Underdrains. Delete the sentence in Subsection 709.07 on page 650, and substitute the following:

Bituminous coated corrugated metal pipe shall conform to the requirements of AASHTO Designation: M 190, Type A with a bituminous coating applied in accordance with the requirements of Subsection 709.03. Manufacturer must repair any damaged coating caused from perforating the pipe.

907-709.08--Polymer Coated Corrugated Metal Pipe for Underdrains. Delete the sentence in Subsection 709.08 on page 650, and substitute the following:

The metal pipe for underdrains shall conform to the requirements of AASHTO Designation: M 245, Type III and the polymer coating shall conform to the requirements of Subsection 709.05. Type I pipe which has been perforated to permit the in-flow or out-flow of water may be used in lieu of Type III pipe. Manufacturer must repair any damaged coating caused from perforating the pipe.

907-709.09--Corrugated Aluminum Alloy Culvert Pipe and Arches. Delete the first sentence in Subsection 709.09 on page 650, and substitute the following:

Corrugated aluminum culvert pipe and arches shall conform to the requirements of AASHTO Designation: M l96, Type IA.

907-709.10--Corrugated Aluminum Alloy Pipe for Underdrains. Delete the first sentence in Subsection 709.10 on page 650, and substitute the following:

Corrugated aluminum pipe underdrains shall conform to the requirements of AASHTO Designation: M 196, Type III. Type I pipe which has been perforated to permit the in-flow or out-flow of water may be used in lieu of Type III pipe.

907-709.11--Bituminous Coated Corrugated Aluminum Alloy Culvert Pipe and Arches. Delete the sentence in Subsection 709.11 on page 650, and substitute the following:

Bituminous coated aluminum culvert pipe and arches shall conform to AASHTO Designation: M 196, Type IA, and in addition shall be coated inside and out as specified in Subsection 709.03. Manufacturer must repair any damaged coating caused from perforating the pipe.

907-709.13--Bituminous Coated Corrugated Aluminum Alloy Pipe for Underdrains. Delete the sentence in Subsection 709.13 on page 650, and substitute the following:

This pipe shall conform to AASHTO Designation: M 196, Type III, and shall be coated with bituminous material conforming to AASHTO Designation: M 190, type coating as specified. Manufacturer must repair any damaged coating caused from perforating the pipe.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-711-4 **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 alkalies listed in AASHTO Designation: M 295, Table 2. Class F fly ash shall have a calcium oxide (CaO) content of less than 6.0%. Class C fly ash shall have a CaO content of greater than or equal to 6.0%.

The replacement of Portland cement with fly ash shall be in accordance with the applicable replacement content specified in Subsection 907-701.02.2.

In addition to these requirements, fly ash shall meet the following specific requirements for the intended use.

907-714.05.2--Fly Ash for Use in Concrete. When used with Portland cement in the production of concrete or grout, the fly ash shall meet the requirements of AASHTO Designation: M 295, Class C or F, with the following exception:

The loss on ignition shall not exceed 6.0 percent.

No additional cementitious materials, such as blended hydraulic cement, GGBFS, metakaolin, or others, shall be added to or as a replacement for Portland cement when used with fly ash.

907-714.06--Ground Granulated Blast Furnace Slag (GGBFS). Delete Subsection 714.06.1 on page 681, and substitute the following:

907-714.06.1--General. The GGBFS source must be approved for listing in the Department's "Approved Sources of Materials" prior to use. The acceptance of GGBFS shall be based on certified test reports, certification of shipment from the supplier, and tests performed on samples obtained after delivery in accordance with the Department's Materials Division Inspection, Testing, and Certification Manual and Department SOP.

The Contractor shall provide suitable means for storing and protecting the GGBFS against dampness and contamination. Separate storage silos, bins, or containers shall be provided for GGBFS. GGBFS which has become partially set, caked or contains lumps shall not be used.

The State Materials Engineer shall be notified in writing of the nature, amount and identity of any processing or other additions made to the GGBFS during production.

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

No additional cementitious materials, such as blended hydraulic cement, fly ash, metakaolin, or others, shall be added to or as a replacement for Portland cement when used with GGBFS in the production of concrete. The replacement of Portland cement with GGBFS shall be in accordance with the applicable replacement content specified in Subsection 907-701.02.2.

Delete Subsection 714.07 on page 682, and substitute the following:

907-714.07--Additional Cementitious Materials.

907-714.07.1--Metakaolin.

907-714.07.1.1--General. Metakaolin shall only be used as a supplementary cementitious material in Portland cement concrete for compliance with the requirements for cementitious materials exposed to soluble sulfate conditions. Metakaolin from different sources shall not be mixed or used alternately in any one class of construction or structure without written permission from the Engineer. No additional cementitious materials, such as blended hydraulic cement, fly ash, GGBFS, or others, shall be added to or as a replacement for Portland cement when used with metakaolin in the production of concrete.

The State Materials Engineer shall be notified in writing of the nature, amount and identity of any processing, or other additions made to the metakaolin during production.

907-714.07.1.2--Source Approval. The approval of each metakaolin source shall be on a case by case basis as determined by the State Materials Engineer. In order to obtain approval of a metakaolin source, the Producer/Suppliers shall submit to the State Materials Engineer the

following for review: certified test reports, made by an acceptable, independent laboratory regularly inspected by the Cement and Concrete Reference Laboratory of the National Institutes of Standards and Technology, which show that the metakaolin meets all the requirements of AASHTO Designation: M295, including the Effectiveness in contributing to sulfate resistance, Procedure A, listed in AASHTO Designation: M295, Table 4 for Supplementary Optional Physical Requirements, and other requirements listed herein.

In order to demonstrate effectiveness in contributing to sulfate resistance, included in this test data shall be results of metakaolin from the proposed source tested in accordance with ASTM Designation: C 1012. There shall be two sets of test specimens per the following:

a. One set of test specimens shall be prepared using a Type I Portland cement meeting the requirements of AASHTO Designation: M85 and having a tricalcium aluminate (C_3A) content of more than 8.0%,

b. One set of test specimens shall be prepared using a Type II Portland cement meeting the requirements of AASHTO Designation: M85.

c. The proposed metakaolin shall be incorporated at the rate of 10% cement replacement in each set of test specimens and shall meet both of the acceptance criteria listed below for source approval.

The requirement for acceptance of the test sample using Type I Portland cement is an expansion of 0.10% or less at the end of six months. The requirement for acceptance of the test sample using Type II Portland cement is an expansion of 0.05% or less at the end of six months.

907-714.07.1.3--Storage. The Contractor shall provide suitable means for storing and protecting the metakaolin against dampness and contamination. Metakaolin which has become partially set, caked, or contains lumps shall not be used.

907-714.07.1.4--Specific Requirements. Metakaolin shall meet the requirements of AASHTO Designation: M 295, Class N with the following modifications:

1. The sum of $SiO_2 + Al_2O_3 + Fe_2O_3$ shall be at least 85%. The Material Safety Data Sheet shall indicate that the amount of crystalline silica, as measured by National Institute of Occupation Safety and Health (NIOSH) 7500 method, after removal of the mica interference, is less than 1.0%.
2. The loss on ignition shall be less than 3.0%.
3. The available alkalies, as equivalent Na_2O, shall not exceed 1.0%.
4. The amount of material retained on a No. 325 mesh sieve shall not exceed 1.0%.
5. The strength activity index at seven (7) days shall be at least 85%.

907-714.07.1.5--Acceptance. With each new lot of material shipped the Contractor shall submit to the State Materials Engineer a certified test report from the manufacturer showing that the material meets the requirements AASHTO Designation: M295, Class N and the requirements of this Subsection.

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

907-714.07.2--Silica Fume.

907-714.07.2.1--General. Silica fume shall only be used as a supplementary cementitious material in Portland cement concrete for compliance with the requirements for cementitious materials exposed to soluble sulfate conditions. Silica fume from different sources shall not be mixed or used alternately in any one class of construction or structure without written permission from the Engineer. No additional cementitious materials, such as blended hydraulic cement, performance hydraulic cement, fly ash, GGBFS, or others, shall be added to or as a replacement for Portland cement when used with silica fume in the production of concrete.

The State Materials Engineer shall be notified in writing of the nature, amount and identity of any processing, or other additions made to the silica fume during production.

907-714.07.2.2--Source Approval. The approval of each silica fume source shall be on a case by case basis as determined by the State Materials Engineer. In order to obtain approval of a silica fume source, the Producer/Suppliers shall submit to the State Materials Engineer the following for review: certified test reports, made by an acceptable, independent laboratory regularly inspected by the Cement and Concrete Reference Laboratory of the National Institutes of Standards and Technology, which show that the silica fume meets all the requirements of AASHTO Designation: M307, Table 3, including the Sulfate resistance expansion, listed in the table for Optional Physical Requirements, and other requirements listed herein.

In order to demonstrate effectiveness in contributing to sulfate resistance, included in this test data shall be results of silica fume from the proposed source tested in accordance with ASTM Designation: C 1012. There shall be two sets of test specimens per the following:

a. One set of test specimens shall be prepared using a Type I Portland cement meeting the requirements of AASHTO Designation: M85 and having a tricalcium aluminate (C_3A) content of more than 8.0%,

b. One set of test specimens shall be prepared using a Type II Portland cement meeting the requirements of AASHTO Designation: M85.

c. The proposed silica fume shall be incorporated at the rate of 8% cement replacement in each set of test specimens and shall meet both of the acceptance criteria listed below for source approval.

The requirement for acceptance of the test sample using Type I Portland cement is an expansion of 0.10% or less at the end of six months. The requirement for acceptance of the test sample using Type II Portland cement is an expansion of 0.05% or less at the end of six months.

907-714.07.2.3--Storage. The Contractor shall provide suitable means for storing and protecting the silica fume against dampness and contamination. Silica fume which has become partially set, caked, or contains lumps shall not be used.

907-714.07.2.4--Acceptance. With each new lot of material shipped, the Contractor shall submit to the State Materials Engineer a certified test report from the manufacturer showing that the material meets the Chemical and Physical Requirements of AASHTO Designation: M307.

