



SM No. CHSIP6098000031

# PROPOSAL AND CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF  
(EXEMPT)

18  
Reconstruction of State Route 198 (Hardy Street), from I-59 to US 49 in  
Hattiesburg, known as Federal Aid Project No. HSIP-6098-00(003) /  
102252301, in the County of Forrest, State of Mississippi.  
Project Completion: 244 Time Units

## NOTICE

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

Electronic addendum updates will be posted on [www.goMDOT.com](http://www.goMDOT.com)

**SECTION 900**  
**OF THE CURRENT**  
**(1996) STANDARD SPECIFICATIONS**  
**FOR ROAD AND BRIDGE CONSTRUCTION**  
**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**  
**JACKSON, MISSISSIPPI**

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

- \_\_\_\_\_ All unit prices and item totals have been entered in accordance with Subsection 102.06 of the Mississippi Standard Specifications for Road and Bridge Construction.
- \_\_\_\_\_ If the bid sheets were prepared using MDOT's Electronic Bid System, proposal sheets have been stapled and inserted into the proposal package.
- \_\_\_\_\_ First sheet of SECTION 905--PROPOSAL has been completed.
- \_\_\_\_\_ Second sheet of SECTION 905--PROPOSAL has been completed and signed.
- \_\_\_\_\_ Addenda, if any, have been acknowledged. Second sheet of Section 905 listing the addendum number has been substituted for the original second sheet of Section 905. Substituted second sheet of Section 905 has been properly completed, signed, and added to the proposal.
- \_\_\_\_\_ DBE/WBE percentage, when required by contract, has been entered on last sheet of the bid sheets of SECTION 905 - PROPOSAL.
- \_\_\_\_\_ Form OCR-485, when required by contract, has been completed and signed.
- \_\_\_\_\_ The last sheet of the bid sheets of SECTION 905--PROPOSAL has been signed.
- \_\_\_\_\_ Combination Bid Proposal of SECTION 905--PROPOSAL has been completed for each project which is to be considered in combination (See Subsection 102.11).
- \_\_\_\_\_ Equal Opportunity Clause Certification, when included in contract, has been completed and signed.
- \_\_\_\_\_ Subcontract Certificate, 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. Bid bond has been signed by the bidder and has also been signed or countersigned by a Mississippi Resident Agent for the Surety with Power of Attorney attached or on file with the Department's Contract Administration Engineer.
- \_\_\_\_\_ Non-resident Bidders: ON STATE FUNDED PROJECTS ONLY, a copy of the current laws regarding any preference for local Contractors from State wherein domiciled has been included. See Subsection 103.01, Mississippi Standard Specifications for Road and Bridge Construction, and Section 31-7-47, MCA, 1972 regarding this matter.

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

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

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

## SECTION 901 - ADVERTISEMENT

Sealed bids will be received by the Mississippi Transportation Commission in the Office of the Contract Administration Engineer, Room 1013, Mississippi Department of Transportation Administration Building, 401 North West Street, Jackson, Mississippi, until 9:30 o'clock A.M., Tuesday, April 24, 2007; thereafter, bids will be received in the First Floor Auditorium of the Mississippi Department of Transportation Administration Building, Jackson, Mississippi, until 10:00 o'clock A.M., Tuesday, April 24, 2007, and shortly thereafter publicly opened for:

Reconstruction of State Route 198 (Hardy Street), from I-59 to US 49 in Hattiesburg, known as Federal Aid Project No. HSIP-6098-00(003) / 102252301, in the County of Forrest, State of Mississippi.

The attention of bidders is directed to the Contract Provisions governing selection and employment of labor. Minimum wage rates have been predetermined by the Secretary of Labor and are subject to Public Law 87-58 1, Work Hours Act of 1962, as set forth in the Contract Provisions.

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.

**The award of this contract will be contingent upon the Contractor satisfying the DBE requirements.**

Bid proposals must be acquired from the MDOT Contract Administration Division. These proposals are available at a cost of Ten Dollars (\$10.00) per proposal. Specimen proposals are also available at the MDOT Contract Administration Division at a cost of Ten Dollars (\$10.00) per proposal, or can be viewed or downloaded at no cost at [www.gomdot.com](http://www.gomdot.com).

Plans may be acquired on a cost per sheet basis from MDOT Plans Print Shop, Room 1100, MDOT Administration Building, 401 North West Street, Jackson, Mississippi, 39201, Telephone (601) 359-7460 or e-mail at [plans@mdot.state.ms.us](mailto:plans@mdot.state.ms.us) or FAX (601) 359-7461. Plans will be shipped upon receipt of payment.

Bid bond, signed or countersigned by a Mississippi Resident Agent, with Power of Attorney attached or on file with the Contract Administration Engineer of the Department, a Cashier's check or Certified Check for five (5%) percent of bid, payable to STATE OF MISSISSIPPI, must accompany each proposal.

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

LARRY L. "BUTCH" BROWN  
EXECUTIVE DIRECTOR

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 1M**

**CODE: (IS)**

**DATE: 1/2/96**

**SUBJECT: Governing Specifications**

The current 1996 Metric Edition of the Mississippi 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 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.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 6M**

**CODE: (IS)**

**DATE: 1/2/96**

**SUBJECT: Status of Right-of-Way, Utility Adjustments and Potentially Contaminated Sites**

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

The status of right-of-way and utility adjustments and potentially contaminated sites are set forth in attachments entitled "Status of Right-of-Way", "Status of Utility Adjustments" and "Status of Potentially Contaminated Sites."

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





**Mayor**

*Johnny L. DuPree, Ph.D.*

**Council - Ward 1**  
*Kim Bradley*

**Council - Ward 2**  
*Deborah Denard Delgado*

**Council - Ward 3**  
*Carter Carroll*

**Council - Ward 4**  
*Dave J. Ware, II*

**Council - Ward 5**  
*Henry Naylor*

**CITY OF HATTIESBURG CONSTRUCTION CERTIFICATIONS  
PROJECT NO. STP-6098-00(003) - 203363/301000  
FORREST COUNTY**

**RIGHT OF WAY AND ENCROACHMENT CERTIFICATION**

This is certification that all rights-of-way and temporary easements necessary to construct this project have been secured by the City of Hattiesburg in accordance with 49 CFR Part 24, except as indicated below and are on file with the City of Hattiesburg. All other construction is within existing rights-of-way. All right-of-way encroachments have been resolved with the exception of a parking lot light pole located @ Sta. 1+750 Rt. with removal to be complete prior to the contract letting date.

**HAZARDOUS MATERIAL CERTIFICATION**

This is certification that no known potentially contaminated sites exist within the limits of construction of this project.

**STATUS OF UTILITY RELOCATION WORK**

**BELLSOUTH:** All known required relocations are complete. No conflict with contractor's operations is anticipated.

**CITY OF HATTIESBURG WATER & SEWER:** All known required relocations are complete with the exception of Ross Blvd., S. 31<sup>st</sup> Ave. and S. 29<sup>th</sup> Ave. These exceptions will be completed prior to the contract letting date. No conflict with contractor's operations is anticipated.

**COMCAST CABLE:** All known required relocations are complete. No conflict with contractor's operations is anticipated.

**MISSISSIPPI POWER:** All known required relocations are complete. No conflict with contractor's operations is anticipated.

**WILLMUT GAS:** All known required relocations are complete with the exception of S. 31<sup>st</sup> Ave. and S. 29<sup>th</sup> Ave. These exceptions will be completed prior to the contract letting date. No conflict with contractor's operations is anticipated.

**This is certification that all known utility conflicts will be resolved prior to construction.  
Dated this the 22<sup>nd</sup> day of January, 2007.**

**Bennie J. Sellers, P.E., P.L.S., Director of Public Services**

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 - NOTICE TO BIDDERS NO. 13M**

**CODE: (SP)**

**DATE: 1/2/96**

**SUBJECT: Final Clean-Up**

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

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

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

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 29M**

**CODE: (IS)**

**DATE: 4/9/96**

**SUBJECT: Selection of Optional Items**

Bidders are hereby advised that, because of a change by the Department in classifying "Optional" items, the bid schedule for this project lists as "Optional" items that formally have been listed as "Alternate".

The summary of quantities sheet(s) in construction plans printed prior to the effective date of this change may list as "Alternate" items that are listed as "Optional" in the bid proposal.

When this contradiction occurs, the listing in the bid schedule is correct and bidders are to disregard the contradicting listing on the summary of quantities sheet(s) in the construction plans.

Bidders should pay close attention to the items classified in the bid schedule as "Optional" items.

With the change by the Department in classifying optional items, a change will be required of the Contractor in the selection of optional items. (Refer to 907-101-2, 907-102-4 and Section 905)

**WHEN THE BID SCHEDULE LISTS OPTIONAL ITEMS, THE CONTRACTOR'S SELECTION MAY, BUT IS NOT REQUIRED TO, BE MADE AT THE TIME OF BIDDING. FOR OPTIONAL ITEMS NOT PRE-SELECTED, THE CONTRACTOR'S SELECTION SHALL BE MADE PRIOR TO OR AT THE TIME OF EXECUTION OF THE CONTRACT.**

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 32M**

**CODE: (IS)**

**DATE: 5/8/96**

**SUBJECT: Soft Metric Reinforcing Steel**

Anywhere in the plans, proposal or specifications reference is made to Grade 400 or Grade 500 reinforcing steel, it shall be understood that Grade 420 and Grade 520 reinforcing steel are the correct grades.

Anywhere in the plans, proposal or specifications reference is made to AASHTO Designation: M 31M, it shall be understood that AASHTO Designation: M 31M, as amended by special provision, shall apply.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 33M**

**CODE: (IS)**

**DATE: 5/8/96**

**SUBJECT: ASTM or AASHTO Designation**

Whenever in the specifications reference is made to an ASTM or AASHTO Designation No., the metric edition in effect on the date of advertisement for bids shall apply, provided a metric version exists, regardless of whether or not the Designation No. shown in the specifications carries a "M" to signify metric version.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 - NOTICE TO BIDDERS NO. 37M**

**CODE: (SP)**

**DATE: 6/21/96**

**SUBJECT: Substitution of Reinforcing Steel - Soft Metric to Imperial**

Bidders are hereby advised that, at their option, imperial (inch-pound) reinforcing steel for cast-in-place or pre-cast concrete structures may be substituted for soft metric reinforcing steel in accordance with the following table. The spacing or total number of bars will remain as shown on the contract plans.

Soft Metric Bar Designation No.	Imperial Bar Designation No.
13	4
16	5
19	6
22	7
25	8
29	9
32	10
36	11

Computation of quantities for final payment will be based on approved order lists.

The basis of payment will be in metric units. The conversion factor to use in the conversion to and from metric is as follows:

$$1 \text{ pound} = 0.4536 \text{ kilogram}$$

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 74M

CODE: (IS)

DATE: 3/31/97

SUBJECT: Plant Pest Quarantines Information

AT THE REQUEST OF THE U. S. DEPARTMENT OF AGRICULTURE, PLANT PEST CONTROL INFORMATION CONCERNING DOMESTIC QUARANTINES IS CITED AS FOLLOWS:

The entire state of Mississippi has been quarantined for the Imported Fire Ants. Soil and soil-moving equipment operating in the state will be subject to plant quarantine regulations. In general, these regulations provide for cleaning soil from equipment before it is moved from the state. Complete information may be secured from the State of Mississippi Department of Agriculture and Commerce, Bureau of Plant Industry, P. O. Box 5207, Mississippi State, Mississippi 39762-5207 - Telephone 325-3390.

## IMPORTED FIRE ANT QUARANTINES

THE FOLLOWING REGULATED ARTICLES REQUIRE A CERTIFICATE OR PERMIT FOR MOVEMENT:

1. Soil, separately or with other things, except soil samples shipped to approved laboratories\*. Potting soil is exempt, if commercially prepared, packaged and shipped in original containers.
2. Plants with roots with soil attached, except houseplants maintained indoors and not for sale.
3. Grass sod.
4. Baled hay and straw that have been stored in contact with the soil.
5. Used soil-moving equipment.
6. Any other products, articles, or means of conveyance of any character whatsoever not covered by the above, when it is determined by an inspector that they present a hazard of spread of the imported fire ant and the person in possession thereof has been so notified.

\* Information as to designated laboratories, facilities, gins, oil mills, and processing plants may be obtained from an inspector.

## Imported Fire Ant Quarantines



### Conditions of Movement.

Counties entirely colored are completely regulated; Counties partially colored are partially regulated.

### Regulated Area.

Restrictions are imposed on the movement of regulated articles as follows:  
From colored areas into or through white areas.

Consult your State or Federal plant protection inspector or your County Agent for assistance regarding exact areas under regulation and requirements for moving regulated articles. For detailed information, see 7 CFR 301.81 for quarantine and regulations.



## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 526M**

**CODE: (IS)**

**DATE: 6/11/99**

**SUBJECT: Alterations In Bidding Process**

Bidders are hereby advised that they may either use the traditional method of entering their bid information by hand on Section 905--Proposal, or may insert printed information obtained from the available Electronic Bid System (EBS).

It is the responsibility of every bidder to check for any addendum or modification to the contract document(s) for which they intend to submit a response. It shall be the bidder's responsibility to be sure they are in receipt of all addenda, pre-bid conference information, and/or questions and answers provided at, or subsequent to, the pre-bid conference, if any are issued.

**The Mississippi Transportation Commission assumes no responsibility for defects, irregularities or other problems caused by the use of electronic media. Operation of this electronic media is done at the sole risk of the user.**

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 - NOTICE TO BIDDERS NO. 575M**

**CODE: (IS)**

**DATE: 2/24/2000**

**SUBJECT: ON-THE-JOB TRAINING PROGRAM**

Bidders are hereby advised that the Department's policy for administering On-The-Job Training has been changed. Affective in the March 2000 letting, payment for training hours will be handled as outlined in Special Provision 906-4. A pay item for trainees will no longer be included in individual construction projects. Payment for training individuals will be processed in accordance with the conditions in MDOT's ON-THE-JOB TRAINING PROGRAM (Special Provision 906-4).

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SECTION 904 - NOTICE TO BIDDERS NO. **664M** CODE: (IS)  
| DATE: **5/02/2001**  
SUBJECT: **ERRATA AND MODIFICATIONS TO 1996 STANDARD SPECIFICATIONS BOOK**

<u>Page</u>	<u>Subsection</u>	<u>Change</u>
101-4	101.02	In the fourth line change the word "six" to "6.1".
104-4	104.02.3	Change the unit of pay item 104-A from "lump um" to "lump sum".
105-4	105.06	In the sixth line of the third paragraph change "Contractor's" to "Contractor".
714-9	714.13.12	In Note 3 of Table I, change "EOS" to "AOS".
721-3	721.03	In the first line of the second paragraph change "banks" to "blanks".
721-3	721.03	In the first line of the third paragraph change "banks" to "blanks".

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 665M**

**CODE: (IS)**

**DATE: 5/02/2001**

**SUBJECT: Substitution of Cold Plastic Traffic Markings**

Bidders are hereby advised that, at their option, cold plastic traffic markings may be used in lieu of hot applied thermoplastic markings. Substitution will only be allowed for pay items 907-626-AA through HH. Substituted cold plastic markings shall be of the same color and width as that required for the hot applied stripe. Unless otherwise specified, the markings, whether hot applied or cold plastic, shall be of the same type material for the entire project. Material and construction requirements for substituted cold plastic traffic markings shall meet the requirements of Section 628 of the Standard Specifications or as amended by special provision. The layout and spacing for substituted cold plastic traffic markings will remain as shown in the plans, or in the contract documents, for hot applied thermoplastic markings. Measurement of substituted cold plastic traffic markings shall be made in accordance with Section 628 of the Standard Specifications or as amended by special provision. Payment for substituted cold plastic traffic markings shall be made at the unit price bid for the appropriate hot applied thermoplastic marking.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 708M**

**CODE: (SP)**

**DATE: 9/13/2001**

**SUBJECT: Placement Of Granular Material**

The Contractor shall be required to place granular material on the shoulders at any time a differential of fifty five millimeters (55 mm) or more exists between the present pavement edge and the shoulder grade. This condition may exist prior to any preliminary leveling, after the placement of the preliminary leveling, after the placement of the surface course. In any event, whenever or wherever, a 55-mm differential exists between the pavement edge and the shoulder material, this condition shall be corrected by the placement of the shoulder material to correct the differential.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 741M

CODE: (IS)

DATE: 02/27/2002

SUBJECT: Work In Proximity Of High Voltage Power Lines

Bidders are hereby advised of Section 45-15-1, et seq., Mississippi Code of 1972, regarding the performance of work in the proximity of high voltage overhead power lines. It is the Contractor's responsibility to comply with those statutory requirements.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 777M**

**CODE: (IS)**

**DATE: 05/22/2002**

**SUBJECT: Payments to Subcontractors**

Bidders are hereby advised that each month, the Contractor will submit to the Project Engineer form OCR-484 certifying payments to all subcontractors. Form OCR-484 can be obtained from the Office of Civil Rights Division, MDOT Administration Building, 401 North West Street, Jackson, MS, or at the MDOT website under the *Business Section, Construction Contracts and Bidding, Disadvantaged Business Enterprise (DBE), Applications and Forms for the DBE Program.*

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 779M**

**CODE: (IS)**

**DATE: 06/07/2002**

**SUBJECT: Contract Overpayment(s)**

Bidders are hereby advised that by the execution of the contract for this project, the Contractor agrees that it has the duty to and will immediately reimburse the Mississippi Transportation Commission, without any demand therefore, for any overpayment(s) of which it has knowledge, or through due diligence, should have knowledge.

By the execution of the contract for this project, the Contractor also agrees that if the Mississippi Transportation Commission has made any overpayment(s) to the Contractor on any previously executed contract(s), the Mississippi Transportation Commission may notify the Contractor in writing of the nature and the amount of the overpayment(s). If the Contractor fails to remit the overpayment(s) to the Mississippi Transportation Commission within sixty (60) calendar days from the date of such notice, interest shall accrue from the date of such notification until payment is made in full at the rate of one percent (1%) per month until fully paid.

By the execution of the contract for this project, the Contractor also agrees that the Mississippi Transportation Commission may offset and withhold a sum equal to any overpayment(s) on any previously executed contract(s), plus interest, where applicable, against any sums due the Contractor under the terms of this contract or any other active contract(s).

By the execution of the contract for this project, the Contractor also agrees that if any overpayment(s) are made by the Mississippi Transportation Commission to the Contractor under the terms of this contract the Mississippi Transportation Commission shall have the right to offset and withhold that amount, plus interest, where applicable, from any sums which the Mississippi Transportation Commission might owe the Contractor on any other active contract(s) or any contract(s) executed subsequent to the execution of this contract.



## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 803M**

**CODE: (IS)**

**DATE: 09/17/2002**

**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 7<sup>th</sup> Street, SW  
Washington, DC 20590  
(202) 366-2212

or

<http://ops.fhwa.dot.gov/freight/regulate/sw/>

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 804M

CODE: (IS)

DATE: 09/26/2002

SUBJECT: Certification of Traffic Control Devices

## Category 1 Traffic Control Devices

Category 1 traffic control devices are defined as low-mass, single-piece traffic cones, tubular markers, single-piece drums, and delineators.

The Contractor shall certify to the Project Engineer by a letter ONLY stating that the Category 1 traffic control devices, furnished and used, either meet the requirements of NCHRP Report 350 or were purchased prior to October 1, 1998.

All documentation supporting the certification is to be kept on file by the Contractor subject to review by the Department at any time. Support documentation shall be kept on file for two years after the completion of the project.

The Contractor may self-certify Category 1 Traffic Control Devices. In order to make the self-certification, the Contractor shall have as a minimum the following support documentation regarding the certification.

1. A title, e.g., "Certification of Crashworthiness";
2. Name and address of vendor making the certification;
3. Unique identification of the certificate (such as serial number) with numbered pages and the total number of pages;
4. Description and unambiguous identification of the item tested;
5. Identification of the basis for self-certification process used and to what test level of NCHRP Report 350. This basis as crash test experience with similar devices or years of demonstrably safe operational performance;
6. A signature and title, or an equivalent identification of the person(s) accepting responsibility for the content of the certification, however produced, and the date of issue;
7. A statement that the certification shall not be reproduced except in full.

All documentation supporting the self-certification is to be kept on file by the Contractor subject to review by the Department at any time. Support documentation shall be kept on file for two years after the completion of the project.

The Contractor's letter to the Project Engineer shall state that all Category 1 traffic control devices, furnished and used, were purchased after October 1, 1998 and met the requirements of NCHRP Report 350, or that the Category 1 traffic control devices, furnished and used, were purchased prior to October 1, 1998.

## Category 2 Traffic Control Devices

Category 2 traffic control devices are defined as barricades, intrusion detectors, vertical panel assemblies, portable sign supports, drums with warning lights, and cones with warning lights.