The Department reserves the right to sample, for check tests, any shipment or lot of silica fume

delivered to a project.

Delete Subsection 714.11.6 on pages 690 and 691, and substitute the following:

907-714.11.6--Rapid Setting Cementitious Patching Compounds for Concrete Repair. Rapid setting concrete patching compounds must be approved for listing in the Department's "Approved Sources of Materials" prior to use. Upon approval, a product must be recertified every four (4) years to remain on the "Approved Sources of Materials" list. Each product shall be pre-measured and packaged dry by the manufacturer. All liquid solutions included by the manufacturer as components of the packaged material shall be packaged in a watertight container. The manufacturer may include aggregates in the packaged material or recommend the addition of Contractor furnished aggregates.

The type, size and quantity of aggregates, if any, to be added at the job site shall be in accordance with the manufacturer's recommendations and shall meet the requirements of Subsection 703.02 for fine aggregate and Subsection 703.03 for coarse aggregate. Required mixing water to be added at the job site shall meet the requirements of Subsection 714.01.2.

Only those bonding agents, if any, recommended by the manufacturer of the grout or patching compounds may be used for increasing the bond to old concrete or mortar surfaces.

Patching compounds containing soluble chlorides will not be permitted when in contact with steel.

Site preparation, proportioning of materials, mixing, placing and curing shall be performed in accordance with the manufacturer's recommendation for the specific type of application, and the Contractor shall furnish a copy of these recommendations to the Engineer.

Rapid setting cementitious concrete patching compounds, including components to be added at the job site, shall conform to the following physical requirements:

Non-shrink cementitious grouts shall not be permitted for use.

Compressive strength shall equal or exceed 3000 psi in 24 hours in accordance with ASTM C 928 for Type R2 concrete or mortar.

Bond strength shall equal or exceed 1000 psi in 24 hours in accordance with ASTM C 928 for Type R2 concrete or mortar.

The material shall have a maximum length change of ±0.15% in accordance with ASTM C 928 for Type R2 concrete or mortar.

The Contractor shall furnish to the Engineer three copies of the manufacturer's certified test report(s) showing results of all required tests and certification that the material meets the specifications when mixed and place in accordance with the manufacturer's instructions. When the mixture is to be placed in contact with steel, the certification shall further state that the packaged material contains no chlorides. Certified test report(s) and certification shall be furnished for each lot in a shipment.

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

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

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

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

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

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

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

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

907-714.11.8--Epoxy Joint Repair System.

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-715-3

DATE: 06/14/2012

SUBJECT: Roadside Development Materials

Add the following to the table in Subsection 907-715.03.2 on page 1.

Wheat	-	80	98

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-715-3 **CODE: (IS)**

DATE: 01/25/2008

SUBJECT: Roadside Development Materials

Section 715, Roadside Development Materials, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-715-02.2.1--Agricultural Limestone. Delete the first sentence of Subsection 715-02.2.1 on page 704 and substitute the following.

Agricultural limestone shall be either a hard-rock limestone material or a marl or chalk agricultural liming material as addressed in the latest amendment to the Mississippi Agricultural Liming Material Act of 1993, published by the Mississippi Department of Agriculture and Commerce.

907-715.02.2.1.1--Screening Requirements. Delete the first sentence of Subsection 715.02.2.1.1 on page 704.

Delete Subsection 715.02.2.1.2 on page 704 and substitute the following:

907-715-02.2.1.2--Calcium Carbonate Equivalent. Marl or chalk liming material shall not have less than 70% calcium and magnesium carbonate calculated as calcium carbonate equivalent when expressed on a dry weight basis.

907-715-02.2.1.3--Neutralizing Values. Hard-rock limestone material shall have a minimum Relative Neutralizing Value (RNV) of 63.0%, which is determined as follows:

% RNV = CCE x (% passing #10 mesh + % passing #50 mesh)/2

Where: CCE = Calcium Carbonate Equivalent

907-715.03--Seed.

907-715.03.2--Germination and Purity Requirements. Add the following to Table B on page 705.

Name (Kind)	Name (Variety)	Percent Germination	Percent Purity
GRASSES			
Rye Grass	Annual	80	98

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-804-13

DATE: 02/14/2013

SUBJECT: Concrete Bridges And Structures

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

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

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

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

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

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

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

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

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

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

After Subsection 804.02.10.3 on page 853, add the following.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Stay-in-place (SIP) metal forms are corrugated metal sheets permanently installed between the supporting superstructure members. After the concrete has cured, these forms shall remain in place as permanent, non-structural members of the bridge.

Pay quantities for bridge deck concrete will be computed from the dimensions shown in the Contract Plans with no allowance for changes in deflection and /or changes in dimensions necessary to accommodate the SIP metal forms.

There will be no direct payment for the cost of the forms and form supports, or any material, tools, equipment, or labor incidental thereto, but the cost shall be considered absorbed in the contract unit price for bridge deck concrete.

Before fabricating any material, three (3) complete sets of SIP metal form shop drawings and design calculations, bearing the Design Engineer's Seal, shall be submitted to the Director of Structures, State Bridge Engineer, through the Project Engineer, for review. The Contractor's SIP metal form Design Engineer shall be a MS Registered Professional Engineer who is knowledgeable in the field of structural design.

In no case shall additional dead load produced by the use of SIP metal forms overstress any bridge component. Design calculations shall indicate any additional dead load from SIP metal form self-weight, form support hangers, concrete in flutes, concrete due to form deflection, etc. not included in the Contract Plans. The additional dead loads shall be clearly labeled and tabulated on the shop drawings. Bridge Division will evaluate the additional load for overstress of the bridge components. In the event that the additional dead load produces an overstress in any bridge component, Bridge Division will reject the Contractor's design. Deflection and loads produced by deflection of the SIP metal forms shall be considered and indicated in the design calculations.

The cambers and deflections provided in the Contract Plans do not consider the effects of SIP metal forms. The Contractor's Engineer shall take into account the weight of the forms and any additional dead load when developing the "Bridge Superstructure Construction Plan".

For the purpose of reducing any additional dead load produced by the SIP metal forms, the flutes of SIP metal forms may be filled with polystyrene foam. When polystyrene foam is used to fill the forms, the form flutes shall be filled completely; no portion of the polystyrene foam shall extend beyond the limits of the flutes. The Contractor shall ensure that the polystyrene foam remains in its required position within flutes during the entire concrete placement process. The Contractor shall not use reinforcing steel supports or other accessories in such a manner as to cause damage to the polystyrene foam. All damaged polystyrene foam shall be replaced to the satisfaction of the Project Engineer. All welding of formwork shall be completed prior to placement of polystyrene foam.

For bridges not located in horizontal curves, the Contractor may reduce the additional dead load by matching the flute spacing with the transverse steel spacing of the bottom layer. The bottom longitudinal layer of steel shall have one (1) inch of minimum concrete cover measured from the bottom of the reinforcing to the top of the flute. The Contractor will not be allowed to vary the reinforcing steel spacing or size from the Contract Plans for the purpose of matching flute spacing.

907-804.03.14.2.1--Materials. SIP metal forms and supports shall meet the requirements of ASTM Designation: A653 having a coating designation G165. Form materials that are less than 0.03-inch uncoated thickness shall not be allowed.

907-804.03.14.2.2--Certification. The Contractor shall provide written certification from the manufacturer stating the product meets the requirements of this specification to the Project Engineer along with the delivery of the coated forms to the job site.

All welds shall be performed by certified welders meeting the requirements of the approved shop drawings.

907-804.03.14.2.3--Polystyrene Foam. The polystyrene foam shall be comprised of expanded polystyrene manufactured from virgin resin of sufficient density to support the weight of concrete without deformation. The polystyrene foam shall be extruded to match the geometry of the flutes and provide a snug fit. The polystyrene foam shall have a density of not less than 0.8 pounds per cubic foot. The polystyrene foam shall have water absorption of less than 2.6% when tested according to ASTM Designation: C272. The Contractor shall provide written certification

from the manufacturer stating the polystyrene foam product meets the requirements of this specification to the Project Engineer along with the delivery of the coated forms to the job site.

907-804.03.14.2.4--Design. The design of the SIP metal forms shall meet the following criteria.

1. The maximum self-weight of the stay in place metal forms, plus the weight of the concrete or expanded polystyrene required to fill the form flutes (where used), shall not exceed 20 psf.

2. The forms shall be designed on the basis of dead load of form, reinforcement, and plastic concrete plus 50 pounds per square foot for construction loads. The design shall use a unit working stress in the steel sheet of not more than 0.725 of the specified minimum yield strength of the material furnished, but not to exceed 36,000 psi.

3. Deflection under the weight of the forms, reinforcement, and plastic concrete shall not exceed 1/180 of the form span or 1/2 inch, whichever is less, for form spans of 10 feet or less, or 1/240 of the form span or 3/4 inch, whichever is less, for form spans greater than 10 feet.

4. The design span of the form shall equal the clear span of the form plus two (2) inches. The span shall be measure parallel to the form flutes.

5. Physical design properties shall be computed in accordance with requirements of the AISI Specifications for the Design of Cold Formed Steel Structural Members, latest published edition.

6. The design concrete cover required by the plans shall be maintained for all reinforcement.

7. The plan dimensions of both layers of primary deck reinforcement from the top surface of the concrete deck shall be maintained.

8. The SIP metal form shall not be considered as lateral bracing for compression flanges of supporting structural members.

9. SIP metal forms shall not be used under closure pours or in bays where longitudinal slab construction joints are located. SIP metal forms shall not be used under cantilevered slabs such as the overhang outside of fascia members.

10. Forms shall be secured to the supporting members by means other than welding directly to the member. Welding to the top flanges of steel stringers and/or girders shall not be allowed. Alternate installation procedures shall be submitted addressing this condition.

907-804.03.14.2.5--Construction. SIP metal form sheets shall not rest directly on the top of the stringer of floor beam flanges. Sheets shall be fastened securely to form supports, and maintain a minimum bearing length of one (1) inch at each end for metal forms. Form supports shall be placed in direct contact with the flange of the stringer or floor beam. All attachments for coated metal forms shall be made by bolts, clips, screws, or other approved means.

907-804.03.14.2.6--Form Galvanizing Repairs. Where forms or their installation are unsatisfactory in the opinion of the Project Engineer, either before or during placement of the concrete, the Contractor shall correct the defects before proceeding with the construction work. The cost of such corrective work shall be at the sole expense of the Contractor. Minor heat discoloration in areas of welds shall not be touched up.

907-804.03.14.2.7--Placing of Concrete. The Contractor shall insure that concrete placement does not damage the SIP metal forms. The concrete shall be vibrated to avoid honeycomb and voids, especially at construction joints, expansion joints, valleys and ends of form sheets. Approved pouring sequences shall be used. Calcium chloride or any other admixture containing chloride salts shall not be used in the concrete. The completed SIP metal form system shall be sufficiently tight to prevent leakage of mortar or concrete.

907-804.03.14.2.8--Inspection. The Project Engineer will observe the Contractor's method of construction during all phases of the construction of the bridge deck slab, including the installation of the SIP metal form system; location and fastening of the reinforcement; composition of concrete items; mixing procedures, concrete placement, and vibration; and finishing of the bridge deck. Should the Project Engineer determine that the procedures used during the placement of the concrete warrant inspection of the underside of the deck, at least one section of the metal forms shall be removed in each span for this purpose. This shall be done as soon after placing the concrete as practical in order to provide visual evidence that the concrete mix and the procedures are obtaining the desired results. An additional section shall be removed in any span if the Project Engineer determines that there has been any change in the concrete mix or in the procedures warranting additional inspection.

If, in the Project Engineer's judgment, inspection is needed to check for defects in the bottom of the deck or to verify soundness, the SIP metal forms shall be sounded with a hammer after the deck concrete has been in place a minimum of two days. If sounding discloses areas of doubtful soundness to the Project Engineer, the SIP metal forms shall be removed from such areas for visual inspection after the concrete has attained adequate strength. The SIP metal bridge deck forms shall be removed at no expense to the State.

At locations where sections of the metal forms have been removed, the Project Engineer will not require the Contractor to replace the metal forms. The adjacent metal forms and supports shall be repaired to present a neat appearance and to ensure their satisfactory retention. As soon as the form is removed, the Project Engineer will examine the concrete surfaces for cavities, honeycombing, and other defects. If irregularities are found and the Project Engineer determines that these irregularities do not justify rejection of the work, the concrete shall be repaired as directed by the Project Engineer. If the Project Engineer determines that the concrete where the form is removed is unsatisfactory, additional metal forms as necessary shall be removed to inspect and repair the slab, and the Contractor's method of construction shall be modified as required to obtain satisfactory concrete in the slab. All unsatisfactory concrete shall be removed and replaced as directed at no expense to the State.

If the method of construction and the results of the inspections as outlined above indicate that sound concrete has been obtained throughout the slabs, the amount of sounding and form removal may be reduced when approved by the Project Engineer.

The Contractor shall provide a safe and convenient means of conducting of the inspection.

Delete Table 6 of Subsection 907-804.03.15 on page 8, and substitute the following.

Table 6
Minimum Compressive Strength Requirements for Form Removal

Forms:	
Columns	1000 psi
Side of Beams	1000 psi
Walls not under pressure	1000 psi
Other Parts	1000 psi
Centering:	
Under Beams	2400 psi
Under Bent Caps	2000 psi
Limitation for Placing Beams on:	
Pile Bents, pile under beam	2000 psi
Frame Bents, two or more columns	2200 psi
Frame Bents, single column	2400 psi

Forms for bridge deck slabs overhead and bridge deck slabs between beams shall be removed with the approval of the Engineer, between two weeks and four weeks after the removal of the wet burlap applied in accordance with Subsection 907-804.03.17.1, or application of liquid membrane applied in accordance with Subsection 907-804.03.17.2.

Delete the second paragraph of Subsection 907-804.03.16.1 on page 9, and substitute the following.

At the option of the Contractor with the approval of the Engineer, when concrete is placed during cold weather and there is a probability that the ambient temperatures will be lower than 40°F, an approved maturity meter may be used to determine concrete strengths by inserting probes into concrete placed in a structure. The minimum number of maturity meter probes required for each structural component shall be in accordance with Table 7. An approved insulating blanketing material shall be used to protect the work when ambient temperatures are less than 40°F and shall remain in place until the required concrete strength in Table 6 is achieved. Within 30 minutes of removal of the insulating blanketing material in any area, the Contractor shall have curing of the concrete established in accordance with the requirements in Subsection 907-804.03.17. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO Designation: T 325 and ASTM Designation: C 1074 specifications. Technicians using the maturity meter or calculating strength/maturity graphs shall be required to have at least two hours of training prior to using the maturity equipment.

Before Subsection 907-804.03.19 on page 9, add the following.

907-804.03.17--Curing Concrete. Delete Subsection 804.03.17 on pages 874 & 875, and substitute the following.

Curing is defined as all actions taken to ensure the moisture and temperature conditions of freshly placed concrete exist so the concrete may develop its potential properties. Curing shall take place from the time of placement until its potential properties have developed. The Contractor shall use the guidance in ACI 308R-01 to:

a) cure the concrete in such a manner as to prevent premature moisture loss from the concrete,
b) supply additional moisture to the concrete as required in order to ensure sufficient moisture within the concrete, and
c) maintain a concrete temperature beneficial to the concrete.

Curing in accordance with the requirements in either Subsection 907-804.03.17.1 or Subsection 907-804.03.17.2 shall be completely established within 20 minutes after finishing, except as noted for bridge decks. Finishing is complete when the pan drag, burlap drag, or other is complete.

The length of time for curing shall be maintained in accordance with either of the following:

1. **Prescribed Length of Time:**
   a) Curing following the requirements of Subsection 804.03.17.1 shall continue uninterrupted for at least 14 days.
   b) Curing following the requirements of Subsection 804.03.17.2 shall continue uninterrupted for at least 10 days.

OR

2. **Length of Time Defined by Development of Compressive Strength:**
   Curing following the application requirements of Subsection 907-804.03.17.1 or Subsection 907-804.03.17.2 shall continue uninterrupted for each day's production until the compressive strength of the concrete exceeds 75% of the 28-day compressive strength submitted as the Basis of Proportioning per Subsection 907-804.02.10.1. Therefore, if an area is being cured in accordance with Subsection 907-804.03.17.1, the curing by wet burlap shall continue until the concrete in that area has attained a minimum of 75% of the 28-day compressive strength submitted as the Basis of Proportioning per Subsection 907-804.02.10.1. Likewise, if an area is being cured in accordance with Subsection 907-804.03.17.2, the curing by liquid membrane shall continue until the concrete in that area has attained a minimum of 75% of the 28-day compressive strength submitted as the Basis of Proportioning per Subsection 907-804.02.10.1.

   The compressive strength of the concrete may be determined by the use of maturity meter in accordance with Subsection 907-804.03.15.

907-804.03.17.1--Water With Waterproof Cover. All burlap shall be completely saturated and wet prior to placing it on the concrete. The burlap shall have been fully soaked in water for a minimum of 12 hours prior to placement on the concrete.

For bridge decks, the Contractor shall apply one (1) layer of saturated burlap within 20 minutes of the initial strike-off for bridges without a skew and 25 minutes of the initial strike-off for bridges with a skew. For all other concrete, the Contractor shall apply one (1) layer of saturated burlap within 20 minutes of completing finishing.

Following the first layer of burlap, the Contractor shall apply a second layer of saturated burlap within five (5) minutes of applying the first layer. The concrete surface shall not be allowed to dry after strike-off or at any time during the curing period.

The Contractor shall maintain the burlap in a fully wet condition using powered fogging equipment capable of producing a fog spray of atomized droplets of water until the concrete has gained sufficient strength to allow foot traffic without the foot traffic marring the surface of the concrete. Burlap shall not be maintained in the fully wet condition using equipment which does not produce a fog spray of atomized droplets of water or by use of manually pressurized sprayers. For bridge decks, once the concrete has gained sufficient strength to allow foot traffic which does not mar the surface of the concrete, soaker hoses shall be placed on the burlap. The soaker hoses shall then be supplied with running water continuously to maintain continuous saturation of all burlap and the entire concrete surface.

If there is a delay in the placement of the first layer of saturated burlap outside the time limit, the struck-off and finished concrete shall be kept wet by use of the powered fogging equipment used to keep the burlap wet.

White polyethylene sheets shall be placed on top of the wet burlap and, as applicable, soaker hoses covering the entire concrete surface as soon as practical and not more than 12 hours after the placement of the concrete. White polyethylene sheets of the widest practical width shall be used, overlapping adjacent sheets a minimum of six inches (6") and tightly sealed with an adhesive like pressure sensitive tape, mastic, glue, or other approved methods to form a complete waterproof cover of the entire concrete surface. White polyethylene sheets which overlap a minimum of two feet (2') may be held in place using means other than an adhesive. The white polyethylene sheets shall be secured so that wind will not displace them. The Contractor shall immediately repair the broken or damaged portions or replace sections that have lost their waterproof qualities.

If burlap and/or white polyethylene sheets are temporarily removed for any reason during the curing period, the Contractor shall keep the entire exposed area continuously wet. The saturated burlap and white polyethylene sheets shall be replaced, resuming the specified curing conditions, as soon as possible.

The Contractor shall inspect the concrete surface once every 8 hours for the entirety of the curing period, so that all areas remain wet for the entire curing period and all curing requirements are satisfied and document the inspection in accordance with Subsection 907-804.03.17.1.1.

At the end of the curing period, one coating of liquid membrane shall be applied following the requirements of Subsection 907-804.03.17.1.2. The purpose of the coating of liquid membrane is

to allow for slow drying of the concrete. The application of liquid membrane to any area shall be complete within 30 minutes of the beginning of removal of the white polyethylene sheets, soaker hoses, and burlap from this area.