The Contractor shall certify to the Project Engineer by a letter ONLY stating that the Category 2 traffic control devices, furnished and used, either meet the requirements of NCHRP Report 350 or were purchased prior to October 1, 2000. The Contractor's letter shall state that all Category 2 traffic control devices, furnished and used, were purchased after October 1, 2000 and met the requirements of NCHRP Report 350, or that the Category 2 traffic control devices, furnished and used, were purchased prior to October 1, 2000.

**Category 3 Traffic Control Devices**

Category 3 Traffic Control Devices are items similar to Category 2 but have a mass of more than 45 kilograms. Category 3 Traffic Control Devices include concrete barrier, truck mounted attenuators (TMAs), workzone crash cushions, and fixed sign supports.

Concrete barrier and fixed sign supports, furnished and used, and purchased after October 1, 2002 must meet the requirements of Report 350.

The Contractor shall furnish a letter ONLY certifying that all concrete barrier and fixed sign supports purchased after October 1, 2002 meets the requirements of NCHRP Report 350. Concrete barrier and fixed sign supports purchased prior to October 1, 2002 may be used without written certification until they complete their normal service life.

Work zone crash cushions and truck mounted attenuators (TMAs), furnished and used, and purchased after October 1, 1998 must meet the requirements of Report 350.

The Contractor shall furnish a letter certifying that all work zone crash cushions and TMAs purchased after October 1, 1998 meets the requirements of NCHRP Report 350. Work zone crash cushions and TMAs purchased prior to October 1, 1998 may be used without written certification until they complete their normal service life.

**Contractor's Letter to the Project Engineer**

The following is an example of a letter to the Project Engineer.

"I, (*Contractor's name*), certify that the Category 1 traffic control devices used on this project and purchased after October 1, 1998 meet the requirements of NCHRP Report 350 and all Category 1 traffic control devices used on this project not meeting NCHRP Report 350 were purchased prior to October 1, 1998.

I also certify that the Category 2 traffic control devices used on this project and purchased after October 1, 2000 meet the requirements on NCHRP Report 350 and all Category 2 traffic control devices used on this project not meeting NCHRP Report 350 were purchased prior to October 1, 2000.

I also certify that except for concrete median barrier, all of the Category 3 traffic control devices crash cushions and truck mounted attenuators used on this project and purchased after October 1, 1998 meet the requirements on NCHRP Report 350 and all Category 3 crash cushions and truck mounted attenuators used on this project not meeting NCHRP Report 350 were purchased prior to October 1, 1998."

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 812M**

**CODE: (SP)**

**DATE: 10/23/2002**

**SUBJECT: Submission of Form OCR-485**

Bidders are hereby advised that prior to the November 2002 letting, Form OCR-485 was completed by the apparent low bidder and submitted 10 days after opening of the bids. Beginning with the November 2002 letting, Form OCR-485 will be completed by **ALL BIDDERS** submitting a bid proposal and **must be included in the bid proposal package**. Failure to include Form OCR-485 in the bid proposal package will cause the Contractor's bid to be considered **irregular**.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904- NOTICE TO BIDDERS NO. 853M**

**CODE: (SP)**

**DATE: 05/12/2003**

**SUBJECT: Removal of Construction Signs**

Bidders are hereby advised that upon receipt of the **Final or Partial** Maintenance Release, as documented in writing by the State Construction Engineer, the Contractor shall have **fifteen (15)** calendar days in which to remove all construction signs on the project. It is agreed that if the signs are not removed within the **fifteen (15)** calendar days the signs shall be considered abandoned and shall become the property of the Mississippi Transportation Commission which may remove, use, and/or dispose of such signs as it sees fit.

The Contractor shall place and maintain appropriate construction signs for any additional work on the project after the Maintenance Release has been issued. These construction signs will not be measured for separate payment. Payment for these signs shall be included in Pay Item No. 618-A, Maintenance of Traffic.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 863M**

**CODE: (SP)**

**DATE: 6/19/2003**

**SUBJECT: Submittal of Hydrated Lime Shipping Tickets**

In accordance with Subsection 907-401.02.3.1 of the specifications, the Contractor shall provide the District Materials Engineer with a copy of each shipping ticket from the supplier including the project number, date, time and weight of hydrated lime shipped and used in Hot Mix Asphalt (HMA) production.

The Contractor is advised that an amount equal to twenty-five percent (25%) of the total value of HMA items performed during the initial estimate period in which the Contractor fails to submit the hydrated lime shipping tickets to the District Materials Engineer will be withheld from the Contractor's earned work. Non-conformance with this specification for successive estimate period(s) will result in the total value (100%) of HMA items performed during this period(s) being withheld from the Contractor's earned work. Monies withheld for this non-conformance will be released for payment on the next monthly estimate following the date the submittal of hydrated lime shipping tickets to the District Materials Engineer is brought back into compliance with this specification.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 - NOTICE TO BIDDERS NO. 894M**

**CODE: (SP)**

**DATE: 10/10/2003**

**SUBJECT: Conversion Factors for MDOT Field Manual for HMA Pavements**

Bidders are hereby advised that the Field Manual For Hot Mix Asphalt Pavement, revised March 1, 2003, is only available in the English version.

Any reference in Notice to Bidders, Special Provisions, Plans, and the Mississippi Standard Specifications for Road and Bridge Construction to the latest edition of the MDOT Field Manual for Hot Mix Asphalt shall be understood that the English version of the Field Manual is applicable.

In order to utilize the English version of the Field Manual, conversions will be made in accordance with MDOT's "Metric Criteria Transportation Projects" booklet, copies of which are available in the Planning Division or Construction Division of MDOT. All conversions will be a "soft conversion" from Metric units to English units.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 896M**

**CODE: (IS)**

**DATE: 10/20/2003**

**SUBJECT: Fuel Tax Applicability to Bidders and Contractors**

Bidders are hereby advised that the “Mississippi Special Fuel Tax Law”, Section 27-55-501, et seq. and its requirements and penalties apply to any contract for construction, reconstruction, maintenance or repairs, for contracts 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 Mississippi State Tax Commission will be notified of the name and address of the Contractor that is awarded this contract. The Contractor will be subject to an audit during the life of this contract to make certain that all applicable fuel taxes are being paid promptly as outlined in Section 27-55-501, et seq.

In addition to any audits performed by the Mississippi State Tax Commission, the Department also reserves the right to audit the Contractor’s records during the life of this contract to make certain that all applicable fuel taxes are being paid promptly as outlined in Section 27-55-501, et seq.



## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 900M**

**CODE: (SP)**

**DATE: 11/12/2003**

**SUBJECT: Estimated Monthly Quantities**

Bidders are hereby advised that each month the Contractor works, the Engineer furnishes the Contractor with a monthly progress estimate showing the total estimated quantities for each pay item in the contract. The Contractor should review the Engineer's progress estimate as to the accuracy of the quantities. Should the Engineer's estimated quantity for any pay item be greater than a tolerance of plus or minus ten percent ( $\pm 10\%$ ) of the Contractor's estimated quantity, the Contractor should 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 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.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 - NOTICE TO BIDDERS NO. 936M**

**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. 1017M**

**CODE: (SP)**

**DATE: 07/22/2005**

**SUBJECT: Storm Water Discharge Associated with Construction Activity  
(≥ 2.0 Hectares)**

**PROJECT: HSIP-6098-00(003) / 102252301 – Forrest County**

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

The Department has acquired Certificate of Permit Coverage MSR102424 under the Mississippi Department of Environmental Quality's (MDEQ) Storm Water Construction General Permit. Projects issued a certificate of permit coverage are granted permission to discharge treated storm water associated with construction activity into State waters. Copies of said permit, completed Large Construction Notice of Intent (LNOI), 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 assumes the responsibility for meeting all permit terms and conditions and for performing permit requirements including, but not limited to, the inspection and reporting requirements. For this project, the Contractor shall furnish, set up and read, as needed, an on-site rain gauge.

The Contractor shall make inspections in accordance with condition No. S-4, page 14, and shall furnish the Project Engineer with the results of each weekly inspection as soon as possible following the date of inspection. A copy of the inspection form provided with the packet completed shall be sufficient. The weekly inspections must be documented monthly on the Inspection and Certification Form. The Contractor's representative and the Project Engineer shall jointly review and discuss the results of the inspections so that corrective action can be taken. The Project Engineer shall retain copies of the inspection reports.

An amount equal to 25 percent (25%) of the total estimated value of the work performed during each period in which the Contractor fails to submit monthly the completed Inspection and

Certification Form to the Project Engineer will be withheld from the Contractor's earned work. Thereafter, on subsequent successive estimate periods, the percentage withheld will be increased at the rate of 25 percent per estimate period in which the non-conformance with this specification continues. Monies withheld for this non-conformance will be released for payment on the next monthly estimate for partial payment following the date the monthly submittal of the completed Inspection and Certification Form is brought back into compliance with this specification.

Upon successful completion of all permanent erosion and sediment controls for a covered project, accepted and documented by the Engineer, a completed Notice of Termination (NOT) of Coverage form shall be submitted to the Office of Pollution Control. If no sediment and erosion control problems are identified, the prime contractor will receive a termination letter from the Office of Pollution Control.

In summary, 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). Also, prior to the commencement of construction on the project, the Contractor shall transmit by letter an original signed copy of the completed Prime Contractor Certification (Form No. 2) to the Office of Pollution Control, P.O. Box 10385, Jackson, Mississippi 39289-0385. Copies of the completed Prime Contractor Certification (Form No. 2) and letter of transmittal shall be furnished the Project Engineer as proof of the required filing with the Office of Pollution Control. At project completion, when accepted and documented by the Engineer, a Notice of Termination of Coverage will be submitted to the Office of Pollution Control.

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

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SECTION 904 - NOTICE TO BIDDERS NO. 1041M

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.

## **SUPPLEMENT TO NOTICE TO BIDDERS NO. 1049M**

**DATE: 04/06/2006**

The goal is 10 percent for the Disadvantaged Business Enterprise. The low bidder is required to submit Form OCR-481 for all DBEs. Bidders are advised to check the bid tabulation link for this project on the MDOT website (<http://www.gomdot.com/bidsystem/>) for results. Bid tabulations are usually posted by 3:00 pm on Letting Day.

Form OCR-481 is available at [http://www.gomdot.com/business/dbe/pdf/OCR\\_481.pdf](http://www.gomdot.com/business/dbe/pdf/OCR_481.pdf) or by calling 601-359-7466.

All OCR-481s must be returned within 10 days following the bid letting to the MDOT Office of Civil Rights, P.O. Box 1850, Jackson, MS 39215-1850.

For answers to questions, contact the MDOT Office of Civil Rights at (601) 359-7466.

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

The bidder hereby gives assurance pursuant to the applicable requirements of "Safe, Accountable, Flexible, Efficient Transportation Equity Act, A Legacy For Users (SAFETEA-LU)" and "Part 26, Title 49, Code of Federal Regulation" that the bidder has made a good faith effort to meet the contract goal for DBE participation for which this proposal is submitted.

A pre-bid meeting will be held in the first floor auditorium of the Mississippi Department of Transportation Administration Building, 401 North West Street, Jackson, Mississippi at 2:00 P.M. on the day preceding the date of the bid opening.

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

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1049M

CODE: (IS)

DATE: 12/20/2005

SUBJECT: DISADVANTAGED BUSINESS ENTERPRISES IN FEDERAL-AID HIGHWAY CONSTRUCTION

This contract is subject to the [Safe, Accountable, Flexible, Efficient Transportation Equity Act, A Legacy For Users \(SAFETEA-LU\)](#) and applicable requirements of "Part 26, Title 49, Code of Federal Regulations." Portions of the Act are set forth in this Notice as applicable to compliance by the Contractor and all of the Act, and the MDOT DBE Program, is incorporated by reference herein.

The Department has developed a Disadvantaged Business Enterprise Program that is applicable to this contract and is made a part thereof by reference.

Copies of the program may be obtained from:

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

## POLICY

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

## ASSURANCES THAT CONTRACTORS MUST TAKE:

MDOT will require that each contract which MDOT signs with a subrecipient or a contractor (and each subcontract the prime contractor signs with a subcontractor) includes the following assurances:

“The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR 26 in the award and administration of federally assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as MDOT deems appropriate.”

**DEFINITIONS**

For purposes of this provision the following definitions will apply:

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

**CONTRACTOR'S OBLIGATION**

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

When a contract requires a zero percent (0%) DBE goal, the Contractor still has the responsibility to take all necessary and reasonable steps to ensure that DBE firms can compete for and participate in the performance of the work in the contract. **In this case**, all work performed by a certified DBE firm is considered to be a “race neutral” measure and the Department will receive DBE credit towards the overall State goals when the DBE firm is paid for their work. If the Prime Contractor is a certified DBE firm, the Department can receive DBE credit only for the work performed by the Prime Contractor’s work force or any work subcontracted to another DBE firm. Work performance by a non-DBE subcontractor is not eligible for DBE credit.

**CONTRACT GOAL**

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

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

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



FORMS ARE AVAILABLE FROM THE CONTRACT ADMINISTRATION DIVISION

The OCR-481 Form must contain the following information:

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

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

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

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

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

- (1) Whether the bidder attended the pre-bid meeting that was scheduled by the Department to inform DBEs of subcontracting opportunities;
- (2) whether the bidder advertised in general circulation, trade association, and minority-focus media concerning the subcontracting opportunities;
- (3) whether the bidder provided written notice to a reasonable number of specific DBEs that their interest in the contract is being solicited;
- (4) whether the bidder followed up initial solicitations of interest by contacting DBEs to determine with certainty whether they were interested;
- (5) whether the bidder selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the contract goal;
- (6) whether the bidder provided interested DBEs with adequate information about the plans, specifications and requirements of the contract;
- (7) whether the bidder negotiated in good faith with interested DBEs and did not reject them as unqualified without sound reasons based on a thorough investigation of their capabilities; and

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

### **DIRECTORY**

Included with this Bid Proposal is a list of "Certified DBE Contractors" which have been certified as such by the Mississippi Department of Transportation and other Unified Certification Partners (UCP).

The DBE firm must be on the Department's list of "Certified DBE Contractors" that is attached to this proposal and approved by MDOT to count towards meeting the DBE goal.

### **REPLACEMENT**

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

Under no circumstances shall the prime or any subcontractor perform the DBE's work (as shown on the OCR-481) without prior written approval from the Department. See "Sanctions" on Page 6 for penalties for performing DBE's work.

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

### **GOOD FAITH EFFORTS**

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

- (a) Proof of written notification to certified DBE Contractors by certified mail that their interest is solicited in subcontracting the work defaulted by the previous DBE or in subcontracting other items of work in the contract.
- (b) Efforts to negotiate with certified DBE Contractors for specific items shall include as a minimum:

- (1) The name, address, and telephone number of each DBE contacted;
  - (2) A description of the information provided about the plans and specifications for those portions of the work to be subcontracted; and
  - (3) A statement of why agreements were not reached.
- (c) For each DBE contacted that was rejected as unqualified, the reasons for such conclusion.
- (d) Efforts made to assist each DBE that needed assistance in obtaining bonding or insurance required by the Contractor.

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

#### **PARTICIPATION / DBE CREDIT**

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

- (1) If the Prime Contractor is a certified DBE firm, only the value of the work actually performed by the DBE Prime can be counted towards the project goal, along with any work subcontracted to a certified DBE firm.
- (2) If the Contractor is not a DBE, the work subcontracted to a certified DBE Contractor will be counted toward the goal.
- (3) The Contractor may count toward the goal a portion of the total dollar value of a contract with a joint venture eligible under the standards of this provision equal to the percentage of the DBE partner in the joint venture.
- (4) Expenditures to DBEs that perform a commercially useful function may be counted toward the goal. A business is considered to perform a commercially useful function when it is responsible for the execution of a distinct element of the work and carries out its responsibilities by actually performing, managing, and supervising the work involved.
- (5) The Contractor may count 100% of the expenditures for materials and supplies obtained from certified DBE suppliers and manufacturers that produce goods from raw materials or substantially alters them for resale provided the suppliers and manufacturers assume the actual and contractual responsibility for the provision of the materials and supplies. The Contractor may count 60 percent of the expenditures to suppliers that are not manufacturers, provided the

supplier performs a commercially useful function in the supply process. Within 30 days after receipt of the materials, the Contractor shall furnish to the DBE Coordinator invoices from the certified supplier to verify the DBE goal.

- (6) Any work that a certified DBE firm subcontracts or sub-subcontracts to a non-DBE firm will not count towards the DBE goal.
- (7) Only the dollars actually paid to the DBE firm may be counted towards the DBE goal.

### **AWARD**

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

- (1) Concurrence from Federal Highway Administration, when applicable.
- (2) Bidder must submit to the Contract Administration Division for approval, Form OCR-481 (DBE Commitment) no later than the 10th day after opening of the bids, or submit information with the bid proposal to satisfy the Department and that adequate good faith efforts have been made to meet the contract goal.
- (3) Bidder must submit with the bid proposal a list of all firms that submitted quotes for material supplies or items to be subcontracted. This information must be submitted on form OCR-485 in the back of the contract proposal.

Prior to the start of any work, the bidder must notify the Project Engineer, in writing, of the name of the designated "DBE Liaison Officer" for this project. This notification must be posted on the bulletin board at the project site.

### **DEFAULT**

The contract goal established by MDOT in this proposal must be met to fulfill the terms of the contract. The Contractor may list DBE Subcontractors and items that exceed MDOT's contract goal, but should unforeseen problems arise that would prevent a DBE from completing its total commitment percentage, the Contractor will meet the terms of the contract as long as it meets or exceeds MDOT's Contract Goal. For additional information, refer to "Replacement" section of this Notice.

### **DBE REPORTS**

- (1) OCR-481: Refer to 'CONTRACT GOAL' section on page no. 2 of this Notice to Bidders for information regarding this form.
- (2) OCR-482: At the conclusion of the project, the Contractor will submit to the Project Engineer for verification of quantities and further handling Form OCR-482 whereby the Contractor

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

- (3) OCR-483: The Project Engineer/Inspector will complete Form OCR-483, the Commercially Useful Function (CUF) Performance Report, in accordance with MDOT S.O.P. No. OCR-03-09-01-483. Evaluations reported on this form are used to determine whether or not the DBE firm is performing a CUF. The Prime Contractor should take corrective action when the report contains any negative evaluations. DBE credit may be disallowed and/or other sanctions imposed if it is determined the DBE firm is not performing a CUF. This form should also be completed and returned to the DBE Coordinator (Office of Civil Rights).
- (5) OCR-485: The bidder must submit with the bid proposal a list of all firms that submitted quotes for material supplies or items to be subcontracted.
- (6) OCR-487: Only used by Prime Contractors that are certified DBE firms. This form is used in determining the exact percentage of DBE credit for the specified project. It should be returned to MDOT with the OCR-481 form, or can also be returned with the Permission to Subcontract forms (CAD -720 or CAD-725).

**SANCTIONS**

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

- (1) Disallow credit towards the DBE goal
- (2) Withhold progress estimate payments
- (3) Deduct from the final estimate an amount equal to the unmet portion of the DBE goal
- (4) Recover an amount equal to the unmet contract goal
- (5) Debar the Contractor involved from bidding on Mississippi Department of Transportation projects.
- (6) Deduct from the Contractor's final estimate all or any combination of the following.

Offense	Percentage of the monetary amount disallowed from (1) above	Lump Sum
# 1	10%	\$ 5,000 or both

# 2	20%	\$ 10,000 or both
# 3	40%	\$ 20,000 & debarment

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 1057M**

**CODE: (IS)**

**DATE: 04/13/2006**

**SUBJECT: ON-THE-JOB TRAINING PROGRAM**

Payment for training hours will be handled as outlined in Special Provision 906-6. A pay item for trainees will no longer be included in individual construction projects. Payment for training individuals will be processed in accordance with the conditions in MDOT's ON-THE-JOB TRAINING PROGRAM (Special Provision 906-6).

On Federal-Aid projects, failure on the part of the Contractor to carryout the terms of the Alternate Training Special Provision (Special Provision 906-6) will be considered grounds to preclude the Contractor from participating in the Alternate On-The-Job Training Program. In the event the Department is required to preclude the Contractor from participating in the program, the Contractor will be required to adhere to the requirements of the Training Special Provision (Special Provision 906-3), for which purpose the special provision is also made a part of this proposal.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1061M

CODE: (IS)

DATE: 04/06/2006

SUBJECT: DBE Participation and Payment

Bidders are hereby advised that the participation of a DBE Firm can not be counted towards the Prime Contractor's DBE goal until the amount being counted towards the goal has been paid to the DBE.

Form OCR-482 has been developed to comply with this requirement. Bidders are hereby advised that at the end of the job, the Prime Contractor will submit this form to the Project Engineer before the final estimate is paid and the project is closed out. This form certifies payments to all DBE Subcontractors over the life of the contract.