907-804.03.17.1.1--Documentation. The Contractor shall provide the Engineer with a daily inspection report that includes:

- documentation that identifies any deficiencies found (including location of deficiency);
- documentation of corrective measures taken;
- a statement of certification that all areas are wet and all curing material is in place on the entire bridge deck;
- documentation showing the time and date of all inspections and the inspector's signature;
- documentation of any temporary removal of curing materials including location, date and time, length of time curing was removed, and means taken to ensure exposed area was kept continuously wet.

907-804.03.17.1.2--Liquid Membrane. At the end of the 14-day wet curing period the wet burlap and polyethylene sheets shall be removed and within 30 minutes, the Contractor shall apply white liquid membrane to the deck. The liquid membrane shall be thoroughly mixed within the time recommended by the liquid membrane producer but no more than an hour before use. If the use of liquid membrane results in a streaked or blotched appearance, the method shall be stopped and water curing applied until the cause of defective appearance is corrected.

The liquid membrane shall be applied when no free water remains on the surface but while the surface is still wet. The liquid membrane shall be applied according to the manufacturer's instructions with a minimum spreading rate per coat of one (1) gallon per 200 square feet of concrete surface. If the concrete is dry or becomes dry, the Contractor shall thoroughly wet it with water applied as a fog spray by means of approved equipment.

The application of liquid membrane shall be accomplished by the use of power applied spray equipment using nozzles and other equipment recommended by the liquid membrane producer. Manually pressurized or manual pump-up type sprayers shall not be used to apply the first application of liquid membrane.

As a visual guide, the color of concrete covered with the required amount of liquid membrane should be indistinguishable from a sheet of commercially available standard "letter" size white copier paper placed on top of it when viewed from a distance of about five feet (5') away horizontally if standing on the same grade as the concrete. The appearance of the concrete does not supersede applying the minimum spreading rate.

The coating shall be protected against marring for at least seven (7) days after the application of the curing compound. The coating on bridge decks shall receive extra attention and may require additional protection as required by the Engineer. All membrane marred or otherwise disturbed shall be given an additional coating. Manually pressurized or manual pump-up type sprayers may be used for giving marred areas the required additional application of liquid membrane. Should the surface coating be subjected repeatedly to injury, the Engineer may require that the water curing method be applied at once.

The 7-day period during which the liquid membrane is applied and protected shall not be reduced even if the period of wet curing is extended past the required 14 days.

907-804.03.17.1.2.1--Liquid Membrane Documentation. The Contractor shall make available to the Engineer an application rate verification method and any information necessary during application of the liquid membrane to verify that the rate of application meets the prescribed rate for the various surfaces of the concrete, including, but not limited to, the top surface of the bridge deck and exposed sides of the bridge deck after any forms are removed. The Contractor shall submit this application verification method to the Engineer in accordance with Subsection 907-804.02.12.1.1.

One method of verifying the rate of application is as follows:

1. Determine the volume of liquid membrane in the container. For a container with a uniform cross-sectional area, for example a 55-gallon drum, determine the area of the cross-section. Determine the height of the surface of the liquid membrane from the bottom of the container. This may be accomplished by inserting a sufficiently long, clean dip-stick parallel with the axis of the container into the liquid membrane until the inserted end of the dip-stick contacts the bottom of the container. On removing the dip-stick, measure the length from the end which was inserted to the point on the dip-stick where the liquid membrane ceases to coat the dip-stick. Multiply the area of the cross-section by the height of the level of liquid membrane, maintaining consistent units, to determine the volume.
2. Perform step 1 prior to beginning applying the liquid membrane to establish the initial volume.
3. During the period of application, perform step 1 each 100 square feet of bridge deck.
4. In order to meet the required application rate of one (1) gallon per 200 square feet, the amount in the container shall be at least 0.5 gallon less than the previous volume in the previous 100 square feet. Other changes in volume may apply depending on the manufacturer's recommended application rate.
5. Additional applications to an area shall be applied until the required rate is satisfied. Areas which are not visually satisfactory to the Engineer shall have additional liquid membrane applied as directed by the Engineer.

The amount of liquid membrane applied shall be determined each day using the application verification method. This information shall be submitted to the Engineer within 24 hours of applying the liquid membrane.

907-804.03.17.2--Liquid Membrane Method. Surfaces on which curing is to be by liquid membrane shall be given the required surface finish prior to the application of liquid membrane. Concrete surfaces cured by liquid membrane shall receive two applications of white liquid membrane. Neither application shall be made from a position supported by or in contact with the freshly placed concrete. Both applications shall be applied perpendicularly to the surface of the concrete.

When using liquid membrane, the liquid membrane shall be thoroughly mixed within the time recommended by the liquid membrane producer but no more than an hour before use. If the use of liquid membrane results in a streaked or blotched appearance, the method shall be stopped and water curing applied until the cause of defective appearance is corrected.

The application of liquid membrane shall accomplished by the use of power applied spray equipment using nozzles and other equipment recommended by the liquid membrane producer. Manually pressurized or manual pump-up type sprayers shall not be used to apply the first two applications of liquid membrane.

The liquid membrane shall be applied when no free water remains on the surface but while the surface is still wet. The liquid membrane shall be applied according to the manufacturer's instructions with a minimum spreading rate per coat of one (1) gallon per 200 square feet of concrete surface. If the concrete is dry or becomes dry, the Contractor shall thoroughly wet it with water applied as a fog spray by means of approved equipment.

The first application of the liquid membrane shall be made as the work progresses. For bridge decks, the first application shall be completed in each area of the deck within 20 minutes of initial strike-off for bridges with no skew and within 25 minutes of initial strike-off for bridges with skew. For all other concrete, the first application of the liquid membrane shall be completed within 20 minutes of finishing.

The second application shall be applied within 30 minutes after the first application. The liquid membrane shall be uniformly applied to all exposed concrete surfaces.

As a visual guide, the color of concrete covered with the required amount of liquid membrane should be indistinguishable from a sheet of commercially available standard "letter" size white copier paper placed on top of it when viewed from a distance of about five feet (5') away horizontally if standing on the same grade as the concrete. The appearance of the concrete does not supersede applying the minimum spreading rate.

The Contractor shall make available to the Engineer an application rate verification in accordance with Subsection 907-804.03.17.1.2.1.

The coating shall be protected against marring for at least 10 days after the application of the curing compound. The coating on bridge decks shall receive extra attention and may require additional protection as required by the Engineer. All membrane marred or otherwise disturbed shall be given an additional coating. Manually pressurized or manual pump-up type sprayers may be used for giving marred areas the required additional application of liquid membrane. Should the surface coating be subjected repeatedly to injury, the Engineer may require that the water curing method be applied at once.

Delete Subsection 907-804.19.7 on page 9, and substitute the following.

907-804.03.19.7--Finishing Bridge Decks.

907-804.03.19.7.1--General. Delete the third paragraph of Subsection 804.03.19.7.1 on page 884, and substitute the following.

Except when indicated otherwise on the plans, the finish of the bridge deck shall be either a belt finish, a broom finish, or one of the following drag methods: pan, double pan, burlap, or pan and burlap. Manual finishing of the bridge deck shall be performed only in areas inaccessible by the

finishing equipment mounted to the strike-off screed, but shall not hinder the requirements for curing in accordance with Subsection 907-804.03.17.1. The surface texture specified and surface requirements shall be in accordance with the applicable requirements of Subsections 501.03.17 and 501.03.18 modified only as the Engineer deems necessary for bridge deck construction operations.

At no time shall water on the surface of the concrete from bleeding, fogging, curing, or other sources be worked into the concrete or used as an aid for finishing.

Regardless of the method of finishing selected, requirements for curing per Subsection 907-804.03.17 shall be completed within the specified time limits. If the requirements in Subsection 907-804.03.17 are not completed within the specific time limits, the Contractor shall cease operations, revise his operations up to and including acquiring new or additional equipment or additional personnel in order to satisfy the requirements in Subsection 907-804.03.17, and, on approval from the Engineer, resume operations

907-804.03.19.7.2--Longitudinal Method. Before the first paragraph of Subsection 804.03.19.7.2 on page 884, add the following.

The longitudinal method may be used for repairs to bridge decks or bridge widening projects. For bridge widening projects, the time for establishing curing in accordance with Subsections 907-804.03.17 shall be increased to within 30 minutes for bridges without skew and within 35 minutes for bridges with skew.

907-804.03.19.7.3--Transverse Method. Delete the first sentence of the second paragraph of Subsection 804.03.19.7.3 on page 885, and substitute the following.

The machine shall be so constructed and operated as to produce a bridge deck of uniform density with minimum manipulation of the fresh concrete and achieved in the shortest possible time.

Delete the fourth paragraph of Subsection 804.03.19.7.3 on page 885, and substitute the following.

At least one dry run shall be made the length of each pour with a "tell-tale" device attached to the screed carriage to assure the specified clearance to the reinforcing steel.

Delete the last sentence of the fifth paragraph of Subsection 804.03.19.7.3 on page 885, and substitute the following.

The screed shall be mechanically actuated to deliver the screeding action and for travel in a longitudinal direction at a uniform rate along the bridge deck.

Delete the last paragraph of Subsection 804.03.19.7.3 on page 886, and substitute the following.

Other finishing requirements shall be in accordance with the general requirements in Subsection 907-804.03.19.7.1 and as specified on the plans.

Regardless of the finish, the requirements for curing per Subsection 907-804.03.17 shall be completed within the specified time limits.

After Subsection 907-804.03.19.7.4 on page 9, add the following.

Delete the title of Subsection 804.03.19.7.4.1.3 on page 888, and substitute the following.

907-804.03.19.7.4.1.3--Final Surface Texture.

907-804.03.20--Opening Bridges.

907-804.03.20.2--Construction Traffic. Delete the paragraph in Subsection 804.03.20.2 on page 889, and substitute the following:

Unless otherwise specified, the concrete bridge decks shall be closed to construction traffic for the time required for curing in Subsection 907-804.03.17 and until the required compressive strength for the concrete is obtained.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-804-13 **CODE: (IS)**

DATE: 11/09/2010

SUBJECT: Concrete Bridges And Structures

Section 804, Concrete Bridges And Structures, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-804.02-- Materials.

907-804.02.1--General. Delete the third and fourth sentences of the first paragraph of Subsection 804.02.1 on page 846, and substitute the following:

For projects with 1000 cubic yards and more, quality control and acceptance shall be achieved through statistical evaluation of test results. For projects of more than 200 but less than 1000 cubic yards, quality control and acceptance shall be achieved by individual test results.

Add the following materials to the list of materials in Subsection 804.02.1 on page 847.

Blended Cement..... 907-701.01 and 907-701.04
Ground Granulated Blast Furnace Slag (GGBFS)..... 907-714.06
Silica Fume 907-714.07.2

907-804.02.8--Laboratory Accreditation. In Table 1 of Subsection 804.02.8 on page 849, substitute AASHTO: R 39 - Making and Curing Concrete Test Specimens in the Laboratory for AASHTO: T 126 - Making and Curing Concrete Test Specimens in the Laboratory.

907-804.02.9--Testing Personnel. Delete Table 2 in this subsection and replace it with the following.

Table 2

Concrete Technician's Tasks	Test Method Required	Certification Required**
Sampling or Testing of Plastic Concrete	AASHTO Designation:T 23, T 119, T 121, T 141, T 152, T 196, and ASTM Designation: C 1064	MDOT Class I certification
Compressive Strength Testing of Concrete Cylinders	AASHTO Designation: T 22 and T 231	MDOT Concrete Strength Testing Technician certification
Sampling of Aggregates	AASHTO Designation: T 2	Work under the supervision of an MDOT Class II certified technician

Testing of Aggregates	AASHTO Designation: T 19, T 27, T 84, T 85, T 248, and T 255	MDOT Class II certification
Proportioning of Concrete Mixtures*	AASHTO Designation: M 157 and R 39	MDOT Class III
Interpretation and Application of Maturity Meter Readings	AASHTO Designation: T 325 and ASTM Designation: C 1074	MDOT Class III or Two hours maturity method training

* Technicians making concrete test specimens for meeting the requirements of Subsection 804.02.10.1.2 shall be MDOT Class I certified and under the direct supervision of an MDOT Class III certified technician.

** MDOT Class I certification encompasses the same test procedures and specifications as ACI Concrete Field Testing Technician Grade I. MDOT Class II certification encompasses the same test procedures and specifications as ACI Aggregate Testing Technician - Level 1. MDOT Concrete Strength Testing Technician encompasses the same test procedures and specifications as ACI Concrete Strength Testing certification.

For specifics about the requirements for each level of certification, please refer to the latest edition of the Department's *Concrete Field Manual*. Technicians holding current MDOT Class I, MDOT Class II and/or MDOT Class III certifications shall be acceptable until those certifications expire. Upon a current certification expiration, recertification with the certifications listed in Table 2 shall be required. Technicians currently performing either specific gravity testing of aggregates or compressive strength tests shall be required to either:

- have the required MDOT certification listed in Table 2, or
- have a current MDOT Class III certification or work under the direct supervision of current MDOT Class III technician, and have demonstrated the specific gravity and/or compressive strength test during the inspection of laboratory equipment by the Materials Division, Concrete Section.

907-804.02.10--Portland Cement Concrete Mix Design. Delete the first sentence of the first paragraph of Subsection 804.02.10 on page 850 and substitute the following:

At least 30 days prior to production of concrete, the Contractor shall submit to the Engineer proposed concrete mixture designs complying with the Department's *Concrete Field Manual*.

Delete the Notes under Table 3 of Subsection 804.02.10 on pages 850 & 851, and substitute the following:

* Maximum size aggregate shall conform to the concrete mix design for the specified aggregate.

** The replacement limits of Portland cement by weight by other cementitious materials (such as fly ash, GGBFS, metakaolin, silica fume, or others) shall be in accordance with the values in Subsection 907-701.02. Other hydraulic cements may be used in accordance with the specifications listed in Section 701.

*** The slump may be increased up to eight (8) inches with :

- an approved water-reducing admixture,
- an approved water-reducing/set-retarding admixture, or
- a combination of an approved water-reducing admixture and an approved set-retarding admixture, in accordance with 907-713.02. Minus slump requirements shall meet those set forth in Table 3 of AASHTO Designation: M157.

**** Entrained air is not required except for concrete exposed to seawater. For concrete exposed to seawater, the total air content shall be 3.0 % to 6.0%. For concrete not exposed to seawater, the total air content shall not exceed 6.0%.

***** Class DS Concrete for drilled shafts shall have an 8±1-inch slump.

Delete the last paragraph of Subsection 804.02.10 on page 851 and substitute the following:

At least one water-reducing admixture shall be used in all classes of concrete in accordance with the manufacturer's recommended dosage range. Any combinations of admixtures shall be approved by the Engineer before their use.

907-804.02.10.1.1--Proportioning on the Basis of Previous Field Experience of Trial Mixtures. Delete the first sentence of the first paragraph of Subsection 804.02.10.1.1 on page 851, and substitute the following:

Where a concrete production facility has a record, based on at least 10 consecutive strength tests from at least 10 different batches within the past 12 months from a mixture not previously used on Department projects, the standard deviation shall be calculated.

907-804.02.10.3--Field Verification of Concrete Mix Design. Delete the first sentence of the third paragraph of Subsection 804.02.10.3 on page 853 and substitute the following:

For all Classes of concrete, the mixture shall be verified to yield within 2.0% of the correct volume when all the mix water is added to the batch.

For all Classes of concrete other than DS, F, and FX, the mixture shall produce a slump within a minus 1½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of three inches (3") or less or within a minus 2½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of greater than three inches (3"), and producing a total air content within a minus 1½ percent tolerance of the maximum allowable air content in Table 3.

For Class DS, the slump shall be within the requirements in Note ***** below Table 3. For Class DS exposed to seawater, the total air content shall be within a minus 1½ percent tolerance of the maximum allowable air content in Note **** below Table 3. For Class DS not exposed to seawater the total air content shall be within the requirements in Note **** below Table 3.

For Classes F and FX, the slump shall be within a minus 1½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of three inches (3") or less or within a minus 2½-inch tolerance of the maximum permitted for mixtures with a maximum permitted

slump of greater than three inches (3"). For Classes F and FX exposed to seawater, the total air content shall be within a minus 1½ percent tolerance of the maximum allowable air content in Note **** below Table 3. For Classes F and FX not exposed to seawater the total air content shall be within the requirements in Note **** below Table 3.

Delete the third sentence of the third paragraph of Subsection 804.02.10.3 on page 853, and substitute the following:

If the requirements of yield, slump, or total air content are not met within three (3) production days after the first placement, subsequent field verification testing shall not be permitted on department projects, and the mix design shall not be used until the requirements listed above are met

907-804.02.10.4--Adjustments of Mixture Proportions. Delete the paragraph in Subsection 804.02.10.4 on page 854, and substitute the following:

The mixture may be adjusted by the Class III Certified Technician representing the Contractor in accordance with the allowable revisions listed in the Department's Concrete Field Manual, paragraph 5.7. Written notification shall be submitted to the Engineer a minimum of seven (7) days prior to any source or brand of material change, aggregate size change, allowable material type change, or decrease in any cementitious material content. Any adjustments of the concrete mixture design shall necessitate repeat of field verification procedure as described in Subsection 804.02.10.3 and approval by the Engineer.

907-804.02.11--Concrete Batch Plants. Delete the first three paragraphs of Subsection 804.02.11 on page 854, and substitute the following:

The concrete batch plant shall meet the requirements of the National Ready Mixed Concrete Association *Quality Control Manual, Section 3, Plant Certification Checklist* as outlined in the latest edition of the Department's *Concrete Field Manual*. The Contractor shall submit a copy of the approved checklist along with proof of calibration of batching equipment, i.e., scales, water meter, and admixture dispenser, to the Engineer 30 days prior to the production of concrete.

For projects with 1000 cubic yards and more, the concrete batch plant shall meet the requirements for an automatic system capable of recording batch weights. It shall also have automatic moisture compensation for the fine aggregate. For projects of more than 200 but less than 1000 cubic yards the plant can be equipped for manual batching with a fine aggregate moisture meter visible to the plant operator.

The concrete batch plant shall have available adequate facilities to cool concrete during hot weather.

Mixer trucks to be used on the project are to be listed in the checklist and shall meet the requirements of the checklist.

907-804.02.12--Contractor's Quality Control. Delete the fourth paragraph of Subsection 804.02.12 on page 854 & 855, and substitute the following:

The Contractor's Quality Control program shall encompass the requirements of AASHTO Designation: M 157 into concrete production and control, equipment requirements, testing, and batch ticket information. The requirement of AASHTO Designation: M 157, Section 11.7 shall be followed except, on arrival to the job site, a maximum of 1½ gallons per cubic yard is allowed to be added. Water shall not be added at a later time. If the maximum permitted slump is exceeded after the addition of water at the job site, the concrete shall be rejected.

907-804.02.12.3--Documentation. After the second sentence of the second paragraph of Subsection 804.02.12.3 on page 856, add the following:

Batch tickets and gradation data shall be documented in accordance with Department requirements. Batch tickets shall contain all the information in AASHTO Designation: M157, Section 16 including the additional information in Subsection 16.2 with the following exception: the information listed in paragraphs 16.2.7 and 16.2.8 is not required. Batch tickets shall also contain the concrete producer's permanent unique mix number assigned to the concrete mix design.

907-804.02.12.5--Non-Conforming Materials. In Table 4 of Subsection 804.02.12.5 on page 857, delete "/ FM" from the requirements on line B.3.a.

In Table 4 of Subsection 804.02.12.5 on page 857, replace "One set (two cylinders) for 0-100 yd^3 inclusive" with "A minimum of one set (two cylinders) for each 100 yd^3,"

907-804.02.13--Quality Assurance Sampling and Testing. Delete subparagraph c) in Subsection 804.02.13 on page 858 and substitute the following:

c) For concrete, the Contractor's QC and Department's QA testing of concrete compressive strengths compare when using the data comparison computer program with an alpha value of 0.01 for projects with 1000 cubic yards and more; or, strength comparisons are within 990 psi for projects of more than 200 but less than 1000 cubic yards.