Form OCR-484 has also been developed to comply with this requirement. Bidders are hereby advised that each month, the Prime Contractors will submit this form to the Project Engineer no later than the 20<sup>th</sup> of each month. This form certifies payments to all Subcontractors and shows all firms even if the Prime Contractor has paid no monies to the firm during that estimate period (negative report). The Project Engineer will attach this form to the monthly estimate before forwarding the estimate to the Contract Administration Division for processing.

Forms OCR-482 and OCR-484 can be obtained from the Office of Civil Rights Division, MDOT Administration Building, 401 North West Street, Jackson, MS, or at [www.gomdot.com](http://www.gomdot.com) under the *Business Section, DBE Information, Applications and Forms for the DBE Program, Monthly Certification Of Payment To Subcontractors (OCR-484)(MDOT)*.



## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO. 1082M**

**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. 1088M**

**CODE: (SP)**

**DATE: 01/22/2007**

**SUBJECT: Use of Precast Drainage Units**

Bidders attention is brought to the content of Subsection 601.02.3 regarding precast units. The Contractor must make a request to the Project Engineer for approval to use precast units prior to installation. Even though the units have been pre-approved by MDOT, official request for use is required.

MDOT has pre-approved the following manufactures. Any other manufacturer must be pre-approved by MDOT Roadway Design Division prior to use.

Hanson Pipe & Products, Inc.  
2840 W. Northside Drive  
Jackson, MS 39213  
(Formally Choctaw, Inc.)

Custom Precast Products, Inc.  
125 International Boulevard  
Lavergne, TN 37086-3326

Custom Precast Products, Inc.  
P.O. Drawer #242  
#68 Industrial Park  
Lumberton, MS 39455

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 - NOTICE TO BIDDERS NO. 1098M**

**CODE: (SP)**

**DATE: 03/09/2007**

**SUBJECT: Contract Time**

**PROJECT: HSIP-6098-00(003) / 102252301 – Forrest County**

The completion of work to be performed by the Contractor for this project will not be a specified date but shall be when all allowable time units are assessed, or any extension thereto as provided in Subsection 108.06. It is anticipated that the Notice of Award will be issued by not later than **May 8, 2007** and the date for issuing the Notice to Proceed / Beginning of Contract Time will be **June 7, 2007**.

Should the Contractor request a Notice to Proceed earlier than **June 7, 2007**, the date the Notice to Proceed is issued will also be the Beginning of Contract Time date.

Allowable Time Units will be **244**.

The contract time has been based on Column **"C"** of the Table of Time Units, in Subsection 108.06.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1099

DATE: 03/21/2007

SUBJECT: Specialty Items

PROJECT: HSIP-6098-00(003) / 102252301 - Forrest County

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

### CATEGORY: CURBING, SIDEWALKS, GUTTERS

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Line No	Pay Item	Description
0330	609-B001	Concrete Curb, Type Header
0340	609-B002	Concrete Curb, Type Doweled
0350	609-B003	Concrete Curb, Type Special Design
0360	609-C002	Concrete Curb (Integral) Type 2
0370	609-D001	Combination Concrete Curb and Gutter Type 1
0380	609-D002	Combination Concrete Curb and Gutter Type 2
0390	609-D020	Combination Concrete Curb and Gutter Type 3B Modified (150-mm)
0400	609-D021	Combination Concrete Curb and Gutter Type 3B Modified (165-mm)

### CATEGORY: EROSION CONTROL

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Line No	Pay Item	Description
0190	212-B001	Standard Ground Preparation
0200	216-A001	Solid Sodding
0210	219-A001	Watering
0590	907-234-A002	Temporary Silt Fence

### CATEGORY: PAVEMENT STRIPING AND MARKING

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Line No	Pay Item	Description
0860	907-625-C002	Traffic Stripe (Continuous White)
0870	907-625-D002	Traffic Stripe (Continuous Yellow)
0880	907-626-AA001	150-mm Thermoplastic Traffic Stripe (Skip White)(2.25-mm min.)
0890	907-626-CC006	150-mm Thermoplastic Double Drop Edge Stripe (Continuous White) (1.50-mm min.)
0900	907-626-DD001	150-mm Thermoplastic Traffic Stripe (Skip Yellow)(2.25-mm min.)
0910	907-626-EE004	150-mm Thermoplastic Traffic Stripe (Continuous Yellow) (2.25-mm min.)
0920	907-626-FF007	150-mm Thermoplastic Double Drop Edge Stripe (Continuous Yellow) (150-mm min.)
0930	907-626-GG001	Thermoplastic Detail Stripe (150-mm Equivalent Length)(White)(2.25-mm min.)
0940	907-626-GG002	Thermoplastic Detail Stripe (150-mm Equivalent Length)(Yellow)(2.25-mm min.)
0950	907-626-HH001	Thermoplastic Legend (White)(3.00-mm min.)
0960	907-626-HH002	Thermoplastic Legend (White)(3.00-mm min.)
0970	907-627-K001	Red-Clear Reflective High Performance Raised Markers
0980	907-627-L001	Two-Way Yellow Reflective High Performance Raised Markers
0990	907-628-II002	150-mm High Performance Cold Plastic Traffic Stripe (Skip White)

CATEGORY: PAVEMENT STRIPING AND MARKING

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Line No	Pay Item	Description
1000	907-628-KK002	150-mm High Performance Cold Plastic Edge Stripe (Continuous White)
1010	907-628-MM002	150-mm High Performance Cold Plastic Traffic Stripe (Continuous Yellow)
1020	907-628-NN002	150-mm High Performance Cold Plastic Edge Stripe (Continuous Yellow)
1030	907-628-OO001	High Performance Cold Plastic Detail Stripe (150-mm Equivalent Length((White)
1040	907-628-OO002	High Performance Cold Plastic Detail Stripe (150-mm Equivalent Length((Yellow)
1050	907-628-PP001	High Performance Cold Plastic Legend (White)
1060	907-628-PP002	High Performance Cold Plastic Legend (White)

CATEGORY: TRAFFIC CONTROL - PERMANENT

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Line No	Pay Item	Description
0530	630-A001	Standard Roadside Signs (Sheet Aluminum, 2.03-mm Thickness)
0540	630-A002	Standard Roadside Signs (Sheet Aluminum, 3.18-mm Thickness)
0550	630-C002	Steel U-Section Posts (2.97 to 3.72 kg/m)
0560	630-K001	Welded & Seamless Steel Pipe Posts (DN 75)
0570	630-K003	Welded & Seamless Steel Pipe Posts (DN 100)

CATEGORY: TRAFFIC CONTROL - TEMPORARY

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Line No	Pay Item	Description
0460	619-D1001	Standard Roadside Construction Signs (less than 0.9 square meter)
0470	619-D2001	Standard Roadside Construction Signs (0.9 square meter or more)
0480	619-E003	Flashing Arrow Panel (Type A)
0490	619-G4001	Barricades (Type III) (Single Faced)
0500	619-G4005	Barricades (Type III) (Double Faced)
0510	619-G5001	Free Standing Plastic Drums
0800	907-619-A1006	Temporary Traffic Stripe (Continuous White) (Type 1 Tape)
0810	907-619-A2006	Temporary Traffic Stripe (Continuous Yellow) (Type 1 Tape)
0820	907-619-A3002	Temporary Traffic Stripe (Skip White) (Type 1 Tape)
0830	907-619-A5002	Temporary Traffic Stripe (Detail) (Type 1 Tape)
0840	907-619-A6006	Temporary Traffic Stripe (Legend) (Type 1 Tape)
0850	907-619-A6009	Temporary Traffic Stripe (Legend)

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 – NOTICE TO BIDDERS NO. 1103M**

**CODE: (SP)**

**DATE: 03/08/2007**

**SUBJECT: Petroleum Products Base Prices For Contracts Let in April, 2007**

**REFERENCE: Subsection 907-109.07**

The following base prices are to be used for adjustment in compensation due to changes in costs of petroleum products:

FUELS

	<u>Per Gallon</u>	<u>Per Liter</u>
Gasoline	\$2.2310	\$0.5894
Diesel	\$2.4856	\$0.6566

MATERIALS OF CONSTRUCTION

<u>ASPHALT CEMENT</u>	Per Gallon	Per Ton	Per Liter	Per Metric Ton
Viscosity Grade AC-5	\$1.4289	\$339.00	\$0.3775	\$373.68
Viscosity Grade AC-10	\$1.4361	\$340.71	\$0.3794	\$375.56
Viscosity Grade AC-20	\$1.4271	\$338.57	\$0.3770	\$373.20
Viscosity Grade AC-30	\$1.4181	\$336.43	\$0.3746	\$370.84
Grade PG 64-22	\$1.4247	\$338.00	\$0.3764	\$372.57
Grade PG 67-22	\$1.4015	\$332.50	\$0.3702	\$366.51
Grade PG 76-22	\$1.8251	\$433.00	\$0.4821	\$477.29
Grade PG 82-22	\$1.9863	\$471.25	\$0.5247	\$519.46

EMULSIFIED ASPHALTS

Grade EA-4 (SS-1)	\$1.3580	\$0.3587
Grade RS-2C (CRS-2)	\$1.3324	\$0.3520
Grade CRS-2P	\$1.5775	\$0.4167

PRIMES

Grade EA-1 & MC-70	\$1.7724	\$0.4682
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**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 - NOTICE TO BIDDERS NO.1104M**

**CODE: (SP)**

**DATE: 03/23/2007**

**SUBJECT: Removal of Foundation**

**PROJECT: HSIP-6098-00(003) / 102252301 – Forrest County**

Bidders are hereby advised that the pay item for Removal of Obstruction is for the removal of the theater foundation slab located at + / - 2 + 450 right.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SECTION 904 - NOTICE TO BIDDERS NO.1105M**

**CODE: (SP)**

**DATE: 03/26/2007**

**SUBJECT: Additional Construction Requirements**

**PROJECT: HSIP-6098-00(003) / 102252301 -- Forrest County**

All permanent lane closures needed for the work associated with the fiber reinforced thin concrete pavement at the intersection of Hardy Street ( 2 + 737.02 to 2 + 855.00) and US 49 ( 48 + 267.240 to 48 + 800.454) will only be allowed between 7:00 P.M. Friday and 6:00 A.M. Monday. No work associated with the fiber reinforced thin concrete pavement at the intersection will be allowed prior to the University of Southern Mississippi's Spring Commencement Service.

If time assessment on the project in Phase 4 Pavement is to start prior to Commencement Service, no time will be assessed in Phase 4. All operations which are performed during the non-daylight hours shall be properly illuminated to allow for the complete performance and inspection of the work. If the Project Engineer feels that there is not proper lighting for adequate performance and inspection of the work the contractor shall make the necessary adjustments to comply with this request. The cost for the adjustments shall be absorbed by the contractor.

Lighting systems shall be positioned such that they do not cause glare to drivers or any nearby homes. When necessary, the lighting systems shall include screening to minimize glare. Prior to the initial start of nighttime operations, a lighting plan shall be submitted to the Project Engineer for review and approval. The lighting plan shall specify the construction area to be lit, and the layout of the lighting systems. The construction is defined as the area in which any and all work related to the construction is on going and is to be performed during the hours of darkness. No nighttime construction shall begin until the lighting plan is approved in writing.

All moving equipment used for nighttime operations shall have mounted a lighting system each direction of travel of the equipment. The equipment shall also have a minimum of 0.54 square feet high intensity retro reflective sheeting toward the extremities of each side of the equipment. A minimum of 1.07 square feet of sheeting shall be visible from each direction.

All workers shall, during the hours of darkness, wear reflectorized garments as specified for traffic directors. Nighttime operations shall also be illuminated by lighting systems consisting of mobile units of floodlights so that the construction area is lit with a minimum illumination intensity of 54 lux. Floodlight lamps shall be mercury vapor. Battery-powered systems shall consist of banks of batteries. The number and size of battery banks shall be sufficient to permit operation of the lighting system for a minimum of 12 hours. The cost of the complete lighting system shall be borne by the contractor.



## SUPPLEMENT TO FORM FHWA-1273

The following MINIMUM HOURLY WAGE RATES have been predetermined by the Secretary of Labor in Wage Determination Decision No. MS20030024 dated June 13, 2003.

### AREA 5 COUNTIES :

ADAMS, AMITE, COVINGTON, FORREST, FRANKLIN, GREENE, JEFFERSON, JEFFERSON DAVIS, JONES, LAMAR, LAWRENCE, LINCOLN, MARION, PERRY, PIKE, WALTHALL, WAYNE, AND WILKINSON

<u>PAYROLL CODE</u>	<u>CLASSIFICATION</u>	<u>MIN. HOURLY</u>
100	Air Tool Operator (Jack Hammer/Air Comp.)	\$6.50
105	Asphalt Raker	5.88
108	Mason Tender (Cement Mason Helper)	6.48
110	Carpenter	8.58
120	Cement Mason (Finisher)	8.09
130	Electrician	14.40
131	Mechanic (Heavy Equipment)	9.24
135	Oiler-Greaser	7.01
140	Form Setter	7.33
145	Grade Checker (Asphalt Crew)	6.95
150	Ironworker, Reinforcing (Tie Steel)	8.51
155	Ironworker, Structural	7.50
160	Laborer, Unskilled	5.88
165	Pipelayer	7.88
175	Painter (Structural Steel)	8.86
180	Piledriverman	8.00
185	Truck Driver (All Types)	6.19
190	Joint Filler	5.24
195	Joint Setter	5.15
197	Welder	8.00
<b><u>POWER EQUIPMENT OPERATORS</u></b>		
205	Aggregate Spreader Operator	6.58
212	Asphalt Broom (Sweeper) Operator	6.17
214	Asphalt Paving Machine/Spreader Operator	6.89
215	Asphalt Distributor Operator	5.92
216	Asphalt Plant Operator	6.31
220	Backhoe (Shovel) Operator	7.69
225	Bulldozer Operator	8.03
235	Concrete Finishing/Curing Machine Operator	7.85
240	Concrete Paving Machine Operator (Spreader)	8.97
250	Concrete Saw Operator	6.15
255	Concrete Breaker & Hydro-Hammer Operator	7.00
270	Loader (All Types)	6.90
275	Milling Machine Operator	7.27
280	Mixer Operator (All Types)	6.53
285	Motor Patrol (Grader) Operator	8.51
290	Mulcher Machine Operator	6.00
295	Earth Auger Operator	8.00
300	Piledriver Machine Operator	10.50
305	Roller Operator (Self-Propelled)	5.73
310	Scraper Operator (All Types)	6.81
315	Striping Machine Operator	10.00
320	Tractor Operator (Track Type)	9.00
325	Tractor Operator (Wheel Type)	5.70
330	Trenching Machine Operator	8.01
350	Crusher Feeder Machine Operator	5.50
360	Crane (Dragline) Operator	9.18
365	Guardrail Post Driver	10.00

Authorized Payroll Code may be used in lieu of classification titles on weekly payrolls submitted to this Department. Codes or classification titles not conforming to those listed will not be acceptable.

**SUPPLEMENT TO FORM FHWA-1273**

**DATE: 6/15/94**

**SUBJECT: Final Certificate and Contract Provisions for Subcontracts**

All subcontracts shall be in writing and contain all pertinent provisions and requirements of the prime contract.

Each "Request for Permission to Subcontract" (Mississippi Department of Transportation Form CAD-720) shall include a copy of subcontract for review by the Mississippi Department of Transportation. The federal contract provisions may be omitted from the subcontract copy submitted for review provided the Contractor certifies that the provisions will be physically incorporated into the agreement furnished to the Subcontractor.

In lieu of submitting a copy of the subcontract for review, the Contractor may certify that the subcontract agreement is in writing and that it contains all the requirements and pertinent provisions of the prime contract.

Each Subcontractor will be required to provide a copy of the subcontract agreement for contract compliance reviews, along with physical evidence (copy of FHWA-1273) that requirements and pertinent provisions have been provided for review and adherence.

**REQUIRED CONTRACT PROVISIONS  
FEDERAL-AID CONSTRUCTION CONTRACTS**

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ATTACHMENTS

- A. Employment Preference for Appalachian Contracts  
(included in Appalachian contracts only)

**I. GENERAL**

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

- Section I, paragraph 2;
- Section IV, paragraphs 1, 2, 3, 4, and 7;
- Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. **Selection of Labor:** During the performance of this contract, the contractor shall not:

a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or

b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

**II. NONDISCRIMINATION**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 *et seq.*) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant

of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

**4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be

taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

#### **6. Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

**7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward

qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

**8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

**9. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

### III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

### IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

**1. General:**

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

**2. Classification:**

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

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

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

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

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

**3. Payment of Fringe Benefits:**

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

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

**4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

**5. Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

**6. Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the

same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

#### **7. Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

#### **8. Violation:**

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

#### **9. Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

### **V. STATEMENTS AND PAYROLLS**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

#### **1. Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

#### **2. Payrolls and Payroll Records:**

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

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

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned,



without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

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

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

## VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

## VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

## VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary,

hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

#### **IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

##### **NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS**

18 U.S.C. 1020 reads as follows:

*"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or*

*Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or*

*Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;*

*Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both."*

#### **X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

#### **XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

##### **1. Instructions for Certification - Primary Covered Transactions:**

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

\*\*\*\*\*

#### **Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Primary Covered Transactions**

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\*\*\*\*\*

#### **2. Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive

Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion—Lower Tier Covered Transactions:**

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared

ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

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

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**NOTICE OF REQUIREMENTS FOR AFFIRMATIVE  
ACTION TO ENSURE EQUAL EMPLOYMENT  
OPPORTUNITY (EXECUTIVE ORDER 11246)**

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for female participation in each trade (percent)
From April 1, 1978 until March 31, 1979	3.1
From April 1, 1979 until March 31, 1980	5.1
From April 1, 1980 until March 31, 1981	6.9
 Until further notice	 Goals for minority participation for each trade (percent)
 SHSA Cities:	
Pascagoula - Moss Point -----	16.9
Biloxi - Gulfport -----	19.2
Jackson -----	30.3
 SMSA Counties:	
Desoto -----	32.3
Hancock, Harrison, Stone -----	19.2
Hinds, Rankin -----	30.3
Jackson -----	16.9
 Non-SMSA Counties:	
George, Greene -----	26.4
Alcorn, Benton, Bolivar, Calhoun, Carroll, Chickasaw, Clay, Coahoma, Grenada, Itawamba, Lafayette, Lee, Leflore, Marshall, Monroe, Montgomery, Panola, Pontotoc, Prentiss, Quitman, Sunflower, Tallahatchie, Tate, Tippah, Tishomingo, Tunica, Union, Washington, Webster, Yalobusha -----	26.5
Attala, Choctaw, Claiborne, Clarke, Copiah, Covington, Franklin, Holmes, Humphreys, Issaquena, Jasper, Jefferson, Jefferson Davis, Jones Kemper, Lauderdale, Lawrence, Leake, Lincoln, Lowndes, Madison, Neshoba, Newton, Noxubee, Oktibbeha, Scott, Sharkey, Simpson, Smith, Warren, Wayne, Winston, Yazoo -----	32.0
Forrest, Lamar, Marion, Pearl River, Perry, Pike, Walthall -----	27.7
Adams, Amite, Wilkinson -----	30.4

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in CFR Part 60-4 shall be based on its implementation of the Equal Opportunity clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor, employer identification number of the subcontractor, estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.
4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is to the county and city (if any), stated in the advertisement.
5. The notification required in Paragraph 3 shall be addressed to the following:

Contract Compliance Officer  
Mississippi Department of Transportation  
P.O. Box 1850  
Jackson, Mississippi 39215-1850

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-101-3M

CODE: (IS)

| DATE: 06/11/2004

SUBJECT: Definitions

Section 101, Definitions and Terms, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

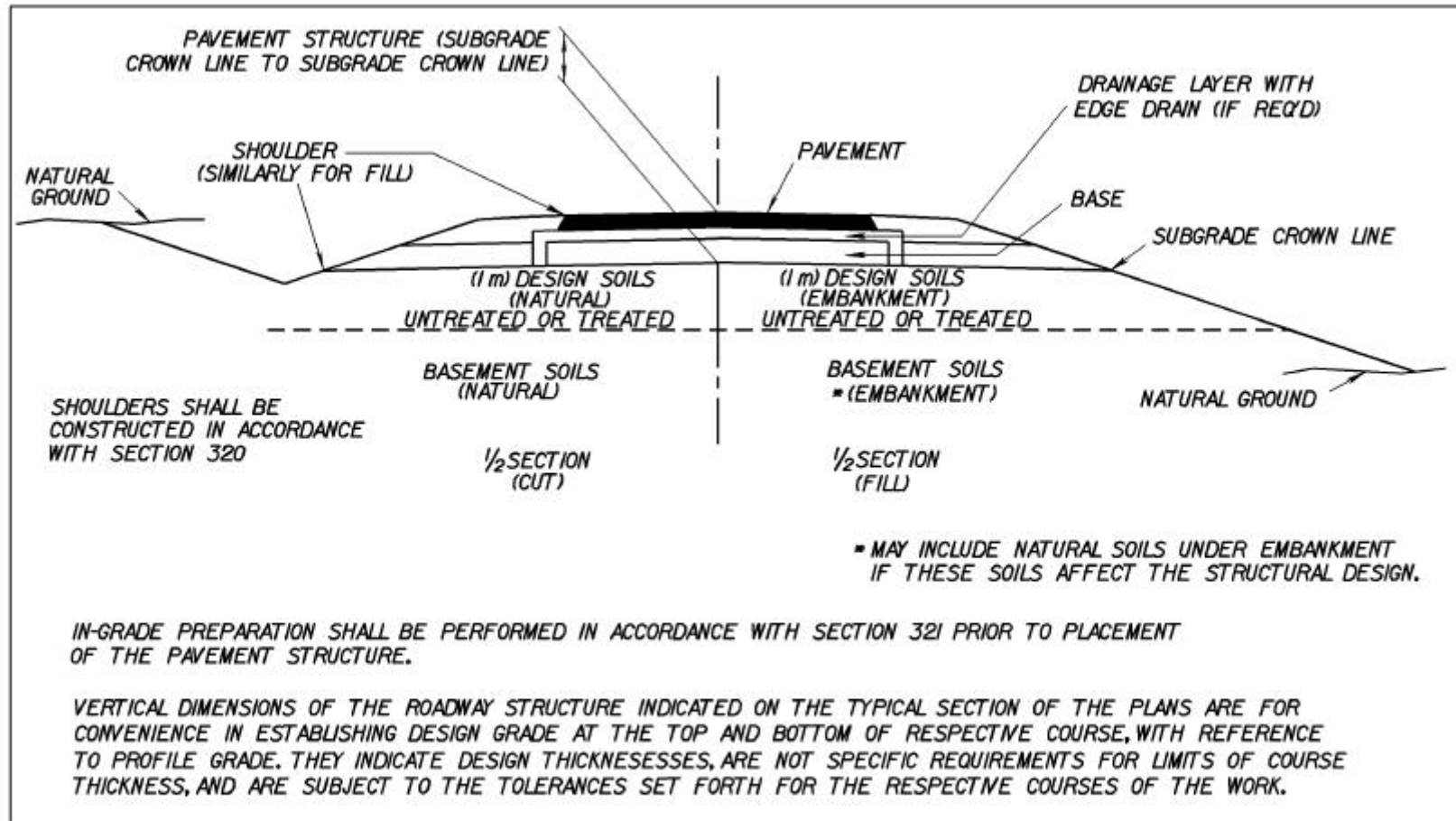
**907-101.02--Definitions.** Delete the definition of "Optional Items" on page 101-8 and substitute:

**Optional Items**-Items listed in the bid schedule of the proposal which are considered to be comparable for the purpose intended, and the Contractor is required to make a selection prior to or at the time of execution of the contract.

| After the definition for Underground Storage Tanks on page 101-12, add the following:

**Wetlands** - As defined in EPA and Corps of Engineer's (Corps) regulations and clarified in the Corps 1987 Wetlands Delineation Manual, or sequent Federal wetland delineation manuals.

Delete Figure 1 at the end of Section 101 on page 101-13, and substitute the following:



**FIGURE 1 - REFERENCE DIVISION 100 - PAGE 101-1**

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. **907-102-4M**

CODE: (IS)

DATE: **03/01/2002**

SUBJECT: **Preparation of Proposal**

Section 102, Bidding Requirements and Conditions, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-102.06--Preparation of Proposal.** Delete in toto the second full paragraph on page 102-4 and substitute:

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

Bidders are cautioned that using older versions of the EBS will result in improperly printed bid sheets. The latest version of the EBS can be obtained at no cost from the MDOT Contract Administration Division or at the MDOT website, [www.mdot.state.ms.us](http://www.mdot.state.ms.us).

If bidders submit EBS generated bid sheets, then the bid sheets included in the proposal should not be completed. The EBS generated bid sheets should be stapled together and included in the bid proposal package in the sealed envelope. If both the forms in the proposal and the EBS generated bid sheets are completed and submitted, only the EBS generated sheets will be recognized and used for the official bid. The diskette containing the information printed on the EBS generated bid sheets should be placed in the pouch located on the inside of the front cover of the bid proposal package. Bid sheets printed from the EBS should be a representation of the data returned on the diskettes. To have a true representation of the bid sheets, the Bidder must copy the inputted unit prices back to the diskette by using the option titled "Copy Project File To Floppy Disk" from the drop-down menu under "Projects". Otherwise, the unit prices bid will not be recorded to the diskette. Bidders are cautioned that failure to follow proper diskette-handling procedures could result in the Department being unable to process the diskette. **Any modification or manipulation of the data contained on the diskette, other than entering unit bid prices, will not be allowed and will cause the Contractor's bid to be considered irregular.**

When the bid schedule lists optional items, the Contractor's selection may, but is not required to, be made at the time of bidding. For optional items not pre-selected, the Contractor's selection shall be made prior to or at the time of execution of the contract.



# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-103-3M**

**CODE: (IS)**

**DATE: 12/2/99**

**SUBJECT: Execution and Approval of Contract**

Section 103, Award and Execution of the Contract, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-103.01-Consideration of Proposals.** Delete the third paragraph of Subsection 103.01 on page 103-1, and substitute the following:

In consideration of contract proposals which are equal to or in excess of \$50,000 and financed 100% with State funds, a nonresident bidder domiciled in a state having laws granting preference to local Contractors will be considered for such contracts on the same basis as the nonresident bidder's state awards contracts to Mississippi Contractors bidding under similar circumstances. When a nonresident Contractor submits a bid equal to or in excess of \$50,000 on a contract financed 100% with State funds, a copy of the current laws from the state of domicile and an explanation thereof pertaining to treatment of nonresident Contractors shall be attached. If no preferential treatment is provided for Contractors in the state of domicile and contracts are awarded to the lowest responsible bidder, a statement to this effect shall be attached. Should the attachment not accompany the bid when submitted, the Contractor shall have 10 days following the opening of the bids to furnish the required information to the Contract Administration Engineer for attachment to the bid. As used herein, the term "resident Contractors" includes a nonresident person, firm or corporation that has been qualified to do business in this State and has maintained a permanent full-time office in the State of Mississippi for two years prior to January 1, 1986, and the subsidiaries and affiliates of such a person, firm or corporation.

**907-103.04--Return of Proposal Guaranty.** Delete the third paragraph of Subsection 103.04 on page 103-2 and substitute the following:

In the event no award is made within **30 days** after the opening of bids, the Executive Director may permit the successful bidder to replace the certified check or cashier's check with a satisfactory bidder's bond.

Delete in toto Subsection 103.07 on page 103-2, and substitute the following:

**907-103.07--Execution and Approval of Contract.** The successful bidder to whom the contract has been awarded shall sign and file with the Director the contract and all documents required by the contract within **10 days** after the contract has been mailed to the bidder. The contract may require certain documents be submitted at an earlier date, in which case, those documents shall be submitted within the time frame specified. If the contract is not executed by the Department within 15 days following receipt of the signed contract and all necessary documents, the bidder shall have the right to withdraw his bid without penalty. No contract is in effect until it is executed by all parties.

**907-103.08--Failure to Execute Contract.** Delete in toto Subsection 103.08 on page 103-2, and substitute the following:

Failure of the bidder to execute the contract and file acceptable bond within **10 days** shall be just cause for the cancellation of the award and forfeiture of the proposal guaranty which shall become the property of the Department, not as a penalty but in liquidation of damages sustained. Award may then be made to the next lowest responsible bidder, or the work may be readvertised at the discretion of the Department.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-104-1M**

**CODE: (IS)**

**DATE: 1/2/96**

**SUBJECT: Partnering Process**

Section 104, Scope of Work, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-104.01--Intent of Contract.

After the end of Subsection 104.01 on page no. 104-1, add the following:

907-104.01.1--Partnering Process.

## **COVENANT OF GOOD FAITH AND FAIR DEALING:**

This contract imposes an obligation of good faith and fair dealing in its performance and enforcement.

The contractor and the Department, with a positive commitment to honesty and integrity, agree to the following mutual duties:

- A. Each will function within the laws and statutes applicable to their duties and responsibilities.
- B. Each will assist in the other's performance.
- C. Each will avoid hindering the other's performance.
- D. Each will proceed to fulfill its obligations diligently.
- E. Each will cooperate in the common endeavor of the contract.

## **VOLUNTARY PARTNERING:**

The Mississippi Department of Transportation intends to encourage the foundation of a cohesive partnership with the contractor and its principal subcontractors and suppliers. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient contract performance and completion within budget, on schedule, and in accordance with plans and specifications.

This partnership will be bilateral in make-up, and participation will be totally voluntary. Any cost associated with effectuating this partnering will be agreed to by both parties and will be shared equally.

To implement this partnering initiative prior to starting of work in accordance with the requirements of Subsection 108.02 Notice to Proceed and prior to the preconstruction conference, the contractor's management personnel and MDOT's District Engineer will initiate a partnering development seminar/team building workshop. The Contractor working with the assistance of the District and the State Construction Engineer will make arrangements to

determine attendees for the workshop, agenda of the workshop, duration, and location. Persons required to be in attendance will be the MDOT key project personnel, the contractor's on-site project manager and key project supervision personnel of both the prime and principal subcontractors and suppliers. The project design engineers, FHWA and key local government personnel will be also be invited to attend as necessary. The contractors and MDOT will also be required to have Regional/District and Corporate/State level managers on the project team.

Follow-up workshops may be held periodically throughout the duration of the contract as agreed by the contractor and Mississippi Department of Transportation.

The establishment of a partnership charter on a project will not change the legal relationship of the parties to the contract nor relieve either party from any of the terms of the contract.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENT TO SPECIAL PROVISION NO. 907-104-4M**

**DATE: 5/03/2004**

**SUBJECT: Minor Alterations to the Contract**

In the first paragraph of Subsection 907-104.02.3 on page 1, change the \$5,000 to \$10,000.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-104-4M

CODE: (IS)

| DATE: 04/11/2003

SUBJECT: Minor Alterations to the Contract

Section 104, Scope of Work, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in toto Subsection 104.02.3 on pages 104-3 and 104-4, and substitute the following:

**907-104.02.3--Minor Alterations to the Contract.** When the Department makes alterations in the details of construction or specifications that are minor in nature, the Resident or Project Engineer may elect to make an equitable adjustment to the contract under the provisions of this subsection. Minor alterations shall be defined as those alterations to the contract that are not addressed in the Standard Specifications, or supplements thereto, and are valued at less than \$5,000.00. The District Engineer shall designate, in writing, the Resident or Project Engineer authorized to execute the Class I Supplemental Agreement. The Resident or Project Engineer and Contractor shall agree upon the scope of work and a lump sum amount, within the above stated limit, for the work to be performed. The agreement shall be reflected in a Class I Supplemental Agreement signed by the Resident or Project Engineer and the Contractor's authorized representative, which, when it bears both the signature of the Resident or Project Engineer and Contractor, shall constitute the scope of work and basis of payment under the item "Minor Alterations to the Contract." Work shall not proceed until both parties sign the agreement.

Any adjustment of contract time due to Minor Alterations will be in accordance with Subsection 108.06 of the Standard Specifications.

Payment will be made under:

| 907-104-A S/A: Minor Alterations to the Contract

- lump sum

(This pay item is not to be included on the plans or in the contract proposal)

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-104-5M

CODE: (IS)

DATE: 06/11/2004

SUBJECT: Differing Site Conditions

Section 104, Scope of Work, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-104.02.2--Differing Site Conditions.** Delete the first, second and third paragraphs of Subsection 104.02.2 on page 104-3, and substitute the following:

During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, are encountered at the site, the Contractor shall promptly notify the Engineer in writing of the specific differing conditions before the affected work is performed.

Upon written notification by the Contractor, the Engineer will investigate the conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding anticipated profits, will be made and the contract modified in writing accordingly. The Engineer will notify the Contractor of the determination whether or not an adjustment of the contract is warranted.

No contract adjustment which results in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice. The written notice shall be submitted upon the forms provided and required by the Department.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-104-6M**

**CODE: (IS)**

**DATE: 06/11/2004**

**SUBJECT: Removal and Disposal of Materials**

Section 104, Scope of Work, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-104.05--Removal and Disposal of Structures and Obstructions.** Change the title of Subsection 104.05 on page 104-6 to the following:

**907-104.05--Removal and Disposal of All Materials From the Project.**

At the end of the fourth paragraph of Subsection 104.05 on page 104-6, remove the period at the end of the sentence and add the following:

, but any such delays shall not entitle the Contractor to nor shall such delays justify or be the basis for any monetary damages against the Commission, Department or any of its officers or employees.

Delete the eighth and ninth paragraphs of Subsection 104.05 on page 104-6 and substitute the following:

When the contract documents indicate certain materials or other matter for removal or removal from the right-of-way permitted and disposed of at locations provided by the Contractor, the Contractor shall furnish the Engineer a copy of a release from each property owner for the servitude of the land. The Contractor shall also furnish the Engineer a certified letter stating that the area of disposal is not in a wetland. The State, the Commission, the Department, or any of its officers or employees will have no ownership or liability whatsoever for materials or matter removed thus from the right-of-way.

All removals by the Contractors are to be made in accordance with the provisions of Section 201, Section 202 and Section 203.



**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-105-2M**

**CODE: (IS)**

**DATE: 06/11/2004**

**SUBJECT: Load and Speed Restrictions**

Section 105, Control of the Work, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete the first paragraph of Subsection 105.13 on page 105-7, and substitute the following:

The Contractor shall determine and comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the project. The Department shall not have any obligations to determine or inform the Contractor of any legal load limitations of any municipality, county or the State of Mississippi. A special permit will not relieve the Contractor of liability for damages which may result from the moving of material or equipment.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-105-3M

CODE: (IS)

DATE: 06/11/2004

SUBJECT: Claims

Section 105, Control of the Work, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-105.17--Claims for Adjustments and Disputes.** Delete the first paragraph of Subsection 105.17 on page 105-10, and substitute the following:

It is in the public interest that the Department have early or prior knowledge of an existing or impending claim of any nature by the Contractor so that the Department may appropriately consider modifying the details of the work or other actions of the Department which might result in mitigation or elimination of the effect of the act or conditions objected to by the Contractor and so that the Department may institute appropriate procedures, as required, to keep strict account of actual costs and to verify, at the time, facts upon which a claim is made. Therefore, if in any case the Contractor deems that additional compensation is due for work or materials not covered in the contract or not ordered by the Engineer as Extra Work, or if the Contractor deems that adjustment in the contract time should be made because of any of the reasons provided for in the contract as a basis for an extension of time, the Contractor shall immediately notify the Engineer in writing of an intention to make such claim for additional compensation before beginning the work on which the Contractor bases the claim. If the nature of the claim is such that the Contractor can not fully identify all aspects of the claim, the Contractor shall have 30 calendar days from the date of the incident to provide the Engineer with written documentation clearly identifying the claim issue(s) and all other logically related work items or phases. If such written notification is not given by the Contractor in accordance with these specifications and the Engineer and the Department's Audit Division, or other authorized persons, are not afforded proper facilities by the Contractor for keeping strict account of actual costs or verification at the time of facts upon which a claim for contract adjustment is made, the Contractor hereby agrees that failure to provide written notice has denied the Department the prerogative of verifying additional time, materials, equipment, labor and making adjustments in the work which might remove or alleviate the conditions for which a claim might be made, and the Contractor further agrees that such failure on the Contractor's part shall be a conclusive waiver of any claim, or part thereof, including the waiver of any such claim for damages before a court of law.

Delete the third paragraph of Subsection 105.17 on pages 105-10 and 105-11, and substitute the following:

Any such notice shall be in writing on a form provided by the Department for such purpose and shall describe in detail any act of omission or commission by the Department or its agents that allegedly caused or contributed to the condition for which a claim may be made and the nature of

the claim and shall provide all documentation to support any such claim. The Contractor shall deliver or mail the notice to the Project Engineer and retain proof of such delivery.

Delete the fifteenth paragraph of Subsection 105.17 on pages 105-12, and substitute the following:

Any part of a claim based on after-the-fact general statements of costs such as "Normal cost of such work", "computed as a percentage of .... etc." or other such indefinite statements shall not justify or be the basis for the payment of or award of any damages and will be denied or returned to the Contractor without action.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-105-5M

CODE: (IS)

DATE: 02/14/2006

SUBJECT: Cooperation By Contractor

Section 105, Control of the Work, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-105.05--Cooperation by Contractor.** In the third sentence of the second paragraph of Subsection 105.05 on page 105-3, change “Notice to Proceed” to “Notice of Award”.

After the last paragraph of Subsection 105.05 on page 105-4, add the following:

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

**SPECIAL PROVISION NO. 907-106-1M**

**CODE: (IS)**

**DATE: 1/2/96**

**SUBJECT: Convict Produced Materials**

Section 106, Control of Materials, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

After the end of Subsection 106.12 on page no. 106-5, add the following:

907-106.13--Convict Produced Materials.

Materials produced after July 1, 1991, by convict labor may only be incorporated in a Federal-aid highway construction project if such materials have been:

1. Produced by convicts who are on parole, supervised release, or probation from a prison or
2. Produced in a qualified prison facility and the cumulative annual production amount of such materials for use in Federal-aid highway construction does not exceed the amount of such materials produced in such facility for use in Federal-aid highway construction during the 12-month period ending July 1, 1987.

Qualified prison facility means any prison facility in which convicts, during the 12-month period ending July 1, 1987, produced materials for use in Federal-aid highway construction projects.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-106-2M**

**CODE: (IS)**

**DATE: 06/11/2004**

**SUBJECT: Contractor Pit and Quarry Sites**

Section 106, Control of Materials, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-106.02.2--Contractor Furnished Sources.** Delete the fourth and fifth paragraphs of Subsection 106.02.2 on page nos. 106-1 and 106-2, and substitute the following:

All pits and quarry sites are subject to approval from the Mississippi Department of Environmental Quality, Office of Geology, as set forth in Subsection 907-107.23.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENT TO SPECIAL PROVISION NO. 907-107-7M**

**DATE:** 03/21/2006

**SUBJECT:** Liability Insurance

In the first sentence of the first paragraph of Subsection 907-107.14.2.1 on page 1, change "\$300,000 each occurrence" to "\$500,000 each occurrence".

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-107-7M

CODE: (IS)

| DATE: 10/22/2003

SUBJECT: Liability Insurance

Section 107, Legal Relations and Responsibility to Public, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows

Delete Subsection 107.14.2.1 on page 107-12 and substitute the following:

**907-107.14.2.1--General.** The Contractor shall carry contractor's liability (including subcontractors and contractual) with limits not less than: \$300,000 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 Resident 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.

Delete the first paragraph of subparagraph (a) in Subsection 107.14.2.2 on page 107-13 and substitute the following:

(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.



## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-107-9M

CODE: (IS)

DATE: 06/11/2004

SUBJECT: Contractor's Responsibility For Work

Section 107, Legal Relations and Responsibility to Public, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-107.09--Construction Over or Adjacent to Navigable Waters and Wetlands.** Delete the fourth paragraph of Subsection 107.09 on page 107-8 and substitute the following:

The permits will only cover work shown on the plans. Should temporary construction be proposed for the Contractor's convenience in the areas set out in the permits, the Contractor shall apply for and furnish a copy of the required permits to the Engineer before proceeding with the temporary construction.

**907-107.11--Use of Explosives.** Delete the first paragraph of Subsection 107.11 on page 107-10 and substitute the following:

The use of explosives is not permissible under any condition or on any project unless approved in writing by the Engineer. When using explosives, the Contractor shall exercise utmost care not to endanger life and property including the new work. The Contractor shall be responsible for all damage resulting from the use of explosives and shall indemnify and hold harmless the Commission, the Department, and any of its officers or employees.