In Table 5 of Subsection 804.02.13 on page 858, delete "and FM" from the requirements on line A.3.

Delete Subsection 907-804.02.13.1 beginning on page 859 and substitute the following:

907-804.02.13.1--Basis of Acceptance.

907-804.02.13.1.1--Sampling. Sampling of concrete mixture shall be performed in accordance with the latest edition of the Department's *Concrete Field Manual*.

907-804.02.13.1.2--Slump. Slump of plastic concrete shall meet the requirements of Table 3: MASTER PROPORTION TABLE FOR STRUCTURAL CONCRETE DESIGN. A check test shall be made on another portion of the sample before rejection of any load.

907-804.02.13.1.3--Air. Total air content of concrete shall be within the specified range for the class of concrete listed in Table 3: MASTER PROPORTION TABLE FOR STRUCTURAL CONCRETE DESIGN. A check test shall be made on another portion of the sample before rejection of any load.

907-804.02.13.1.4--Yield. If the yield of the concrete mix design is more than plus or minus 3% of the designed volume, the mix shall be adjusted by a Class III Certified Technician representing the Contractor to yield the correct volume plus or minus three percent (±3%). If batching of the proportions of the mix design varies outside the batching tolerance range of the originally approved proportions by more than the tolerances allowed in Subsection 804.02.12.1, the new proportions shall be field verified per Subsection 804.02.10.3.

907-804.02.13.1.5--Temperature. Cold weather concreting shall follow the requirements of Subsection 907-804.03.16.1. Hot weather concreting shall follow the requirements of Subsection 804.03.16.2 with a maximum temperature of 95°F for Class DS concrete or for concrete mixes containing cementitious materials meeting the requirements of Subsection 907-701.02.2 as a replacement of Portland cement. For other concrete mixes, the maximum concrete temperature shall be 90°F. Concrete with a temperature more than the maximum allowable temperature shall be rejected and not used in Department work.

907-804.02.13.1.6--Compressive Strength. Laboratory cured concrete compressive strength tests shall conform to the specified strength (f'_c) listed in the specifications. Concrete represented by compressive strength test below the specified strength (f'_c) may be removed and replaced by the Contractor. If the Contractor elects not to remove the material, it will be evaluated by the Department as to the adequacy for the use intended. All concrete evaluated as unsatisfactory for the intended use shall be removed and replaced by the Contractor at no additional cost to the Department. For concrete allowed to remain in place, reduction in payment will be as follows:

Projects with 1000 Cubic Yards and More. When the evaluation indicates that the work may remain in place, a statistical analysis will be made of the QC and QA concrete test results. If this statistical analysis indicates at least 93% of the material would be expected to have a compressive strength equal to or greater than the specified strength (f'_c) and 99.87% of the material would be expected to have a compressive strength at least one standard deviation above the allowable design stress (f_c), the work will be accepted. If the statistical analysis indicates that either of the two criteria are not met, the Engineer will provide for an adjustment in pay as follows for the material represented by the test result.

Total Pay on Material in Question = Unit Price - (Unit Price x % Reduction)

$$\% \text{ Reduction} = \frac{(f'_c - X)}{f'_c - (f_c + s)} \times 100$$

where:

f'_c = Specified 28-day compressive strength, psi

X = Individual compressive strength below f'_c, psi
s = standard deviation, psi*
f_c = allowable design stress, psi

* Standard deviation used in the above reduction of pay formula shall be calculated from the applicable preceding compressive strengths test results plus the individual compressive strength below f'_c. If below f'_c strengths occur during the project's first ten compressive strength tests, the standard deviation shall be calculated from the first ten compressive strength tests results.

Projects of More Than 200 but Less Than 1000 Cubic Yards. When the evaluation indicates that the work may remain in place, a percent reduction in pay will be assessed based on a comparison of the deficient 28-day test result to the specified strength. The Engineer will provide for an adjustment in pay as follows for the material represented by the test result.

Total Pay on Material in Question = Unit Price - (Unit Price x % Reduction)

$$\% \text{ Reduction} = \frac{(f'_c - X)}{f'_c} \times 100$$

where:

f'_c = Specified 28-day compressive strength, psi
X = Individual compressive strength below f'_c, psi

907-804.03--Construction Requirements.

907-804.03.6--Handling and Placing Concrete.

907-804.03.6.2--Consolidation. After the last sentence of Subsection 804.03.6.2 on page 864, add the following:

If the Department determines that there is an excessive number of projections, swells, ridges, depressions, waves, voids, holes, honeycombs or other defects in the completed structure, removal of the entire structure may be required as set out in Subsection 105.12.

907-804.03.15--Removal of Falsework, Forms, and Housing. Delete the first sentence of the second paragraph of Subsection 804.03.15 on page 871, and substitute the following:

Concrete in the last pour of a continuous superstructure shall have attained a compressive strength of 2,400 psi, as determined by cylinder tests or maturity meter probe, prior to striking any falsework.

Delete the first sentence of the third paragraph of Subsection 804.03.15 on page 871, and substitute the following:

At the Contractor's option and with the approval of the Engineer, the time for removal of forms may be determined by cylinder tests, in accordance with the requirements listed in Table 6, in which case the Contractor shall furnish facilities for testing the cylinders.

Delete the fourth and fifth paragraphs of Subsection 804.03.15 on pages 871 & 872, and substitute the following:

The cylinders shall be cured under conditions which are not more favorable than those existing for the portions of the structure which they represent.

Delete the table in Subsection 804.03.15 on page 872, and substitute the following:

Table 6
Minimum Compressive Strength Requirements for Form Removal

Forms:	
Columns	1000 psi
Side of Beams	1000 psi
Walls not under pressure	1000 psi
Floor Slabs, overhead	2000 psi
Floor Slabs, between beams	2000 psi
Slab Spans	2400 psi
Other Parts	1000 psi
Centering:	
Under Beams	2400 psi
Under Bent Caps	2000 psi
Limitation for Placing Beams on:	
Pile Bents, pile under beam	2000 psi
Frame Bents, two or more columns	2200 psi
Frame Bents, single column	2400 psi

In lieu of using concrete strength cylinders to determine when falsework, forms, and housings can be removed, an approved maturity meter may be used to determine concrete strengths by inserting probes into concrete placed in a structure. The minimum number of maturity meter probes required for each structural component shall be in accordance with Table 7. Falsework, forms, and housings may be removed when maturity meter readings indicate that the required concrete strength is achieved. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO Designation: T 325 and ASTM Designation: C 1074 specifications. Technicians using the maturity meter or calculating strength/maturity graphs shall be required to have at least two hours of training prior to using the maturity equipment.

Table 7
Requirements for use of Maturity Meter Probes

Structure Component	Quantity of Concrete	No. of Probes
Slabs, beams, walls, & miscellaneous items	0 - 30 yd^3	2
	> 30 to 60 yd^3	3
	> 60 to 90 yd^3	4
	> 90 yd^3	5
Footings, Columns & Caps	0 - 13 yd^3	2
	> 13 yd^3	3
Pavement, Pavement Overlays	1200 yd^2	2
Pavement Repairs	Per repair or 900 yd^2 Whichever is smaller	2

907-804.03.16--Cold or Hot Weather Concreting.

907-804.03.16.1--Cold Weather Concreting. After the third paragraph of Subsection 804.03.16.1 on page 873, add the following:

In lieu of the protection and curing of concrete in cold weather, at the option of the Contractor with the approval of the Engineer, when concrete is placed during cold weather and there is a probability of ambient temperatures lower that 40°F, an approved maturity meter may be used to determine concrete strengths by inserting probes into concrete placed in a structure. The minimum number of maturity meter probes required for each structural component shall be in accordance with Table 7. An approved insulating blanketing material shall be used to protect the work when ambient temperatures are less than 40°F and shall remain in place until the required concrete strength in Table 6 is achieved. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO Designation: T 325 and ASTM Designation: C 1074 specifications. Technicians using the maturity meter or calculating strength/maturity graphs shall be required to have at least two hours of training prior to using the maturity equipment.

Rename the Table in Subsection 804.03.16.1 on page 874 from "Table 6" to "Table 8".

907-804.03.19--Finishing Concrete Surfaces.

907-804.03.19.7--Finishing Bridge Floors.

907-804.03.19.7.4--Acceptance Procedure for Bridge Deck Smoothness. After the first sentence of the second paragraph of Subsection 804.03.19.7.4 on page 886, add the following:

Auxiliary lanes, tapers, shoulders and other areas that are not checked with the profilograph, shall meet a 1/8 inch in 10-foot straightedge check made transversely and longitudinally across the deck or slab.

907-804.05--Basis of Payment. Add the "907" prefix to the pay items listed on page 898.

S E C T I O N 9 0 5 - P R O P O S A L

Date _____

Mississippi Transportation Commission
Jackson, Mississippi

Sirs: The following proposal is made on behalf of _____
_____ of _____
_____
for constructing the following designated project(s) within the time(s) hereinafter specified.

The plans are composed of drawings and blue prints on file in the offices of the Mississippi Department of Transportation, Jackson, Mississippi.

The Specifications are the current Standard Specifications of the Mississippi Department of Transportation approved by the Federal Highway Administration, except where superseded or amended by the plans, Special Provisions and Notice(s) to Bidders attached hereto and made a part thereof.

I (We) certify that I (we) possess a copy of said Standard and any Supplemental Specifications.

Evidence of my (our) authority to submit the Proposal is hereby furnished. The proposal is made without collusion on the part of any person, firm or corporation. I (We) certify that I (we) have carefully examined the Plans, the Specifications, including the Special Provisions and Notice(s) to Bidders, herein, and have personally examined the site of the work. On the basis of the Specifications, Special Provisions, Notice(s) to Bidders, and Plans, I (we) propose to furnish all necessary machinery, tools, apparatus and other means of construction and do all the work and furnish all the materials in the manner specified. I (We) understand that the quantities mentioned herein are approximate only and are subject to either increase or decrease, and hereby propose to perform any increased or decreased quantities of work at the unit prices bid, in accordance with the above.