**907-107.17--Contractor's Responsibility For Work.** After the second paragraph of Subsection 107.17 on page 107-15, add the following:

Damage to items of construction, caused by the traveling public on a project or section(s) of a project open to traffic, shall be repaired by the Contractor. The Contractor will be paid for repairing such damage to certain acceptably installed items of construction at the contract unit price(s) for the applicable item(s) used in the repair. An acceptably installed item shall be complete-in-place meeting the requirements of the specifications. The acceptably installed items of construction eligible to receive payment for repair of damage caused by the traveling public shall be items used for signing, safety and traffic control. The eligible items shall be limited to traffic signal systems, signs and sign supports, lighting items, guard rail items, delineators, impact attenuators, median barriers, bridge railing or permanent pavement markings. If damage to the above items necessitate only minor repairs, in lieu of total replacement, the work shall be performed in accordance with Subsection 109.04, or as directed by the Engineer. Damage not meeting the requirements to qualify for repair payment shall be repaired at no additional cost to the State.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-107-10M**

**CODE: (IS)**

**DATE: 06/11/2004**

**SUBJECT: Environmental Protection**

Section 107, Legal Relations and Responsibility to Public, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-107.22.3--Pit Operations.** Delete the second paragraph of Subsection 107.22.3 on page 107-19.

**907-107.22.5--Special Temporary Erosion Control.** Delete the first and second paragraphs of Subsection 107.22.5 on page 107-20, and substitute the following:

The plans may designate special temporary erosion control work such as fast growing grasses or other designated temporary features for problem areas during grading, paving or other construction work. Unless otherwise provided, quantities for such temporary features shown on the plans will be included in items for which bids are to be received. The Contractor shall perform all designated temporary work as indicated on the plans or provided in the contract or as directed by the Engineer at the time and in the manner deemed to provide the most effective deterrent to siltation.

Any emergency temporary erosion control will be authorized and used only under conditions or causes created solely by the State or unforeseeable causes beyond the control of the Contractor. The Engineer shall be the sole judge as to the use and payment of emergency temporary erosion control work. Unforeseen special emergency erosion control features not contemplated in the plans or contract documents and determined by the Engineer to be essential for the prevention of siltation and pollution for conditions or causes created solely by the State or unforeseeable causes beyond the control of the Contractor shall be performed as Extra Work.

**907-107.23--Material Pits.** Delete the second paragraph of Subsection 107.23 on page 107-21, and substitute the following:

Prior to opening a new pit or enlarging an existing pit, the Contractor will furnish the Engineer either a copy of the "Notification of Exempt Operations" or a copy of the (permanent or temporary) Class II Permit approval from the Mississippi Department of Environmental Quality, Office of Geology. The Contractor shall also obtain a letter stating that the pit site is satisfactory from an archaeological and historical standpoint from the Mississippi Department of Archives and History, Historic Preservation Division, Jackson, Mississippi. All costs involved in obtaining clearance shall be borne by the Contractor. Delays encountered in obtaining clearance will not be a reason for extension of contract time. This requirement is not applicable to

commercial sources.

When the contract requires the Contractor to dispose of excavated material, the Contractor shall, prior to removal, furnish the Engineer with a copy of a letter from the land owner stating that the Contractor has the right to place material on the said property. The Contractor shall also furnish the Engineer with a letter stating that the property is not in a wetland. Delays encountered in obtaining this information will not be a reason for extension of contract time. This requirement is not applicable to commercial sources.

The Contractor is further reminded of and shall comply with the requirements of the Clean Water Act Amendments requiring National Pollutant Discharge Elimination System (NPDES) permits for discharges composed entirely of storm water from active or inactive surface mining operations, excluding work areas covered by a U. S. Army Corps of Engineers Clean Water Act Section 404 Permit. Questions or problems concerning NPDES permits should be directed to the Mississippi Department of Environmental Quality (MDEQ), Office of Pollution Control, Industrial Branch, Jackson, Mississippi.

The Contractor shall, before a regulated area is opened or enlarged as a material pit, obtain from MDEQ the necessary Mining Storm Water NPDES Permit(s) authorizing the discharge of storm water subject to the terms and conditions of said permit. All costs involved in obtaining the permit(s) shall be borne by the Contractor. Delays encountered in obtaining the permit(s) will not be a reason for extension of contract time.

For regulated commercial sources, the owner(s) shall bear the responsibility for meeting the requirements of the NPDES permitting process.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-107-11M**

**CODE: (IS)**

**DATE: 08/12/2005**

**SUBJECT: Permits, Licenses and Taxes**

Section 107, Legal Relations and Responsibility to Public, of the 1996 Metric 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 107-1 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.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-107-14M

CODE: (IS)

DATE: 02/14/2006

SUBJECT: Contractor's Protection Plan

Section 107, Legal Relations and Responsibility to Public, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows

Delete in toto Subsection 107.22.1 on page 107-18 and substitute:

**907-107.22.1--Contractor's Protection Plan.** At the preconstruction conference or prior to starting any work on the project, the Contractor shall submit to the Engineer for approval, an erosion control plan to supplement permanent erosion control work required under the contract. As a minimum, the plan shall include the following:

1. Plan profile sheets (11" x 17" or larger) of the entire project showing the locations of erosion control devices (pay items) such as silt fence, hay bales, silt basins, slope drains, etc. Also, showing the locations of other measures (absorbed items) such as brush barriers, diversion berms, etc. that the Contractor may elect to use to prevent siltation.
2. A plan for disposal of waste materials, if applicable.
3. A detailed schedule of operations at locations of high siltation potential to clearly indicate how siltation of streams, lakes and reservoirs and the interruption of normal stream flows will be held to a practical and feasible minimum.
4. A copy of the certification for the Contractor's Certified Erosion Control Person for monitoring and maintaining the effectiveness of the erosion control plan, including NPDES permit requirements.

The plan shall be updated as needed during the progress of the project. Work shall not be started until an erosion control plan is approved by the Engineer.

The Engineer will have the authority to suspend all work and/or withhold payments for failure of the Contractor to carry out provisions of the erosion control plan and/or proper maintenance thereof.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-108-11M**

**CODE: (IS)**

**DATE: 1/02/2003**

**SUBJECT: Liquidated Damages Table**

Section 108, Prosecution and Progress, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby modified as follows:

Delete the table in Subsection 108.07 on page 108-12, and substitute the following:

**Schedule of Deductions for Each Day of Overrun in Contract Time**

<b>Original Contract Amount</b>		<b>Daily Charge</b>
<b>From More Than</b>	<b>To and Including</b>	<b>Per Calendar Day</b>
\$ 0	\$ 100,000	\$ 140
100,000	500,000	200
500,000	1,000,000	300
1,000,000	2,000,000	450
2,000,000	5,000,000	650
5,000,000	10,000,000	750
10,000,000	-----	1,400

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-108-19M**

**CODE: (IS)**

**DATE: 04/21/2006**

**SUBJECT: Prosecution and Progress**

Section 108, Prosecution and Progress, of the 1996 Metric 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 108-1, add the following:

The Contractor must pay subcontractor(s) for satisfactory performance of their contracts no later than 15 calendar days from receipt of payment from the Department. Within 15 calendar days after receiving payment from the Department for work satisfactorily performed, the Contractor shall make prompt payment to all sub-contractors or material suppliers for all monies due. Within 15 calendar days after receiving payment from the Department for work satisfactorily completed, the Contractor shall promptly return all retainage monies due to all sub-contractors or material suppliers. 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 third and fourth paragraphs of Subsection 108.02 on page 108-3, and substitute the following:

If the Department delays the issuance of the Notice to Proceed, the Beginning of Contract Time will automatically be adjusted equal to the number of calendar days of the delay. When the revised date falls on Sunday or a holiday the following day will be the Beginning of Contract Time. The contract time will be extended automatically as provided in Subsection 907-108.06, and the Department will furnish the Contractor a revised progress schedule as provided in Subsection 108.03.1.

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.

**907-108.04.3--Temporary Suspension of Work.** Delete the last sentence of the second paragraph of Subsection 108.04.3 on page 108-6, and substitute the following:

The failure of the Contractor to submit the written report within the seven-day period officially constitutes a waiver of any claims for additional time or damages. The request shall set forth the reasons and support for such adjustment.

Delete in toto Subsection 108.06 on pages 108-7 through 108-11, and substitute the following:

**907-108.06--Determination and Extension of Contract Time.**

**907-108.06.1--General.** Unless otherwise indicated in the contract, contract time will be established on a time unit basis. The span of time allowed for the completion of the physical features of work included in the contract will be indicated in the contract documents as total number of time units allowed and will be known as "Contract Time." The completion date will not be specified but will be determined by the number of time units allowed for completing the work.

The span of time allowed in the contract 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 will be increased in time units in the same ratio that the cost of the 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. In such cases, reasonable time will be allowed. Original contract value and/or time shall be understood to include work and/or time added or removed by supplemental agreement.

During the months of December, January and February, Time will only be assessed in the miscellaneous phase, unless otherwise specified in the Contract.

Except as required for the miscellaneous phase assessment, time will not be charged for Saturdays, Mississippi legal holidays as defined in the contract, and other Department recognized holidays unless the Contractor performs work. Time charges for Saturdays or the noted holidays will be assessed only to the phases on which the Contractor actually works.

Except as required for the miscellaneous phase assessment, time will not be charged for Sundays, even though the Contractor is permitted or required to perform work as provided by the contract.

Time will not be charged during any required waiting period for placement of permanent pavement markings as set forth in Subsection 618.03 provided all other work is complete except growth and coverage of vegetative items as provided in Subsection 210.01.

**907-108.06.1.2--Contract Time Assessment.** The time required to complete the work has been determined by using time units from one of the columns in the following TABLE OF TIME



UNITS. Column A will be used for projects consisting primarily of earthwork; Column B will be used primarily for base and pavement projects; Column C will be used for projects consisting primarily of bridges and structures; and Column D will be used primarily for overlay projects. The column applicable to the contract will be indicated in the contract documents.

**TABLE OF TIME UNITS**

<b>Month</b>	<b>Column A</b>	<b>Column B</b>	<b>Column C</b>	<b>Column D</b>
January	5	5	6	7
February	5	7	8	9
March	9	9	11	13
April	13	14	14	17
May	17	19	19	19
June	19	20	22	19
July	21	22	23	18
August	21	22	23	18
September	20	20	22	17
October	15	17	17	15
November	10	11	11	12
December	5	4	4	6
Calendar Year	160	170	180	170

Allocation of time units for a fractional part of a month will be computed as a proportion of the listed time units for the applicable month.

Time unit assessment 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 that each work phase in progress could have been productive, regardless of whether the Contractor worked on that phase.

When the Contractor worked or could have worked eight hours or more on a phase, a maximum of eight hours will be shown as productive hours available for that phase.

A phase will not be considered for assessment unless at least four consecutive satisfactory hours are available prior to noon. If the Contractor elects to work on such a day, time will only be assessed in the phase(s) in which the Contractor actually works.

The "miscellaneous" phase will not be considered a controlling phase and used in the assessment of time units except when shown as the only phase in progress. Under this condition, time units, monthly time units divided by monthly calendar days, will be assessed in accordance with the applicable column in the TABLE OF TIME UNITS.

Time unit assessment for controlling phases will be based on the Average Value per Time Unit (AVTU) of each phase that should be in progress. Time unit assessment for each phase will begin on the time unit number shown on the approved progress schedule for the beginning of the phase; or if work is commenced on a phase earlier than shown on the progress schedule, time unit assessment will begin on the first day of an estimate period following the previous period in which 15 percent of the value of a phase has been earned except a phase shall not commence in the months of December, January and February.

The AVTU of each controlling phase will continue to be included in the determination of available time units until the physical features of the phase have been satisfactorily completed or until the approved progress schedule indicates an interval of no activity. When the nature of the work requires the phase to be split, time charges in the phase will cease when the work in a portion of the phase has been completed, and will re-start when the items of the work in the next portion of the phase begin. If work has not begun in the next portion of the phase, time charges will begin when the time unit number shown on the approved progress schedule for the beginning of the next portion of the phase has been met or exceeded when rounded to the tenth of a time unit. **When the approved progress schedule indicates that a controlling phase(s) is to be completed prior to December 1 and the physical features of the phase(s) have not been satisfactorily completed, beginning on December 1 the miscellaneous phase will be shown as the only active phase during the months of December, January, and February. Under this condition, time units, monthly time units divided by monthly calendar days, will be assessed in accordance with the applicable column in the TABLE OF TIME UNITS. If the physical features of the phase(s) have not been completed by March 1, the phase will resume as a controlling phase and time assessment will be made accordingly.**

When the Engineer determines that a controlling phase has been completed as indicated above and there are no other controlling phase(s) in progress at that time, time units will be assessed based on the AVTU of the next immediately scheduled phase(s).

For each day during the contract time, except Sundays and Saturdays and holidays on which the Contractor does not work, the ratio of the AVTU of each phase scheduled to be in progress to the total AVTU of all the phases scheduled to be in progress will be determined. Each ratio thus determined will be multiplied by the satisfactory hours available for the respective phase.

The product thus determined for each phase will be the proportionate productive hours for that phase. The proportionate hours for each phase will be added and the sum divided by eight with the quotient rounded to the nearest one-tenth (0.1). This number will be the time unit assessment for that day unless the number before rounding is less than two-tenths (0.2) and the assessment is assigned as zero (0.0) time units.

The Engineer will maintain a daily cumulative assessment of available time units throughout the duration of contract time. When the cumulative time unit assessment is equal to the total number of allowed time units, contract time shall expire.

Each month the Engineer will furnish the Contractor with a report showing the number of available time units assessed during the estimate period and the cumulative time unit assessment 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 25 calendar days following the Contractor's receipt 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**

The percentage elapsed time will be calculated as a direct ratio of the time units assessed to the total time units provided in the contract, or as modified by Supplemental Agreement.

The percent of completion of the work will be determined by the ratio of the value of the part of the work accomplished to the total contract amount, or amount as modified by Supplemental Agreement.

When the progress of the work lags more than 20 percent behind the approved progress schedule or the schedule becomes unrealistic because soil and weather conditions have permitted work on some phases and not on others, the Contractor should immediately submit a revised schedule for approval in order that the Engineer's daily assessment will be based on a more realistic schedule. The beginning date for the revisions on the schedule shall be the beginning date of the next report period after the submission. The revised progress schedule shall be accompanied by a written statement from the Contractor indicating any additional equipment, labor, materials, etc. to be assigned to the work to ensure completion within contract time. The total allowed time units shown on the revised progress schedule shall not exceed the total allowed time units in the original contract. Approval of the revised progress schedule shall in no way be construed as a waiver of the provisions of Subsection 108.07. In the event the Contractor does not submit an approvable revised progress schedule, the progress schedule in effect will continue to be used for the daily assessment of time units.

**907-108.06.1.3--Extension of Time.** If the Contractor finds it impossible, for reasons beyond the Contractor's control, to complete the work within the contract time or as extended in accordance with this subsection, the Contractor may, prior to the expiration of the Contract Time as extended, make a written request to the Engineer for an extension of time, justifying the granting of the request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Engineer finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, the time for completion may be extended in such amount as the conditions justify.

Revision to the contract time will be determined by adding the number of time units representing the calendar days of delay to the number of time units at the time of the extension.

If the completion of the project is extended into a season of the year in which completion of certain items 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 reduced quality. When determined that completion of the items out-of-season 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.

**907-108.06.1.4--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 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.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENT TO SPECIAL PROVISION NO. 907-109-7M**

**DATE: 11/21/2006**

**SUBJECT: Measurement and Payment for Changes in Costs of Construction  
Materials (Fuels and Asphalt)**

Delete the first paragraph of Subsection 907-109.07 on page 1 and substitute the following.

Because of the uncertainty in estimating the costs of petroleum products that will be required during the life of a contract, an adjustment in compensation for certain materials may be allowed when provisions are included in the contract. When a pay item on the bid sheets indicate that an adjustment is allowed and when a notice to bidders is included in the contract showing current monthly base prices, an adjustment will be provided as follows:

Delete the second sentence of the fifth paragraph of Subsection 907-107.07 on page 1 and substitute the following:

Adjustments for change in cost will be determined from the difference in the contract base prices and the prices for the period that the work is performed and for the quantities completed.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. **907-109-7M**

CODE: (IS)

DATE: **12/12/2002**

SUBJECT: **Measurement and Payment for Changes in Costs of Construction  
Materials (Fuels and Asphalt)**

Section 109, Measurement and Payment, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction, is hereby amended as follows:

Delete line 20, page 109-8 and add the following subsection:

**907-109.07 - Changes in Material Costs.** Because of the uncertainty in estimating the costs of petroleum products that will be required during the life of a contract, adjustment in compensation for certain materials is provided as follows:

**Bituminous Products--**Each month the Department will acquire unit prices from producers or suppliers who supply the State highway construction industry with bituminous products. The average of all quotes for each product will serve as the base price for contracts let in the subsequent month.

**Fuels--**Selected cash price quotations for bulk gasoline and diesel fuel will be taken from Platt's Oilgram PAD 2 and PAD 3. The appropriate adjustment per liter for gasoline and diesel fuel will be added to the quotations to allow for taxes and markups. The prices thus determined will serve as the base prices for contracts let in the subsequent month.

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 For Contracts Let In (Month and Year)."

Each month thereafter, the Engineer will be furnished with the current monthly prices. Adjustments for change in cost will be determined from the difference in the contract base prices and the prices for the period that the work is performed and for the quantities completed, provided the price change in a product is more than five percent. Adjustments may increase or decrease compensation depending on the difference between the base prices and prices for the estimate period.

The adjustments will be determined for the quantities of bituminous products and the average fuel requirements for processing a unit of work as set forth herein.

**COST ADJUSTMENT FACTORS FOR FUEL USAGE**

<u>Item of Work</u>	<u>Units</u>	<u>Code</u>	<u>Diesel</u>	<u>Gasoline</u>
Excavation & Embankment (Except Structure and Foundation)	liters/cubic meter	(E)	1.44	0.74
Granular Materials, Stabilizer Aggregates or Coarse & Seal Aggregates	liters/cubic meter or liters/metric ton	(GM) (GT)	4.36 2.59	2.82 1.67
Subgrade & Base Mixing Items	liters/square meter	(M)	0.199	0.127
Hot Mix Asphalt (HMA)	liters/metric ton	(B)	10.72	3.25
Asphalt Drainage Course	liters/square meter	(D)	2.20	0.67
Portland Cement Concrete Base & Pavement	liters/square meter	(C)	0.50	0.68
Bridge Items, Structural Concrete, Pipe Culverts, (Including Foundation & Structure Excavation and all other Concrete related items)	liters/\$1000	(S)	41.6	49.2

**CONSTRUCTION MATERIALS**

The items and quantities subject to compensation adjustment:

**ADJUSTMENT CODE**

- (A1) Asphalt for HMA mixture -- theoretical liters based on job mix formula and unit mass of 1.010 kilograms per liter (new asphalt only for recycled HMA mixture).
- (A2) Asphalt for Surface Treatment -- pay quantity in liters.
- (A3) Asphalt for Prime -- pay quantity in liters.
- (A4) Asphalt for Curing Seal -- 1.13 liters per square meter.
- (A5) Asphalt for Bituminous Treated Roving -- 2.26 liters per square meter.
- (A6) Asphalt for Asphalt Drainage Course -- theoretical gallons per square meter based on job mix formula and unit mass of 1.010 kilograms per liter.

Any difference between checked final quantity and the sum of quantities shown on the monthly estimates for any item will be adjusted by the following formula:

$$\text{FA} = (\text{FCQ} - \text{PRQ}) \times \text{EA}$$

Where: FA = Final Adjustment  
FCQ = Final Checked Quantity  
PRQ = Total Quantity Previously Reported on Monthly Estimate  
EA = Total Adjustment Shown on Monthly Estimate

The final adjustment is to consider any error(s) that may have been made in the computations of monthly adjustments.

After the expiration of contract time, including all authorized extensions, adjustments will be computed using fuel and material prices that are in effect at the expiration of contract time.



**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENT TO SPECIAL PROVISION NO. 907-109-10M**

**DATE: 12/20/2004**

**SUBJECT: Partial Payments**

Delete the first paragraph of Subsection 907-109.06.2 on page 1 and substitute the following.

To qualify for advance payment, materials must be stored or stockpiled on or near the project or at other locations approved by the Engineer; or in the case of prestressed concrete members that may require being produced at an out-of-state location, the prestress members shall be produced and may be stored at the commercial manufacturer's yard provided it is a PCI certified plant on the Department's List of Approved Prestress & Precast Plants and it is located within the continental United States; or in the case of structural steel members that may require fabrication at an out-of-state location, the fabricated members may be stored at the location of the commercial fabricator's yard provided it is located within the continental United States.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-109-10M**

**CODE: (IS)**

**DATE: 06/11/2004**

**SUBJECT: Partial Payments**

Section 109, Measurement and Payment, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-109.06.1--General.** After the second paragraph of Subsection 109.06.1 on page 109-6, add the following:

Each month the Contractor receives a monthly progress estimate, the Contractor shall review the Engineer's progress estimate as to the accuracy of the quantities. Should the Engineer's estimated quantity for any pay item be greater than a tolerance of plus or minus ten percent ( $\pm 10\%$ ) of the Contractor's estimated quantity, the Contractor shall 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 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 and any claim by the Contractor shall be considered to have been waived.

**907-109.06.2--Advancement on Materials.** Delete the fourth sentence of the first paragraph of Subsection 109.06.2 on page 109-7, and substitute:

To qualify for advance payment, materials must be stored or stockpiled on or near the project or at other locations approved by the Engineer; or in the case of prestressed concrete members that may require being produced at an out-of-state location, the prestress members shall be produced and may be stored at the commercial manufacturer's yard provided it is a PCI certified plant on the Department's List of Approved Prestress & Precast Plants and it is located within the continental United States; or in the case of prestressed concrete members that may require being produced at an out-of-state location, the prestress members may be stored at the location of the commercial manufacturer's yard provided it is a PCI certified plant on the Department's List of Approved Prestress & Precast Plants and it is located within the continental United States; or in the case of structural steel members that may require fabrication at an out-of-state location, the fabricated members may be stored at the location of the commercial fabricator's yard provided it is located within the continental United States.

Delete the second paragraph of Subsection 109.06.2 on pages 109-6 & 109-7, and substitute the following:

Advancements will not be allowed until the Project Engineer has received triplicate copies of material invoices and certified test reports or acceptable certificates of conformance, and in the case of materials stored at the commercial producer's/fabricator's yard, the material shall be positively identified for the specific project and a Certificate of Storage issued by the State Materials Engineer, another designated Department employee or a designated representative of the Department. Requests for advancements on fabricated structural steel members and prestress concrete members stored out-of-state will be denied when the Department does not have available a designated representative to issue a Certificate of Storage.

Delete the first sentence of the third paragraph of Subsection 109.06.2 on page 109-7, and substitute the following:

The Contractor shall make suitable arrangements to the satisfaction of the Engineer for storage and protection at approved sites or, in the case of materials stored at the commercial producer's yard located in Mississippi or, in the case of fabricated structural steel members stored at the commercial fabricator's yard or prestress concrete members stored at a commercial manufacturer's yard located within the continental United States, the Contractor shall make arrangements with the producer/fabricator for suitable storage and protection.

Delete the third full paragraph on page 109-7, and substitute:

Unless specifically provided for in the contract, advance payment will not be made on materials, except for fabricated structural steel members or prestress concrete members, stored or stockpiled outside of the State of Mississippi.

Delete in toto Subsection 109.06.3 on pages 109-7 and 109-8, and substitute the following:

**907-109.06.3--Retainage.** Regardless of the value of the earned work based on the value of work scheduled for completion by the approved progress schedule, no deduction for retainage will be made from payments and advancement of materials due to the Contractor. Likewise, the Contractor shall not withhold any retainage from any payments due to a Subcontractor or Supplier.

**907-109.10--Payment of Withheld Funds.** Delete in toto Subsection 109.10 on page 109-8, and substitute the following:

**907-109.10--Blank.**

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-203-1M**

**CODE: (IS)**

**DATE: 11/26/2002**

**SUBJECT: Excavation and Embankment**

Section 203, Excavation and Embankment, of the 1996 Metric Edition of Mississippi Standard Specifications for Road and Bridge Construction, is hereby amended as follows:

## **907-203.03--Construction Requirements.**

**907-203.03.8.7--Compaction of Embankments.** Delete the fifth paragraph of Subsection 203.03.8.7 on page 203-11 and substitute the following:

For basement and design soils, the required density shall be 95.0 percent and 98.0 percent, respectively. If a density test fails within minus two percent (-2.0%), 93.0 to 95.0% or 96.0 to 98.0%, of the required density, a verification test will be performed and the average of the two tests will be the test value for the lot. If this test value does not meet the required density (95.0 or 98.0%), the lot shall be rejected. If the original test value exceeds minus two percent (-2%) of the required density, no verification test will be performed and the lot shall be rejected.

**907-203.05--Basis of Payment.** Delete the first, fifth, and ninth pay item, description and unit of measure shown on page 203-13, and substitute the following:

907-203-A: Unclassified Excavation (\_\_\_\_\_) - per cubic meter  
FM or LVM

907-203-E: Borrow Excavation (\_\_\_\_\_) (Class \_\_\_\_\_) - per cubic meter  
FM, FME or LVM

907-203-EX: Borrow Excavation (AH)(\_\_\_\_\_) (Class \_\_\_\_\_) - per cubic meter  
FME or LVM

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-234-1M**

**CODE: (IS)**

**DATE: 12/10/2001**

**SUBJECT: Silt Fence**

Section 907-234, Silt Fence, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby modified as follows:

**907-234.05--Basis of Payment.** Add the "907" prefix to the pay items listed on page 234-2.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-304-12M

CODE: (SP)

DATE: 01/23/2007

SUBJECT: Granular Courses of Crushed Stone

Section 304, Granular Courses, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows for Crushed Stone ONLY:

**907-304.03--Construction Requirements.**

**907-304.03.6--Shaping, Compacting and Finishing.** Add the following to the last paragraph on page 304-3:

For crushed stone courses, the required density shall equal or exceed 99.0 percent with no single density test below 95.0 percent. When placed on filter fabric, the required density shall equal or exceed 96.0 percent with no single density test below 92.0 percent.

No density will be required for Granular Material (Crushed Stone) courses used for maintenance of traffic.

**907-304.05--Basis of Payment.** After the last pay item listed on page 304-5, add the following:

907-304-D:	20-mm and Down Crushed Stone	- per metric ton
907-304-E:	50-mm to 20-mm Crushed Stone	- per metric ton
907-304-F:	100-mm to 50-mm Crushed Stone	- per metric ton
907-304-G:	20-mm and Down Crushed Stone (AEA)	- per cubic meter
907-304-H:	20-mm and Down Crushed Stone (LVM)	- per cubic meter
907-304-I:	Crushed Stone Base (Size ____)	- per metric ton
907-304-I:	Crushed Stone Base (Size ____)(LVM)	- per cubic meter
907-304-I:	Granular Material (Crushed Stone)	- per metric ton
907-304-I:	Granular Material (Crushed Stone)(LVM)	- per cubic meter

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-401-10M

CODE: (IS)

DATE: 11/04/2005

SUBJECT: Hot Mix Asphalt (HMA)

Section 401, Plant Mix Pavements-General, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is deleted in toto and replaced as follows:

### **SECTION 907-401 - HOT MIX ASPHALT (HMA) - GENERAL**

**907-401.01--Description.** These specifications include general requirements that are applicable to all types of HMA along with the specific requirements for each particular mixture when deviations from the general requirements are necessary.

This work consists of the construction of one or more lifts of HMA in accordance with these specifications and the specific requirements for the mixture to be produced and in reasonably close conformity with the lines, grades, thicknesses and typical sections shown on the plans or established by the Engineer.

#### **907-401.01.1--Definitions.**

**Maximum Sieve Size** - Maximum sieve size is the smallest sieve size at which 100 percent of the aggregate passes.

**Nominal Maximum Sieve Size** - The nominal maximum sieve size is one sieve size larger than the first sieve to retain more than 10 percent of the aggregate.

**Maximum Density Line** - The maximum density line is a straight line plot on the FHWA 0.45 power gradation chart which extends from the zero origin point of the chart through the plotted point of the combined aggregate gradation curve on the nominal maximum sieve size.

**Mechanically Fractured Face** - An angular, rough, or broken surface of an aggregate particle created by crushing as determined by ASTM Designation: D 5821.

#### **907-401.02--Materials.**

##### **907-401.02.1--Component Materials.**

**907-401.02.1.1--General.** Component materials will be conditionally accepted at the plant subject to later rejection if incorporated in a mixture or in work which fails to meet contract requirements.

**907-401.02.1.2--Aggregates.** The source of aggregates shall meet the applicable requirements of Section 907-703.

**907-401.02.1.2.1--Coarse Aggregate Blend.** Mechanically fractured faces by mass of the combined mineral aggregate coarser than the 4.75 mm sieve:

<u>Mixture</u>	<u>Percent Fractured Faces, minimum</u>
25 mm	70 (one face)
19 mm*	80 (one face)
12.5 mm	90 (two face)
9.5 mm	90 (two face)
4.75 mm	90 (two face)

\* When used on routes requiring polymer modified asphalt, the top intermediate lift (19 mm mixture), including travel lane and adjacent lane, shall have at least 90 percent two fractured faces minimum. When placed on an existing portland cement concrete surface, all intermediate lifts (19 mm mixture) shall have at least 90 percent fractured two faces minimum.

The maximum percentage by mass of flat and elongated particles, for all mixes other than 4.75 mm, maximum to minimum dimension greater than 5, shall not exceed 10% for all mixtures. This shall be determined in accordance with ASTM D 4791, Section 8.4, on the combined mineral aggregate retained on the 4.75 mm sieve.

**907-401.02.1.2.2--Fine Aggregate Blend.** Of all the material passing the 2.36 mm sieve and retained on the 75 µm sieve, not more than 60 percent shall pass the 600 µm sieve.

Uncrushed natural sand shall pass the 9.5 mm sieve and may be used, excluding the content in RAP, in the percentages of the total mineral aggregate by mass set out in the following table:

Mixture	Maximum Percentage of Natural Sand by Total Mass of Mineral Aggregate		
	HT	MT	ST
25 mm	10	10	20
19 mm	10	10	20
12.5 mm	10	10	20
9.5 mm	10	10	10
4.75 mm	25	30	30



**907-401.02.1.2.3--Combined Aggregate Blend.****Design Master Range**

Mixture:	25 mm	19 mm	12.5 mm	9.5 mm	4.75 mm
Nominal Maximum Sieve Size	<u>25.0 mm</u>	<u>19.0 mm</u>	<u>12.5 mm</u>	<u>9.5 mm</u>	<u>4.75 mm</u>
<u>Sieve Size</u>	<u>Percent Passing</u>				
37.5 mm	100				
25.0 mm	90-100	100			
19.0 mm	89 max.	90-100	100		
12.5 mm	-	89 max.	90-100	100	100
9.5 mm	-	-	89 max.	90-100	95-100
4.75 mm	-	-	-	89 max.	90-100
2.36 mm	16-50	18-55	20-60	22-70	-
1.18 mm	-	-	-	-	30-60
75 µm	4.0-9.0	4.0-9.0	4.0-9.0	4.0-9.0	6.0-12.0

For MT and HT mixtures, the combined aggregate gradation of the job mix formula, when plotted on FHWA 0.45 power chart paper, shall fall entirely below the Maximum Density Line on all sieve sizes smaller than the 4.75 mm sieve. However, MT and HT mixtures having a minimum fine aggregate angularity index of 44.0 (ASTM C1252, Method A) may be designed above the maximum density line.

The 9.5 mm mixtures shall have a minimum fine aggregate angularity of 44.0 for HT and MT mixtures and 40.0 for ST mixtures when tested on combined aggregate in accordance with ASTM C1252, Method A. The 4.75 mm mixtures shall have a minimum fine aggregate angularity of 45.0 for all design levels when tested on combined aggregate in accordance with ASTM C 1252, Method A.

The minus 425 µm fraction of the combined aggregate shall be non-plastic when tested according to AASHTO T 90. The clay content for the combined aggregate used in underlying layers shall not exceed 1.0 percent, and when used in top layers shall not exceed 0.5 percent by mass of the total mineral aggregate when tested according to AASHTO T 88.

**907-401.02.1.3--Bituminous Materials.** Bituminous materials shall meet the applicable requirements of Section 907-702 for the grade specified.

Tack coat shall be the same neat grade asphalt cement used in the mixture being placed or those materials specified for tack coat in Table 410-A on the last page of Section 410. Emulsified asphalt shall not be diluted without approval of the Engineer.

**907-401.02.1.4--Blank.**

**907-401.02.1.5--Hydrated Lime.** Hydrated lime shall meet the requirements of 714.03.2 for lime used in soil stabilization.

**907-401.02.1.6--Asphalt Admixtures.** Additives for liquid asphalt, when required or permitted, shall meet the requirements of Subsection 702.08.

**907-401.02.1.7--Polymers.** Polymers for use in polymer modified HMA pavements shall meet the requirements of Subsection 907-702.08.3.

**907-401.02.2--Blank.**

**907-401.02.3--Composition of Mixtures.**

**907-401.02.3.1--General.** Unless otherwise specified or permitted, the HMA shall consist of a uniform mixture of asphalt, aggregate, hydrated lime and, when required or necessary to obtain desired properties, antistripping agent and/or other materials.

The total amount of crushed limestone aggregate for mixtures, excluding 4.75 mm mixtures, when used in the top lift, shall not exceed 50 percent of the total combined aggregate by mass.

Hydrated lime shall be used in all HMA at the rate of one percent (1%) by mass of the total dry aggregate including aggregate in RAP, if used. The aggregate, prior to the addition of the hydrated lime, shall contain sufficient surface moisture. If necessary, the Contractor shall add moisture to the aggregate according to the procedures set out in Subsection 907-401.03.2.1.2.

The Contractor shall obtain a shipping ticket for each shipment of hydrated lime. The Contractor shall provide the District Materials Engineer with a copy of each shipping ticket from the supplier, including the date, time and weight of hydrated lime shipped and used in hot mix asphalt production. An amount equal to twenty-five percent (25%) of the total value of HMA items performed during the initial estimate period in which the Contractor fails to submit the hydrated lime shipping tickets to the District Materials Engineer will be withheld from the Contractor's earned work. Non-conformance with this specification for successive estimate period(s) will result in the total value (100%) of HMA items performed during this period(s) being withheld from the Contractor's earned work. Monies withheld for this non-conformance will be released for payment on the next monthly estimate following the date the submittal of hydrated lime shipping tickets to the District Materials Engineer is brought back into compliance with this specification.

Mixtures will require the addition of an antistripping agent when the Tensile Strength Ratio (MT-63M) and/or the Boiling Water Test (MT-59M) fail to meet the following criteria.

Tensile Strength Ratio (TSR - MT-63M)	
Wet Strength / Dry Strength	85 percent minimum
Interior Face Coating	95 percent minimum
Boiling Water Test (MT-59M)	
Particle Coating	95 percent minimum

Reclaimed asphalt pavement (RAP) materials may be used in the production of HMA in the percentages of the total mix by mass set out in the following table:

HMA Mixture	Maximum percent RAP by total mass of mix
4.75 mm	0
9.5 mm	15
12.5 mm Top Lift	15
12.5 mm Underlying Lift	30
19 mm	30
25 mm	30

During HMA production, the RAP shall pass through a maximum 50-mm square sieve located in the HMA plant after the RAP cold feed bin and prior to the RAP mass determining system.

Crushed reclaimed concrete pavement may be used as an aggregate component of all HMA pavements. When crushed reclaimed concrete pavement is used as an aggregate component, controls shall be implemented to prevent segregation. Crushed reclaimed concrete pavement aggregate shall be separated into coarse and fine aggregate stockpiles using the 9.5 mm or 12.5 mm sieve as a break-point unless otherwise approved by the Engineer in writing.

**907-401.02.3.1.1--Mixture Properties.**

ALL MIXTURES

Percent of Maximum Specific Gravity (Gmm)

N <sub>Design</sub>	96.0
N <sub>Initial</sub>	Less than 90.0
N <sub>Maximum</sub>	Less than 98.0

VMA CRITERIA

Minimum percent

25 mm mixture	12.0
19 mm mixture	13.0
12.5 mm mixture	14.0
9.5 mm mixture	15.0
4.75 mm mixture	16.0

Mixtures with VMA more than two percent higher than the minimum may be susceptible to flushing and rutting; therefore, unless satisfactory experience with high VMA mixtures is available, mixtures with VMA greater than two percent above the minimum should be avoided.

The specified VFA range for 4.75 mm nominal maximum size mixtures for design traffic levels >3 million ESAL's (HT Mixtures) shall be 75 to 78 percent, for design traffic levels of 1.0 to 3

million ESAL's (MT mixtures) 65 to 78 percent, and for design traffic levels of <1.0 million ESAL's (ST mixtures) 65 to 78 percent.

DUST/BINDER RATIO (4.75 mm)

(Percent Passing 75µm / Effective Binder Percent) 0.9 to 2.0

DUST/BINDER RATIO (9.5 mm, 12.5 mm, 19 mm & 25mm)

(Percent Passing 75µm / Effective Binder Percent) 0.8 to 1.6

**907-401.02.3.2--Job Mix Formula.** The job mix formula shall be established in accordance with Mississippi Test Method: MT-78M, where N represents the number of revolutions of the gyratory compactor.

Compaction Requirements:	N <sub>Initial</sub>	N <sub>Design</sub>	N <sub>Maximum</sub>
High Type (HT) Mixtures (19 mm, 12.5 mm, 9.5 mm & 4.75 mm)	7	85	130
Medium Type (MT) Mixtures (19 mm, 12.5 mm, 9.5 mm & 4.75 mm)	7	65	100
All Standard Type (ST) Mixtures; 25 mm HT & MT Mixtures	6	50	75

At least 10 working days prior to the proposed use of each mixture, the Contractor shall submit in writing to the Engineer a proposed job-mix formula or request the transfer of a verified job-mix formula as set forth in the latest edition of MDOT's Field Manual for HMA and TMD-11-78-00-000M. The job-mix formula shall be signed by a Certified Mixture Design Technician (CMDT).

The Department will perform the tests necessary for review of a proposed job-mix formula for each required mixture free of charge one time only. A charge will be made for additional job-mix formulas submitted by the Contractor for review.

Review of the proposed job-mix formula will be based on percent maximum specific gravity at N<sub>Initial</sub>, N<sub>Design</sub>, and N<sub>Maximum</sub>, VMA @ N<sub>Design</sub>, resistance to stripping, and other criteria specified for the mixture.

The mixture shall conform thereto within the range of tolerances specified for the particular mixture. No change in properties or proportion of any component of the job-mix formula shall be made without permission of the Engineer. The job-mix formula for each mixture shall be in effect until revised in writing by the Engineer.

A job-mix formula may be transferred to other contracts in accordance with conditions set forth in the Department's Field Manual for HMA.

The Contractor shall not place any HMA prior to receiving “tentative” approval and a MDOT design number from the Central Laboratory.

When a change in source of materials, unsatisfactory mixture production results (such as segregation, bleeding, shoving, rutting over 3 millimeters, raveling & cracking) or changed conditions make it necessary, a new job-mix formula will be required. The conditions set out herein for the original job-mix formula are applicable to the new job-mix formula.

**907-401.02.4--Substitution of Mixture.** The substitution of a one (1) size finer mixture for an underlying lift shall require written permission of the State Construction Engineer, except no substitution of a 4.75 mm mixture will be allowed. A 9.5 mm mixture may be substituted for the 12.5 mm mixture designated on the plans as the top lift or pre-leveling. The 19 mm mixture may be substituted for the 25 mm mixture in trench widening work. Any substitution of mixtures shall be of the same type. No other substitutions will be allowed. The quantity of substituted mixture shall be measured and paid for at the contract unit price for the mixture designated on the plans. The substitution of any mixture will be contingent on meeting the required total structure thickness and maintaining the minimum and/or maximum laying thickness for the particular substituted mixture as set out in the following table.

Mixture	Single Lift Laying Thickness (millimeters)	
	Minimum	Maximum
25 mm	75	100
19 mm	55	75
12.5 mm	40	50
9.5 mm	25	40
4.75 mm	12.5	20

**907-401.02.5--Contractor's Quality Management Program.**

**907-401.02.5.1--General.** The Contractor shall have full responsibility for quality management and maintain a quality control system that will furnish reasonable assurance that the mixtures and all component materials incorporated in the work conform to contract requirements. The Contractor shall have responsibility for the initial determination and all subsequent adjustments in proportioning materials used to produce the specified mixture. Adjustments to plant operation and spreading and compaction procedures shall be made immediately when results indicate that they are necessary. Mixture produced by the Contractor without the required testing or personnel on the project shall be subject to removal and replacement by the Contractor at no additional cost to the State.

**907-401.02.5.2--Personnel Requirements.** The Contractor shall provide at least one Certified Asphalt Technician-I (CAT-I) full-time during HMA production at each plant site used to furnish material to the project. Sampling shall be conducted by a certified technician or by plant personnel under the direct observation of a certified technician. All testing, data analysis and data posting will

be performed by the CAT-I or by an assistant under the direct supervision of the CAT-I. The Contractor shall have a Certified Asphalt Technician-II (CAT-II) available to make any necessary process adjustments. Technician certification shall be in accordance with MDOT SOP TMD-22-10-00-000M, MDOT HMA Technician Certification Program. An organizational chart, including names, telephone numbers and current certification, of all those responsible for the quality control program shall be posted in the contractor's laboratory while the asphaltic paving work is in progress.