Attached hereto is a certified check, cashier's check or Proposal Guaranty Bond in the amount as required in the Advertisement (or, by law).

INSTRUCTION TO BIDDERS: Alternate and Optional Items on Bid Schedule.

1. Two or more items entered opposite a single unit quantity WITHOUT DEFINITE DESIGNATION AS "ALTERNATE ITEMS" are considered as "OPTIONAL ITEMS". Bidders may or may not indicate on bids the Optional Item proposed to be furnished or performed WITHOUT PREJUDICE IN REGARD TO IRREGULARITY OF BIDS.

2. Items classified on the bid schedule as "ALTERNATE ITEMS" and/or "ALTERNATE TYPES OF CONSTRUCTION" must be preselected and indicated on bids. However, "Alternate Types of Construction" may include Optional Items to be treated as set out in Paragraph 1, above.

3. Optional items not preselected and indicated on the bid schedule MUST be designated in accordance with Subsection 102.06 prior to or at the time of execution of the contract.

4. Optional and Alternate items designated must be used throughout the project.

I (We) further propose to perform all "force account or extra work" that may be required of me (us) on the basis provided in the Specifications and to give such work my (our) personal attention in order to see that it is economically performed.

S E C T I O N 9 0 5 -- P R O P O S A L (CONTINUED)

I (We) further propose to execute the attached contract agreement (Section 902) as soon as the work is awarded to me (us), and to begin and complete the work within the time limit(s) provided for in the Specifications and Advertisement. I (We) also propose to execute the attached contract bond (Section 903) in an amount not less than one hundred (100) percent of the total of my (our) part, but also to guarantee the excellence of both workmanship and materials until the work is finally accepted.

I (We) enclose a certified check, cashier's check or bid bond for **five percent (5%) of total bid** and hereby agree that in case of my (our) failure to execute the contract and furnish bond within Ten (10) days after notice of award, the amount of this check (bid bond) will be forfeited to the State of Mississippi as liquidated damages arising out of my (our) failure to execute the contract as proposed. It is understood that in case I am (we are) not awarded the work, the check will be returned as provided in the Specifications.

Respectfully Submitted,

DATE _____

_____
Contractor

BY _____
Signature

TITLE _____

ADDRESS _____

CITY, STATE, ZIP _____

PHONE _____

FAX _____

E-MAIL _____

(To be filled in if a corporation)

Our corporation is chartered under the Laws of the State of _____ and the names, titles and business addresses of the executives are as follows:

President	Address
Secretary	Address
Treasurer	Address

The following is my (our) itemized proposal.

Site Improvements at Lyman Site - Utility Mainline Installation, known as State Project No. LWO-6032-24(006) / 502517301 in Harrison County.

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
					Roadway Items
0010	201-A001		1	Lump Sum	Clearing and Grubbing
0020	202-B078		150	Square Yard	Removal of Pavement, All Types and Depths
0030	203-EX005	(E)	50	Cubic Yard	Borrow Excavation, AH, FME, Class B3
0040	220-A001		5	Acre	Insect Pest Control [$30.00]
0050	234-A001		1,850	Linear Feet	Temporary Silt Fence
0060	618-A001		1	Lump Sum	Maintenance of Traffic
0070	618-B001		1	Square Feet	Additional Construction Signs [$10.00]
0080	620-A001		1	Lump Sum	Mobilization
0090	907-225-A001		5	Acre	Grassing
0100	907-225-B001		12	Ton	Agricultural Limestone
0110	907-225-C001		10	Ton	Mulch, Vegetative Mulch
0120	907-237-A003		800	Linear Feet	Wattles, 20"
0130	907-260-A002		1	Lump Sum	Lift Station
0140	907-263-A005	(S)	5,290	Linear Feet	4" Diameter PVC Force Main Pipe, SDR 26
0150	907-263-A008	(S)	480	Linear Feet	4" Diameter Ductile Iron Force Main Pipe
0160	907-263-C001	(S)	5	Each	Air Release Valve
0170	907-265-A008	(S)	205	Linear Feet	8" PVC Pipe, Water
0180	907-265-A009	(S)	6,040	Linear Feet	12" PVC Pipe, Water
0190	907-265-A010	(S)	400	Linear Feet	12" Ductile Iron Pipe, Water
0200	907-265-C001		5,500	Pounds	Ductile Iron MJ Fittings
0210	907-265-D002		3	Each	8" Gate Valve and Value Box
0220	907-265-D018		3	Each	12" Gate Valve and Value Box
0230	907-265-F001		15	Each	Fire Hydrant Assembly
0240	907-265-H001		1	Each	Initial Testing
0250	907-265-I001		1	Each	Initial DisinfectionTesting
0260	907-265-J005		1	Each	Connection to Existing 12" Water Main
0270	907-265-L004	(S)	1	Each	Flushing Valve
0280	907-265-L005	(S)	1	Each	Automatic Flushing Assembly
0290	907-304-H001	(GY)	20	Cubic Yard	Size 825 Crushed Stone Base, LVM
0300	907-501-B001	(C)	25	Square Yard	6" Plain Cement Concrete Pavement, Drag Finish
0310	907-603-A002	(S)	290	Linear Feet	8" Steel Pipe, Jacked or Bored
0320	907-603-A003	(S)	160	Linear Feet	16" Steel Pipe, Jacked or Bored

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
0330	907-603-A004	(S)	240	Linear Feet	20" Steel Pipe, Jacked or Bored
0340	907-603-DD004	(S)	940	Linear Feet	Directional Drilling, 4" HDPE Pipe, SDR 11
0350	907-603-DD005	(S)	640	Linear Feet	Directional Drilling, 12" HDPE Pipe, SDR 11
0360	907-699-A002		1	Lump Sum	Roadway Construction Stakes
				ALTERNATE GROUP AA NUMBER 1	
0370	907-403-A006	(BA1)	18	Ton	Hot Mix Asphalt, MT, 12.5-mm mixture
				ALTERNATE GROUP AA NUMBER 2	
0380	907-403-M002	(BA1)	18	Ton	Warm Mix Asphalt, MT, 12.5-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).

	Project No.	County		Project No.	County
1.	____________	____________	6.	____________	____________
2.	____________	____________	7.	____________	____________
3.	____________	____________	8.	____________	____________
4.	____________	____________	9.	____________	____________
5.	____________	____________	10.	____________	____________

A. If option (a) has been selected, then go to II, and sign Combination Bid Proposal.

B. If option (b) has been selected, then complete the following, go to II, and sign Combination Bid Proposal.

SECTION 905 - COMBINATION BID PROPOSAL (Continued)

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
1. _____	_____ _____	_____ _____	_____ _____	_____ _____	
2. _____	_____ _____	_____ _____	_____ _____	_____ _____	
3. _____	_____ _____	_____ _____	_____ _____	_____ _____	
4. _____	_____ _____	_____ _____	_____ _____	_____ _____	
5. _____	_____ _____	_____ _____	_____ _____	_____ _____	
6. _____	_____ _____	_____ _____	_____ _____	_____ _____	
7. _____	_____ _____	_____ _____	_____ _____	_____ _____	
8. _____	_____ _____	_____ _____	_____ _____	_____ _____	

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
9. _____	_____ _____	_____ _____	_____ _____	_____ _____	
10. _____	_____ _____	_____ _____	_____ _____	_____ _____	

C. If option (c) has been selected, then initial and complete one of the following, go to II. and sign Combination Bid Proposal.

_____ I (We) desire to be awarded work not to exceed a total monetary value of $ _____.

_____ I (We) desire to be awarded work not to exceed _____ number of contracts.

II. It is understood that the Mississippi Transportation Commission not only reserves the right to reject any and all proposals, but also the right to award contracts upon the basis of lowest separate bids or combination bids most advantageous to the State.

It is further understood and agreed that the Combination Bid Proposal is for comparison of bids only and that each contract shall operate in every respect as a separate contract in accordance with its proposal and contract documents.

I (We), the undersigned, agree to complete each contract on or before its specified completion date.

SIGNED _____

_____

_____

TO: EXECUTIVE DIRECTOR, MISSISSIPPI DEPARTMENT OF TRANSPORTATION
JACKSON, MISSISSIPPI

CERTIFICATE

If awarded this contract, I (we) contemplate that portions of the contract will be sublet. I (we) certify that those subcontracts which are equal to or in excess of fifty thousand dollars ($50,000.00) will be in accordance with regulations promulgated and adopted by the Mississippi State Board of Contractors on January 13, 1999.

I (we) agree that this notification of intent DOES NOT constitute APPROVAL of the subcontracts.

NOTE: Insert name and address of subcontractors. (Subcontracts equal to or in excess of fifty thousand dollars ($50,000.00) ONLY.)

(Individual or Firm)	(Address)
(Individual or Firm)	(Address)
(Individual or Firm)	(Address)
(Individual or Firm)	(Address)

NOTE: Failure to complete the above DOES NOT preclude subsequent subcontracts. Subsequent subcontracts, if any, equal to or in excess of fifty thousand dollars ($50,000.00) will be in accordance with regulations promulgated and adopted by the Mississippi State Board of Contractors on January 13, 1999.

Contractor _____

By _____

Title _____

CERTIFICATE MUST BE EXECUTED

REV. 2/99

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

CERTIFICATION
(Execute in duplicate)

I,_____,
(Name of person signing certification)

individually, and in my capacity as _____ of
(Title)

_____ do hereby certify under
(Name of Firm, Partnership, or Corporation)

penalty of perjury under the laws of the United States and the State of Mississippi that

_____, Bidder
(Name of Firm, Partnership, or Corporation)

on Project No. **LWO-6032-24(006) / 502517301**,

in **Harrison** County(ies), Mississippi, has not either directly or indirectly entered into any agreement, participated in any collusion; or otherwise taken any action in restraint of free competitive bidding in connection with this contract; nor have any of its corporate officers or principal owners.