**907-401.02.5.3--Testing Requirements.** As a minimum, the Contractor's quality management program shall include the following:

- (a) Bituminous Material. Provide Engineer with samples in a sealed one liter metal container at the frequency given in MDOT SOP TMD-20-04-00-000M.
- (b) Mechanically Fractured Face. Determine mechanically fractured face content of aggregates retained on the 4.75 mm sieve, at a minimum of one test per day of production.
- (c) Mixture Gradation. Conduct extraction tests for gradation determination on the mixture. Sample according to the frequency in paragraph (i) and test according to Mississippi Test Method MT-31M.
- (d) Total Voids and VMA. Determine total voids and voids in mineral aggregate (VMA), at  $N_{Design}$ , from the results of bulk specific gravity tests on laboratory compacted specimens. Sample according to the sampling frequency in paragraph (i) and test according to the latest edition of MDOT's Field Manual for HMA.
- (e) Asphalt Content. Sample according to the sampling frequency in paragraph (i). Determine the asphalt content using one of the following procedures.
  - (1) Nuclear gauge. (Mississippi Test Method MT-6M)
  - (2) Incinerator oven. (AASHTO T 308, Method A)
- (f) Stripping Tests. Conduct a minimum of one stripping test at the beginning of each job-mix production and thereafter, at least once per each two weeks of production according to Mississippi Test Method: MT-63M and one stripping test per day of production according to Mississippi Test Method: MT-59M. Should either the TSR (MT-63M) or the boiling water (MT-59M) stripping tests fail, a new antistrip additive or rate shall be established or other changes made immediately that will result in a mixture which conforms to the specifications; otherwise, production shall be suspended until corrections are made.
- (g) Density Tests. For 25 mm, 19.5 mm, 12.5 mm & 9.5 mm mixtures, conduct density tests as necessary to control and maintain required compaction according to Mississippi Test Method: MT-16M, Method C (nuclear gauge), or AASHTO T 166.

(Note - The nuclear gauge may be correlated, at the Contractor's option, with the average of a minimum of five pavement sample densities.) For 4.75 mm mixtures, conduct density tests as necessary to control and maintain required compaction according to AASHTO Designation: T 166.

- (h) Quality Control Charts. Plot the individual test data, the average of the last four tests and the control limits for the following items as a minimum:

Mixture Gradation (Percent Passing) Sieves:

12.5 mm, 9.5 mm , 2.36 mm, 1.18 mm, 600 μm and 75 μm.

Asphalt Content, Percent

Maximum Specific Gravity, G<sub>mm</sub>

Total Voids @ N<sub>Design</sub>, Percent

VMA @ N<sub>Design</sub>, Percent

**NOTE:** For 4.75 mm mixtures, Quality Control Charts for mixture gradation are not required on the 2.36 mm and 600 μm sieves. For 4.75 mm mixtures, as a minimum, Quality Control Charts for mixture gradation shall be kept on the 9.5 mm, 1.18 mm and 75 μm sieves. For all mixtures other than 4.75 mm, Quality Control Charts for mixture gradation are not required on the 1.18 mm sieve.

Keep charts up-to-date and posted in a readily observable location. Charts may be kept on a computer, however, the charts shall be printed out a minimum of once each production day and displayed in the laboratory. Note any process changes or adjustments on the Air Voids chart.

- (i) Sampling Frequency. Conduct those tests as required above at the following frequency for each mixture produced based on the estimated plant tonnage at the beginning of the day.

<u>Total Estimated Production,</u> <u>metric tons</u>	<u>Number of Tests</u>
50-800	1
801-1700	2
1701-2700	3
2701+	4

- (j) Sample Requirements. Obtain the asphalt mixture samples from trucks at the plant. Obtain aggregate samples from cold feed bins or aggregate stockpile. Save a split portion of all mixture samples at the laboratory site in a dry and protected location for 14 calendar days. At the completion of the project, the remaining samples may be disposed of with the approval of the Engineer.

**NOTE:** Material placed in a storage silo from a previous day's production shall be randomly sampled and tested when removed for placement on the roadway. Such sample(s) shall be independent of the day's production sampling frequency and shall be used in calculating the four (4) sample running average.

The above testing frequencies are for the estimated plant production for the day. If production is discontinued or interrupted, the tests will be conducted at the previously established sample tonnage points for the materials that are actually produced. If the production exceeds the estimated tonnage, sampling and testing will continue at the testing increments previously established for the day. A testing increment is defined as the estimated daily tonnage divided by the required number of tests from the table in 907-401.02.5.3 paragraph (i).

In addition to the above program, the following tests shall be conducted on the first day of production and once for every eight production samples thereafter, with a minimum of one test per production week.

Aggregate Stockpile Gradations (AASHTO T-11 and T-27)

Reclaimed Asphalt Pavement (RAP) Gradation (Mississippi Test Method MT-31M)

Fine Aggregate Angularity for all 4.75 mm and 9.5 mm mixtures and all MT and HT mixtures designed above the maximum density line. (ASTM C 1252, Method A)

Testing of the aggregate and RAP stockpiles during production will be waived provided the Contractor provides the Engineer with gradation test results for the materials in the stockpile determined during the building of the stockpiles. The test results provided shall represent a minimum frequency of one per one thousand metric tons of material in the stockpile. If the Contractor continues to add materials to the stockpile during HMA production, the requirements for gradation testing during production are not waived.

**907-401.02.5.4--Documentation.** The Contractor shall document all observations, records of inspection, adjustments to the mixture, and test results on a daily basis. All tests conducted by the Contractor in accordance with 907-401.02.5.3(h) shall be included in the running average calculations. If single tests are performed as a check on individual HMA properties, between regular samples, without performing all tests required in 907-401.02.5.3(h), the results of those individual tests shall not be included in the running average calculations for that particular property. The Contractor shall record the results of observations and records of inspection as they occur in a permanent field record. The Contractor shall record all process adjustments and job mix formula (JMF) changes on the air void charts. The Contractor shall provide copies of all test data sheets and the daily summary reports on the appropriate Mississippi DOT forms to the Engineer on a daily basis. The Contractor shall provide a written description of any process change (including blend proportions) to the Engineer as they occur. Information provided to the Engineer must be received in the Engineer's office by no later than 9:00 AM the day after the HMA is produced. Fourteen days after the completion of the placement of the HMA, the



Contractor shall provide the Engineer with the original testing records and control charts in a neat and orderly manner.

**907-401.02.5.5--Control Limits.** The following control limits for the job mix formula (JMF) and warning limits are based on a running average of the last four data points.

<u>Item</u>	<u>JMF Limits</u>	<u>Warning Limits</u>
Sieve - % Passing		
12.5 mm	± 5.5	± 4.0
9.5 mm	± 5.5	± 4.0
2.36 mm	± 5.0	± 4.0
1.18 mm (For 4.75 mm mixtures ONLY)	± 4.0	± 3.0
600 µm	± 4.0	± 3.0
75 µm	± 1.5	± 1.0
Asphalt Content, %	-0.3 to +0.5	-0.2 to + 0.4
Total Voids @ N <sub>Design</sub> , %	± 1.3	± 1.0
VMA @ N <sub>Design</sub> , %	- 1.5	- 1.0

**907-401.02.5.6--Warning Bands.** Warning bands are defined as the area between the JMF limits and the warning limits.

**907-401.02.5.7--Job Mix Formula Adjustments.** A request for a JMF adjustment signed by a CAT-II may be made to the Engineer by the Contractor. Submit sufficient testing data with the request to justify the change. The requested change will be reviewed by the State Materials Engineer for the Department. If current production values meet the mixture design requirements, a revised JMF will be issued. Adjustments to the JMF shall conform to the latest edition of MDOT’s Field Manual for HMA. Adjustments to the JMF to conform to actual production shall not exceed the tolerances specified for the JMF limits. Regardless of such tolerances, any adjusted JMF gradation shall be within the design master range for the mixture specified. **The JMF asphalt content may only be reduced if the production VMA meets or exceeds the minimum design VMA requirements for the mixture being produced.**

**907-401.02.5.8--Actions and Adjustments.** Based on the process control test results for any property in question, the following actions shall be taken or adjustments made when appropriate:

- (a) When the running average trends toward the warning limits, the Contractor shall consider taking corrective action. The corrective action, if any, shall be documented. All tests shall be part of the contract files and shall be included in the running average calculations.
- (b) The Contractor shall notify the Engineer whenever the running average exceeds the warning limits.
- (c) If two consecutive running averages exceed the warning limit, the Contractor shall stop production and make adjustments. Production shall only be restarted after notifying the Engineer of the adjustments made.

- (d) If the adjustment made under (c) improves the process such that the running average after four additional tests is within the warning limits, the Contractor may continue production with no reduction in payment.
- (e) If the adjustment made under (c) does not improve the process and the running average after four additional tests stays in the warning band, the mixture will be considered unsatisfactory. Reduced payment for unsatisfactory mixtures will be applied starting from the stop point to the point when the running average is back within the warning limits in accordance with Subsection 907-401.02.6.3.
- (f) Failure to stop production and make adjustments when required shall subject all mixture produced from the stop point to the point when the running average is back within the warning limits to be considered unsatisfactory. Reduced payment for unsatisfactory mixtures will be applied in accordance with Subsection 907-401. 02.6.3.
- (g) If the running average exceeds the JMF limits, the Contractor shall stop production and make adjustments. Production shall only be restarted after notifying the Engineer of the adjustments made.
- (h) All materials for which the running average exceeds the JMF limits will be considered unacceptable and shall be removed and replaced by the Contractor at no additional cost to the State. The Engineer will determine the quantity of material to be replaced based on a review of the individual testing data which make up the running average in question and an inspection of the completed pavement. If the Engineer decides to leave the mixture in place because of special circumstances, the quantity of mixture, as defined above, will be paid for in accordance with Subsection 907-401.02.6.3.
- (i) Single test results shall be compared to 1.7 times the warning and JMF limits. If the test results verified by QA testing (within allowable differences in Subsection 907-401.02.6.2) exceed these limits, the pay factor provided in Subsection 907-401.02.6.3 will apply for the quantity of material represented by the test(s). Single test limits will be used for the acceptance of projects when insufficient tonnage is produced to require four (4) Contractor's tests.
- (j) The above corrective action will also apply for a mixture when the Contractor's testing data has been proven incorrect. The Contractor's data will be considered incorrect when;  
1) the Contractor's tests and the Engineer's tests do not agree within the allowable differences given in Subsection 907-401.02.6.2 and the difference can not be resolved, or  
2) the Engineer's tests indicates that production is outside the JMF limits and the results have been verified by the Materials Division. The Engineer's data will be used in place of the Contractor's data to determine the appropriate pay factor.

**907-401.02.6--Standards of Acceptance.**

**907-401.02.6.1--General.** Acceptance for mixture quality (VMA and total voids @  $N_{Design}$ , gradation, and asphalt content) will be based on random samples tested in accordance with the latest edition of MDOT's Field Manual for HMA. Pavement densities and smoothness will be accepted by lots as set out in 907-401.02.6.4 and 907-401.02.6.5.

**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	
9.5 mm and above	6.0
4.75 mm	5.0
2.36 mm	4.0
1.18 mm (For 4.75 mm mixtures ONLY)	3.5
600 μm	3.5
75 μm	2.0
AC Content	0.4
Specimen Bulk SG (Gmb) @ N <sub>Design</sub>	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.

**907-401.02.6.3--Acceptance Procedure for Mixture Quality.** All obviously defective material or mixture will be subject to rejection by the Engineer. Such defective material or mixture shall not be incorporated into the finished work. If the defective material has already been placed in the work, the material shall be removed and replaced at no additional cost to the State.

The Engineer will base final acceptance of the asphalt mixture production on the results of the Contractor's testing for total voids and VMA @  $N_{Design}$ , gradation, and asphalt content as verified by the Engineer in the manner hereinbefore described and the uniformity and condition of the completed pavement. Areas of pavement that exhibit nonuniformity or failures (materials or construction related) such as but not limited to segregation, bleeding, shoving, rutting over 3 millimeters, raveling, slippage, or cracking will not be accepted. Such areas will be removed and replaced at no additional cost to the State.

Bituminous mixture placed prior to correction for deficiencies in VMA and total voids @  $N_{Design}$ , gradation, or asphalt content, as required in 907-401.02.5.8 and determined by the Engineer satisfactory to remain in place will be paid for in accordance with the following pay factors times the contract unit price per metric ton.

**Pay Factor for Mixture Quality \***

Item	Produced in Warning Bands	Produced Outside JMF Limits (Allowed to Remain in Place)
Gradation	0.90	0.75
Asphalt Content	0.85	0.75
Total Voids @ $N_{Design}$	0.70	0.50
VMA @ $N_{Design}$	0.90	0.75

\* The minimum single payment will apply.

**907-401.02.6.4--Acceptance Procedure for Density.** Each completed lift will be accepted with respect to compaction on a lot to lot basis from density tests performed by the Department. For normal production days, divide the production into approximately equal lots as shown in the following table. When cores are being used for the compaction evaluation, randomly obtain one core from each lot. When the nuclear density gauge is being used for compaction evaluation, obtain two random readings from each lot and average the results (see Chapter 7 of the latest edition of MDOT’s Field Manual for HMA). Additional tests may be required by the Engineer to determine acceptance of work appearing deficient. The Contractor shall furnish and maintain traffic control for all compaction evaluations (including coring) required in satisfying specified density requirements.

**Lot Determination**

<u>Daily Production - Metric Tons</u>	<u>Number of Lots</u>
0-300	1
301-600	2
601-1000	3
1001-1500	4
1501-2100	5
2101-2800	6
2801+	7

**907-401.02.6.4.1--Roadway Density.** The density requirement for each completed lift on a lot to lot basis from density tests performed by the Department shall be as follows:

1. For all single lift overlays, with or without leveling and/or milling, the required lot density shall be 92.0 percent of maximum density.

- 2. For all multiple lift overlays (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.
- 3. For all pavements on new construction, the required lot density for all lifts shall be 93.0 percent of maximum density.

When it is determined that the density for a lot is below the required density (93.0 percent or 92.0 percent) but not lower than 91.0 or 90.0 percent of maximum density, respectively, the Contractor will have the right to remove and replace the lot(s) not meeting the specified density requirements in lieu of accepting reduced payment for the lot(s).

When it is determined that the density for a lot is above 96.0 percent, the Engineer shall notify the Contractor who will make plant adjustments to resolve the problem.

When it is determined that the density for a lot is below 91.0 or 90.0 percent, respectively, the lot(s), or portions thereof shall be removed and replaced in accordance with Chapter 7 of the latest edition of MDOT's Field Manual for HMA at no additional cost to the State. A corrected lot will be retested for approval. No resampling will be performed when pavement samples are used for determining density.

At any time the average daily compaction (the total of the percent compaction for the lots produced in one day divided by the total number of lots for the day) does not meet the required percent compaction or more for two consecutive days, the Contractor shall notify the Engineer of proposed changes to the compactive effort. If the average daily compaction does not meet the required percent compaction or more for a third consecutive day, the Contractor shall stop production until compaction procedures are established to meet the specified density requirements.

Each lot of work found not to meet the density requirement of 92.0 percent of maximum density may remain in place with a reduction in payment as set out in the following tables:

**PAYMENT SCHEDULE FOR COMPACTION  
OF 92.0 PERCENT OF MAXIMUM DENSITY**

<u>Pay Factor</u>	<u>Lot Density ** % of Maximum Density</u>
1.00	92.0 and above
0.90	91.0 - 91.9
0.70	90.0 - 90.9

\*\* Any lot or portion thereof with a density of less than 90.0 percent of maximum density shall be removed and replaced at no additional cost to the State.

**PAYMENT SCHEDULE FOR COMPACTION OF 93.0 PERCENT OF MAXIMUM DENSITY**

<u>Pay Factor</u>	Lot Density *** <u>% of Maximum Density</u>
1.00	93.0 and above
0.90	92.0 - 92.9
0.70	91.0 - 91.9

\*\*\* Any lot or portion thereof with a density of less than 91.0 percent of maximum density shall be removed and replaced at no additional cost to the State.

The compaction pay factors and mixture quality pay factor (Subsection 907-401.02.6.3) will each apply separately. However, the combined pay factor shall not be less than 0.50 for any mixture allowed to remain in place.

**907-401.02.6.4.2--Trench Widening Density.** The density for trench widening on a lot to lot basis shall be determined from density tests performed by the Department using pavement samples (cores).

When it is determined that the density for a trench widening lot is below 89.0 percent but not lower than 88.0 percent of maximum density, the Contractor will have the right to remove and replace the lot(s) not meeting the specified density requirements in lieu of accepting reduced payment for the lot(s).

When it is determined that the density for a trench widening lot is above 95.0 percent, the Engineer shall notify the Contractor who will make plant adjustments to resolve the problem.

When it is determined that the density for a trench widening lot is below 88.0 percent, the lot(s), or portions thereof shall be removed and replaced in accordance with Chapter 7 of the latest edition of MDOT’s Field Manual for HMA at no additional cost to the State. A corrected lot will be retested for approval. No resampling will be performed when pavement samples are used for determining density.

At any time the daily compaction (the total of the percent compaction for the lots produced in one day divided by the total number of lots for the day) does not meet 89.0 percent compaction or more for two consecutive days, the Contractor shall notify the Engineer of proposed changes to the compactive effort. If the average daily compaction does not meet 89.0 percent compaction or more for a third consecutive day, the Contractor shall stop production until compaction procedures are established to meet the specified density requirement.

Each lot of trench widening work found not to meet the density requirement of 91.0 percent of maximum density may remain in place with a reduction in payment as set out in the following table:

**PAYMENT SCHEDULE FOR COMPACTION  
(TRENCH WIDENING WORK)**

	Lot Density ***
<u>Pay Factor</u>	<u>% of Maximum Density</u>
1.00	89.0 and above
0.50	88.0 - 88.9

\*\*\* Any lot or portion thereof with a density of less than 88.0 percent of maximum density shall be removed and replaced at no additional cost to the State.

The compaction pay factors and mixture quality pay factor (Subsection 907-401.02.6.3) will each apply separately. However, the combined pay factor shall not be less than 0.50 for any mixture allowed to remain in place.

**907-401.02.6.5--Acceptance Procedure for Pavement Smoothness.** When compaction is completed, the lift shall have a uniform surface and be in reasonably close conformity with the line, grade and cross section shown on the plans.

The smoothness of each applicable lift will be determined by using a California Profilograph to produce a profilogram (profile trace) at each designated location. The surface shall be tested and corrected to a smoothness index as described herein with the exception of those locations or specific projects that are excluded from a smoothness test with the profilograph.

The profilograph, furnished and operated by the Contractor under supervision of the Engineer, shall consist of a frame at least 7.5 meters in length supported upon multiple wheels having no common axle. The wheels shall be arranged in a staggered pattern so that no two wheels will simultaneously cross the same bump. A profile is to be recorded from the vertical movement of a sensing mechanism. This profile is in reference to the mean elevation of the contact points established by the support wheels. The sensing mechanism, located at the mid-frame, may consist of a single bicycle-type wheel or a dual-wheel assembly consisting of either a bicycle-type (pneumatic tire) or solid rubber tire vertical sensing wheel and a separate bicycle-type (pneumatic tire) longitudinal sensing wheel. The wheel(s) shall be of such circumference(s) to produce a profilogram recorded on a scale of 1:300 longitudinally and 1:1 (full scale) vertically. Motive power may be provided manually or by the use of a propulsion unit attached to the center assembly. In operation, the profilograph shall be moved longitudinally along the pavement at a speed no greater than 5 KPH so as to reduce bounce as much as possible. The testing equipment and procedure shall comply with the requirements of Department SOP.

The Contractor may elect to use a computerized version of the profilograph in lieu of the standard profilograph. If the computerized version of the profilograph is used, it shall meet the requirements of Subsection 907-401.02.6.6.



The smoothness of each applicable lift will be determined for traffic lanes, auxiliary lanes, climbing lane and two-way turn lanes. Areas excluded from a smoothness test with the profilograph are acceleration and deceleration lanes, tapered sections, transition sections (for width), shoulders, crossovers, ramps, side street returns, etc. The roadway pavement on bridge replacement projects having 300 meters or less of pavement on each side of the structure will be excluded from a test with the profilograph. Pavement on horizontal curves having a radius of less than 300 meters at the centerline and pavement within the superelevation transition of such curves are excluded from a test with the profilograph. The profilogram shall terminate five meters from each transverse joint that separates the pavement from a bridge deck, bridge approach slab or existing pavement not constructed under the contract.

A profilogram will be made for each applicable lift. The measurements will be made in the outside wheel path of exterior lanes and either wheel path of interior lanes. The wheel path is designated as being located 0.9 meter from the edge of pavement or longitudinal joint. The testing will be limited to a single profilogram for each lift of a lane except that a new profilogram will be made on segments that have been surface corrected. When surface corrections are required and/or made, a new profilogram will be made. The new profilogram shall meet the requirements of Subsection 907-403.03.2.