Except as noted hereafter, it is further certified that said legal entity and its corporate officers, principal owners, managers, auditors and others in a position of administering federal funds are not currently under suspension, debarment, voluntary exclusion or determination of ineligibility; nor have a debarment pending; nor been suspended, debarred, voluntarily excluded or determined ineligible within the past three years by the Mississippi Transportation Commission, the State of Mississippi, any other State or a federal agency; nor been indicted, convicted or had a civil judgment rendered by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

Initial here "_____" if exceptions are attached and made a part thereof. Any exceptions shall address to whom it applies, initiating agency and dates of such action.

Note: Exceptions will not necessarily result in denial of award but will be considered in determining bidder responsibility. Providing false information may result in criminal prosecution or administrative sanctions.

All of the foregoing and attachments (when indicated) is true and correct.

Executed on _____ _____
Signature

(5/29/2008S)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

CERTIFICATION
(Execute in duplicate)

I,_____,
(Name of person signing certification)

individually, and in my capacity as _____ of
(Title)

_____ do hereby certify under
(Name of Firm, Partnership, or Corporation)

penalty of perjury under the laws of the United States and the State of Mississippi that

_____, Bidder
(Name of Firm, Partnership, or Corporation)

on Project No. **LWO-6032-24(006) / 502517301**,

in **Harrison** County(ies), Mississippi, has not either directly or indirectly entered into any agreement, participated in any collusion; or otherwise taken any action in restraint of free competitive bidding in connection with this contract; nor have any of its corporate officers or principal owners.

Except as noted hereafter, it is further certified that said legal entity and its corporate officers, principal owners, managers, auditors and others in a position of administering federal funds are not currently under suspension, debarment, voluntary exclusion or determination of ineligibility; nor have a debarment pending; nor been suspended, debarred, voluntarily excluded or determined ineligible within the past three years by the Mississippi Transportation Commission, the State of Mississippi, any other State or a federal agency; nor been indicted, convicted or had a civil judgment rendered by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

Initial here "_____" if exceptions are attached and made a part thereof. Any exceptions shall address to whom it applies, initiating agency and dates of such action.

Note: Exceptions will not necessarily result in denial of award but will be considered in determining bidder responsibility. Providing false information may result in criminal prosecution or administrative sanctions.

All of the foregoing and attachments (when indicated) is true and correct.

Executed on _____ _____
Signature

(5/29/2008S)

S E C T I O N 9 0 2

CONTRACT FOR **LWO-6032-24(006) / 502517301**

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

STATE OF MISSISSIPPI,

COUNTY OF HINDS

This contract entered into by and between the Mississippi Transportation Commission on one hand, and the undersigned contractor, on the other witnesseth;

That, in consideration of the payment by the Mississippi Transportation Commission of the prices set out in the proposal hereto attached, to the undersigned contractor, such payment to be made in the manner and at the time of times specified in the specifications and the special provisions, if any, the undersigned contractor hereby agrees to accept the prices stated in the proposal in full compensation for the furnishing of all materials and equipment and the executing of all the work contemplated in this contract.

It is understood and agreed that the advertising according to law, the Advertisement, the instructions to bidders, the proposal for the contract, the specifications, the revisions of the specifications, the special provisions, and also the plans for the work herein contemplated, said plans showing more particularly the details of the work to be done, shall be held to be, and are hereby made a part of this contract by specific reference thereto and with like effect as if each and all of said instruments had been set out fully herein in words and figures.

It is further agreed that for the same consideration the undersigned contractor shall be responsible for all loss or damage arising out of the nature of the work aforesaid; or from the action of the elements and unforeseen obstructions or difficulties which may be encountered in the prosecution of the same and for all risks of every description connected with the work, exceptions being those specifically set out in the contract; and for faithfully completing the whole work in good and workmanlike manner according to the approved Plans, Specifications, Special Provisions, Notice(s) to Bidders and requirements of the Mississippi Department of Transportation.

It is further agreed that the work shall be done under the direct supervision and to the complete satisfaction of the Executive Director of the Mississippi Department of Transportation, or his authorized representatives, and when Federal Funds are involved subject to inspection at all times and approval by the Federal Highway Administration, or its agents as the case may be, or the agents of any other Agency whose funds are involved in accordance with those Acts of the Legislature of the State of Mississippi approved by the Governor and such rules and regulations issued pursuant thereto by the Mississippi Transportation Commission and the authorized Federal Agencies.

The Contractor agrees that all labor as outlined in the Special Provisions may be secured from list furnished by

It is agreed and understood that each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and this contract shall be read and enforced as though it were included herein, and, if through mere mistake or otherwise any such provision is not inserted, then upon the application of either party hereto, the contract shall forthwith be physically amended to make such insertion.

The Contractor agrees that he has read each and every clause of this Contract, and fully understands the meaning of same and that he will comply with all the terms, covenants and agreements therein set forth.

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

_____
Contractor (s)

By _____ MISSISSIPPI TRANSPORTATION COMMISSION

Title _____ By _____
Signed and sealed in the presence of: Executive Director
(names and addresses of witnesses)

_____ _____
Secretary to the Commission

Award authorized by the Mississippi Transportation Commission in session on the ____ day of _____, _____, Minute Book No. _____, Page No. _____.

Revised 8/06/2003

S E C T I O N 9 0 3
PERFORMANCE AND PAYMENT BOND

CONTRACT BOND FOR: **LWO-6032-24(006) / 502517301**

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

STATE OF MISSISSIPPI,

COUNTY OF HINDS

Know all men by these presents: that we, _____
(Contractor)

_____ Principal, a _____

residing at _____ in the State of _____

and _____
(Surety)

residing at _____ in the State of _____,

authorized to do business in the State of Mississippi, under the laws thereof, as surety, are held and firmly bound unto the State of Mississippi in the sum of _____

_____

($_____) Dollars, lawful money of the United States of America, to be paid to it for which payment well and truly to be made, we bind ourselves, our heirs, administrators, successors, or assigns jointly and severally by these presents.

Signed and sealed this the _____ day of _____ A.D. _____.

The conditions of this bond are such, that whereas the said _____

_____

principal, has (have) entered into a contract with the Mississippi Transportation Commission, bearing the date of _____ day of _____ A.D. _____ hereto annexed, for the construction of certain projects(s) in the State of Mississippi as mentioned in said contract in accordance with the Contract Documents therefor, on file in the offices of the Mississippi Department of Transportation, Jackson, Mississippi.

Now therefore, if the above bounden _____

_____ in all things shall stand to and abide by and well and truly observe, do keep and perform all and singular the terms, covenants, conditions, guarantees and agreements in said contract, contained on his (their) part to be observed, done, kept and performed and each of them, at the time and in the manner and form and furnish all of the material and equipment specified in said contract in strict accordance with the terms of said contract which said plans, specifications and special provisions are included in and form a part of said contract and shall maintain the said work contemplated until its final completion and acceptance as specified in Subsection 109.11 of the approved specifications, and save harmless said Mississippi Transportation Commission from any loss or damage arising out of or occasioned by the negligence, wrongful or criminal act, overcharge, fraud, or any other loss or damage whatsoever, on the part of said principal (s), his (their) agents, servants, or employees in

the performance of said work or in any manner connected therewith, and shall be liable and responsible in a civil action instituted by the State at the instance of the Mississippi Transportation Commission or any officer of the State authorized in such cases, for double any amount in money or property, the State may lose or be overcharged or otherwise defrauded of, by reason of wrongful or criminal act, if any, of the Contractor(s), his (their) agents or employees, and shall promptly pay the said agents, servants and employees and all persons furnishing labor, material, equipment or supplies therefor, including premiums incurred, for Surety Bonds, Liability Insurance, and Workmen's Compensation Insurance; with the additional obligation that such Contractor shall promptly make payment of all taxes, licenses, assessments, contributions, damages, any liquidated damages which may arise prior to any termination of said principal's contract, any liquidated damages which may arise after termination of the said principal's contract due to default on the part of said principal, penalties and interest thereon, when and as the same may be due this state, or any county, municipality, board, department, commission or political subdivision: in the course of the performance of said work and in accordance with Sections 31-5-51 et seq. Mississippi Code of 1972, and other State statutes applicable thereto, and shall carry out to the letter and to the satisfaction of the Executive Director of the Mississippi Department of Transportation, all, each and every one of the stipulations, obligations, conditions, covenants and agreements and terms of said contract in accordance with the terms thereof and all of the expense and cost and attorney's fee that may be incurred in the enforcement of the performance of said contract, or in the enforcement of the conditions and obligations of this bond, then this obligation shall be null and void, otherwise to be and remain in full force and virtue.

Witness our signatures and seals this the _____ day of _____ A.D. _____.

_____	_____
(Contractors) Principal	Surety
By _____	By _____
	(Signature) Attorney in Fact
	Address _____
	_____
Title _____	_____
(Contractor's Seal)	(Printed) MS Agent
	_____
	(Signature) MS Agent
	Address _____
	_____
	_____
	(Surety Seal)
	_____
	Mississippi Insurance ID Number

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____
Contractor

_____
Address

_____
City, State ZIP

as Principal, hereinafter called the Principal, and _____
Surety

a corporation duly organized under the laws of the state of _____

as Surety, hereinafter called the Surety, are held and firmly bound unto **State of Mississippi, Jackson, Mississippi**

As Obligee, hereinafter called Obligee, in the sum of **Five Per Cent (5%) of Amount Bid**

Dollars ($ _____)

for the payment of which sum will and truly to be made, the said Principal and said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for **Site Improvements at Lyman Site - Utility Mainline Installation, known as State Project No. LWO- 6032-24(006) / 502517301 in Harrison County.**

NOW THEREFORE, the condition of this obligation is such that if the aforesaid Principal shall be awarded the contract, the said Principal will, within the time required, enter into a formal contract and give a good and sufficient bond to secure the performance of the terms and conditions of the contract, then this obligation to be void; otherwise the Principal and Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee legally contracts with another party to perform the work if the latter amount be in excess of the former, but in no event shall liability hereunder exceed the penal sum hereof.

Signed and sealed this _____ day of _____ , 20___

_____
(Principal) (Seal)

_____ By: _____
(Witness) (Name) (Title)

_____
(Surety) (Seal)

_____ By: _____
(Witness) (Attorney-in-Fact)

_____
MS Agent

_____
Mississippi Insurance ID Number