Each applicable lift will be accepted on a segment to segment basis for pavement smoothness. When the profile index requirement of the lift is 475.0 millimeters per kilometer, no segment of the lift with a profile index greater than 475.0 millimeters per kilometer shall be allowed to remain in place without correction. For the purpose of determining pavement smoothness and contract price adjustment for rideability (Subsection 907-403.03.2), each day's production will be sub-divided into sections which terminate at bridges, transverse joints or other interruptions. Each section will be sub-divided into segments of 0.1 kilometer. Where a segment less than 0.1 kilometers occurs at the end of a section, it will be combined with the preceding 0.1-kilometer segment for calculation of the profile index. The last five meters of a day's lift may not be obtainable until the lift is continued and for this reason may be included in the subsequent segment.

A profile index will be determined for each segment as millimeters per kilometer in excess of the "Zero" blanking band which is simply referred to as the "Profile Index". From the profilogram of each segment, the scallops above and below the "Zero" blanking band are totaled in millimeters. The totaled count of millimeters is converted to millimeters per kilometer to establish a smoothness profile index for that segment.

Individual bumps and/or dips that are identified on the profilogram by locating vertical deviations that exceed 10 millimeters when measured from a chord length of 7.5 meters or less shall be corrected regardless of the profile index value of the segment. Surface correction by grinding shall be in accordance with Subsection 907-401.02.6.7. The Contractor shall also make other necessary surface corrections to ensure that the final profile index of the segment meets the requirements of Subsection 907-403.03.2.

Segment(s) exceeding the accepted profile index value shall be corrected as specified in Subsection 907-403.03.4. All such corrections shall be at the expense of the Contractor.

Scheduling will be the responsibility of the Contractor with approval of the Engineer, and the tests shall be conducted within 72 hours after each day's production unless authorized otherwise by the Engineer. The Contractor will be responsible for traffic control associated with this testing operation.

#### **907-401.02.6.6--Computerized Profilograph.**

**907-401.02.6.6.1--General** The computerized profilograph, furnished and operated by the Contractor under the supervision of the Engineer, shall be equipped with an on-board computer capable of meeting the following conditions.

Vertical displacement shall be sampled every 75 millimeters or less along the roadway. The profile data shall be bandpass filtered in the computer to remove all spatial wavelengths shorter than 0.6 meter. This shall be accomplished by a third order, low pass Butterworth filter. The resulting band limited profile will then be computer analyzed according to the California Profilograph reduction process to produce the required millimeters per kilometer index. This shall be accomplished by fitting a linear regression line to each 0.1 kilometer of continuous pavement section. This corresponds to the perfect placement of the blanking band bar by a human trace reducer. Scallops above and below the blanking band are then detected and totaled according to the California protocol. Bump/Dip analysis shall take place according to the California Profilograph reduction process.

The computerized profilograph shall be capable of producing a plot of the profile and a printout which will give the following data: Stations every 7.5 meters, bump/dip height and bump/dip length of specification (10.0 millimeters and 7.5 meters respectively), the blanking band width, date of measurement, total profile index in millimeters per kilometer for the measurement, total length of the measurement, and the raw millimeters for each 0.1-kilometer segment.

**907-401.02.6.6.2--Mechanical Requirements.** The profilograph shall consists of a frame 7.5 meters long supported at each end by multiple wheels. The frame shall be constructed to be easily dismantled for transporting. The profilograph shall be constructed from aluminum, stainless steel and chromed parts. The end support wheels shall be arranged in a staggered pattern such that no two wheels cross a transverse joint at the same time. The relative smoothness shall be measured by the vertical movement of an 200 millimeters or larger diameter sensing wheel at the midpoint of the 7.5-meter frame. The horizontal distance shall be measured by a 500-mm or larger diameter pneumatic wheel. This profile shall be the mean elevation referenced to the twelve points of contact with the pavement established by the support wheels. Recorded graphical trace of the profile shall be on a scale of 1:1 (full scale) vertical motion of the sensing wheel and 1:300 horizontal motion of the profilograph.

**907-401.02.6.6.3--Computer Requirements.** The computer shall have the ability to produce output on sight for verification. The computerized output shall indicate the profile index for each

specified section of roadway. Variable low and high pass third-order Butterworth filtering options shall be available. The printout shall be capable of showing station marks automatically on the output. Blanking band positioning for each specified section of the roadway shall be placed according to the least squares fit line of the collected data. Variable bump and dip tests shall be available to show "must correct" locations on the printout. The computer must have the ability to display on screen "must correct" conditions and alert the user with an audible warning when a must correct location has been located. The computer must have the ability to store profile data for later reanalysis. The measurement program must be menu driven and IBM compatible. User selected options, identification, calibration factors, and time and date stamps shall be printed at the top of each printed report for verification. The control software must be upgradeable. A power source shall be included for each profilograph and be capable of supplying all power needs for a full days testing.

**907-401.02.6.7--Surface Correction.** Corrective work to bumps shall consist of diamond grinding in accordance with these specifications or methods approved by the Engineer. All surface areas corrected by grinding shall be sealed with a sealant approved by the Engineer.

**907-401.02.6.7.1--Diamond Grinding.** Grinding of asphalt surfaces shall consist of diamond grinding the existing asphalt pavement surface to remove surface distortions to achieve the specified surface smoothness requirements.

**907-401.02.6.7.2--Equipment.** The grinding equipment shall be a power driven, self-propelled machine that is specifically designed to smooth and texture pavement surfaces with diamond blades. The effective wheel base of the machine shall not be less than 3.6 meters. It shall have a set of pivoting tandem bogey wheels at the front of the machine and the rear wheels shall be arranged to travel in the track of the fresh cut pavement. The center of the grinding head shall be no further than 0.9 meter forward from the center of the back wheels.

The equipment shall be of a size that will cut or plane at least 0.6 meter wide. It shall also be of a shape and dimension that does not encroach on traffic movement outside of the work area. The equipment shall be capable of grinding the surface without causing spalls at joints, or other locations.

**907-401.02.6.7.3--Construction.** The construction operation shall be scheduled and proceed in a manner that produces a uniform finish surface. Grinding will be accomplished in a manner to provide positive lateral drainage by maintaining a constant cross-slope between grinding extremities in each lane.

The operation shall result in pavement that conforms to the typical cross-section and the requirements specified in 907-401.02.6.7.4. It is the intent of this specification that the surface smoothness characteristics be within the limits specified.

The Contractor shall establish positive means for removal of grinding residue. Solid residue shall be removed from pavement surfaces before it is blown by traffic action or wind. Residue

shall not be permitted to flow across lanes used by public traffic or into gutters or drainage facilities, but may be allowed to flow into adjacent ditches.

**907-401.02.6.7.4--Finished Pavement Surface.** The grinding process shall produce a pavement surface that is smooth and uniform in appearance with a longitudinal line type texture. The line type texture shall contain parallel longitudinal corrugations that present a narrow ridge corduroy type appearance. The peaks of the ridges shall not be more than two millimeters higher than the bottoms of the grooves.

The finished pavement surface will be measured for riding quality. The grinding shall produce a riding surface which does not exceed either the specified profile index or the specified bump and dip limit.

**907-401.02.7--Nuclear Gauges.**

**907-401.02.7.1--Nuclear Moisture-Density Gauge.** The nuclear gauge unit used to monitor density shall contain a full data processor which holds all calibration constants necessary to compute and directly display wet density, moisture, and dry density in kilograms per cubic meter. The data processor shall compute and display the percent moisture and percent density based on dry mass.

**907-401.02.7.2--Nuclear Asphalt Content Gauge.** The Contractor shall furnish and calibrate, unless designated otherwise in the contract, a Troxler Nuclear Asphalt Content Gauge (Model 3241 or updated model) or a Campbell Nuclear Asphalt Content Gauge (Model AC-2) or an approved equal.

**907-401.03--Construction Requirements.** Mississippi DOT has adopted the “Hot-Mix Asphalt Paving Handbook” as the guideline for acceptable HMA construction practices.

**907-401.03.1--Specific Requirements.**

**907-401.03.1.1--Weather Limitations.** The mixture shall not be placed when weather conditions prevent the proper handling and finishing or the surface on which it is to be placed is wet or frozen. At the time of placement, the air and pavement surface temperature limitations shall be equal to or exceed that specified in the following table:

**TEMPERATURE LIMITATIONS**

Compacted Thickness	Temperature
Less than 40 millimeters	13°C
40 millimeters to 50 millimeters	10°C
55 millimeters to 75 millimeters	7°C
Greater than 75 millimeters	5°C

When paving operations are discontinued because of rain, the mixture in transit shall be protected until the rain ceases. The surface on which the mixture is to be placed shall be swept to remove as much moisture as possible and the mixture may then be placed subject to removal and replacement at no additional cost to the State if contract requirements are not met.

**907-401.03.1.2--Tack Coat.** Tack coat shall be applied to previously placed HMA and between lifts, unless otherwise directed by the Engineer. The tack coat shall be applied as a spray coating, fog coating, or "spider webbing". Construction requirements shall be in accordance with Subsection 407.03.

**907-401.03.1.3--Blank.**

**907-401.03.1.4--Density.** 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 92.0 percent of the maximum density based on AASHTO Designation: T 209 for the day's production. If a job-mix formula adjustment is made during the day which affects the maximum specific gravity, calculate a new average maximum density for the lot(s) placed after the change.

Pavement core samples obtained for determining density which have a thickness less than two times the maximum size aggregate permitted by the job-mix formula will not be used as a representative sample.

Preleveling, wedging [less than fifty percent (50%) of width greater than minimum lift thickness], ramp pads, irregular shoulder areas, median crossovers, turnouts, and other areas where an established rolling pattern cannot be obtained shall be compacted to refusal densification.

**907-401.03.2--Bituminous Mixing Plants.**

**907-401.03.2.1--Plant Requirements.**

**907-401.03.2.1.1--Cold Aggregate Storage.** The cold storage for hydrated lime shall be a separate bulk storage bin with a vane feeder or other approved feeder system which can readily be calibrated. The system shall provide a means for easy sampling of the hydrated lime additive and verifying the quantity of lime dispensed. The feeder system shall require a totalizer.

The hydrated lime additive equipment shall be interlocked and synchronized with the cold feed controls to operate concurrently with the cold feed operation which will automatically adjust the hydrated lime feed to variations in the cold aggregate feed. A positive signal system shall be installed which will automatically shut the plant down when malfunctions cause an improper supply of hydrated lime or water.

The plant shall not operate unless the entire hydrated lime system is functioning properly.

**907-401.03.2.1.2--Cold Aggregate Feed.** The hydrated lime shall be dispensed dry or as a slurry (1 part hydrated lime to 3 parts water) directly onto the composite aggregate between the cold feed and the dryer.

When hydrated lime is introduced dry, a spray bar or other approved system capable of spraying all aggregate with water shall be installed in order to maintain all aggregate at the moisture condition set out in Subsection 907-401.02.3.1 prior to addition of the hydrated lime. An alternate system for spraying the coarse aggregate stockpiles may be allowed when approved by the Engineer. The approved equipment and methods shall consistently maintain the aggregate in a uniform, surface wet condition. The moisture content of the aggregate-hydrated lime mixture, following spraying and mixing, shall be introduced into the automatic moisture controls of the plant.

The aggregate-hydrated lime mixture shall be uniformly blended by some mechanical means such as a motorized "on the belt" mixer or pug mill located between the cold feed and the dryer. Other mixing devices may be used subject to approval by the Engineer.

A maximum of forty five (45) percent of the total aggregate blend may be fed through any single cold feed bin. If the JMF calls for more than forty five (45) percent of a specific aggregate, that aggregate must be fed through two (2) or more separate cold feed bins.

**907-401.03.2.1.3--Dryer.** The efficiency of drying aggregates shall be such that the moisture content of the top HMA mixture shall not exceed 0.50 percent by mass of the total mixture, and the moisture content of all the underlying mixtures shall not exceed 0.75 percent by mass of the total mixture being produced.

**907-401.03.2.1.4--Blank.**

**907-401.03.2.1.5--Control of Bituminous Material and Antistripping Agent.** Specified bituminous materials from different manufacturers or from different refineries of a single manufacturer shall not be mixed in the plant's asphalt cement supply system storage tank and used in the work without prior written approval of the Engineer. Approval is contingent upon the Engineer's receipt of three copies of the manufacturer's certified test report(s) from the Contractor showing that the bituminous material blend conforms to the specifications.

A satisfactory method of determining the mass or metering shall be provided to ensure the specified quantity of bituminous material. Provisions shall be provided for checking the quantity or rate of flow. Mass determining or metering devices shall be accurate within plus or minus one-half percent.

The antistripping agent shall be injected into the bituminous material immediately prior to the mixing operation with an approved in-line injector system capable of being calibrated so as to ensure the prescribed dosage.

An in-line spigot for sampling of asphalt shall be located between the asphalt storage tank and the antistripping agent in-line injector.

**907-401.03.2.1.6--Thermometric Equipment.** An armored thermometer of adequate range and calibrated in 2°C increments shall be fixed at a suitable location in the bituminous line near the charging valve of the mixer unit.

The plant shall be equipped with an approved dial-scale, mercury-actuated thermometer, pyrometer or other approved thermometric instrument placed at the discharge chute of the dryer to measure the temperature of the material.

When the temperature control is unsatisfactory, the Engineer may require an approved temperature-recording apparatus for better regulation of the temperature.

**907-401.03.2.1.7--Screens.** A scalping screen shall be used.

**907-401.03.2.1.8--Dust Collector.** The plant shall be equipped with a dust collector constructed to waste or return collected material. When collected material is returned, it shall be returned through a controlling device which will provide a uniform flow of material into the aggregate mixture.

**907-401.03.2.1.9--Safety Requirements.** A platform or other suitable device shall be provided so the Engineer will have access to the truck bodies for sampling and mixture temperature data.

**907-401.03.2.1.10--Blank.**

**907-401.03.2.1.11--Truck Scales.** The specifications, tolerances and regulations for commercial mass determining and measuring devices as recommended by the National Bureau of Standards [National Institute of Standards and Technology (NIST) Handbook 44] shall govern truck scales used in the State of Mississippi, except mass determining devices with a capacity of 4536 kilograms or more used to determine the mass of road construction materials (i.e. sand, gravel, asphalt, fill dirt, topsoil and concrete) shall have a tolerance of one-half of one percent (1/2 of 1%) in lieu of the requirements of Handbook 44 and shall be regulated by the Mississippi Department of Transportation.

Scales shall be checked and certified by a scale company certified in heavy truck masses by the Mississippi Department of Agriculture and Commerce. In the case of scales used for measurement of materials on Department of Transportation projects, certification shall be performed in the presence of an authorized representative of the Department or a copy of the certification may be furnished for scales that have been checked and certified within the last six months for use on other Department of Transportation projects and are still in the position where previously tested. Scales that have not been checked and certified under NIST Handbook 44 guidelines, except for the herein modified tolerances allowed, shall be so checked and certified prior to use for measurement of materials on Department of Transportation projects. Tests shall

be continued on six month intervals with the test conducted in the presence of an authorized representative of the Department.

Truck scales shall be accurate to one-half of one percent of the applied load, shall be sensitive to 10 kilograms, and shall have a graduation of not more than 10 kilograms.

The Contractor may use an electronic mass determining system approved by the Engineer in lieu of truck scales. The system shall be equipped with an automatic print out system which will print a ticket for each load with the following information:

MDOT, Contractor's name, project number, county, ticket number, load number, pay item number, item description of the material delivered, date, time of day, haul vehicle number, gross mass, tare mass, net mass and total daily net mass.

When approved by the Engineer and materials are measured directly from a storage bin equipped with load cells, exceptions may be made to the gross and tare mass requirements.

The ticket shall also have a place for recording the temperature of HMA mixtures, if applicable, and the signatures of MDOT's plant and roadway inspectors. The load numbers for each project shall begin with load number one (1) for the first load of the day and shall be numbered consecutively without a break until the last load of the day. The Contractor shall provide MDOT with an original and one copy of each ticket. When the ticket information provided by the Contractor proves to be unsatisfactory, MDOT will use imprinter(s) and imprinter tickets to record load information. All recorded masses shall be in kilograms and shall be accurate to within one-half of one percent of the true mass, and the system shall be sensitive to 10 kilograms. The Engineer will require random loads to be checked on certified platform scales at no cost to the Department.

When an electronic mass determining system utilizes the plant scales of a batch plant, the system may be used only in conjunction with a fully automatic batching and control system.

**907-401.03.2.2--Additional Requirements for Batching Plants.**

**907-401.03.2.2.1--Plant Scales.** The plant batch scale mass shall not exceed the platform scale mass by more than one percent (1%).

**907-401.03.2.3--Additional Requirements for Drum Mixing Plants.**

**907-401.03.2.3.1--Plant Controls.** The plant shall be operated with all the automatic controls as designed and provided by the plant manufacturer. If the automatic controls malfunction, brief periods of manual operations to complete the day's work or to protect the work already placed may be conducted with the approval of the Engineer. During manual operation, the Contractor must continue to produce a uniform mixture meeting all contract requirements.



**907-401.03.2.3.2--Aggregate Handling and Proportioning.** A screening unit shall be placed between the bins and the mixer to remove oversized aggregate, roots, clayballs, etc.

**907-401.03.2.4--Surge or Storage Bins.** Surge and/or storage systems may be used at the option of the Contractor provided each system is approved by the Department prior to use. Surge bins shall be emptied at the end of each day's operation. Storage silos may be used to store mixtures as follows:

- 19-mm & 25-mm mixtures ----- 24 hours
- 9.5-mm & 12.5-mm mixtures ----- 36 hours

The storage silos must be well sealed, completely heated and very well insulated. The mixture when removed from the storage silo shall be tested to ensure that it meets all the same specifications and requirements as the mixture delivered directly to the paving site. See Subsection 907-401.02.5.3, subparagraph (i) for sampling and testing requirements.

**907-401.03.3--Hauling Equipment.** The inside surfaces of each vehicle bed shall be coated with a light application of water and thin oil, soap solution, lime water solution or other approved material to prevent the mixture from sticking. Diesel fuel or gasoline shall not be used to lubricate vehicle beds. Truck beds shall be raised to drain excessive lubricants before placing mixture in the bed. An excess of lubricant will not be permitted.

**907-401.03.4--Bituminous Pavers.** The screed or strikeoff assembly shall be capable of vibrating and heating the full width of the mixture being placed and shall lay the lift with an automatic control device to the specified slope and grade without tearing, pulling or gouging the mixture surface.

**907-401.03.5--Rollers.** All rollers shall be self-propelled units capable of maintaining a smooth and uniform forward and reverse speed as required for proper compaction. They shall be equipped with adjustable scrapers, water tanks, mats and a device for wetting the wheels or tires to prevent the mixture from sticking. Adhesion of the mixture to the rollers will not be permitted. The use of diesel fuel or gasoline for cleaning roller wheels or tires or to aid in preventing the mixture from sticking to the wheels or tires is prohibited.

All rollers shall be in good mechanical condition, free from leaking fuels and lubricants, loose link motion, faulty steering mechanism, worn king bolts and bearings. They shall be operational at slow speeds to avoid displacement of the mixture and capable of reversing direction smoothly and without backlash.

**907-401.03.6--Preparation of Grade.** The foundation upon which HMA pavement is to be placed shall be prepared in accordance with the applicable Section of the Standard Specification.

Unless otherwise directed, tack coat shall be applied to the underlying surface on which the mixture is to be placed. Emulsions, if used, must be allowed to "break" prior to placement of the bituminous mixture.

Bituminous mixture shall not be placed against the edge of pavements, curbs, gutters, manholes and other structures until sprayed with a thin uniform tack coating. The tack coat shall be protected until the mixture has been placed.

Existing HMA pavements that require preliminary leveling or patching in advance of placing the bituminous mixture shall be sprayed with a tack coat material and then brought as nearly as practicable to uniform grade and cross section. The material shall be placed by hand or machine in one or more compacted layers approximately 50 millimeters or less in compacted thickness.

**907-401.03.7--Blank.**

**907-401.03.8--Preparation of Mixture.** The temperature of the mixture, when discharged from the mixer, shall not exceed 170°C.

**907-401.03.9--Material Transfer Equipment.** Except for the areas mentioned below, when placing the top intermediate lift and/or the top lift of HMA pavements, the material transferred from the hauling unit shall be remixed prior to being placed in the paver hopper or insert by using an approved Materials Transfer Device. Information on approved devices can be obtained from the State Construction Engineer. Areas excluded from this requirement include: temporary work of short duration, detours, bridge replacement projects having less than 300 meters of pavement on each side of the structure, acceleration and deceleration lanes less than 300 meters in length, tapered sections, transition sections (for width), shoulders less than three meters in width, crossovers, ramps, side street returns and other areas designated by the Engineer.

**907-401.03.10--Spreading and Finishing.** Grade control for HMA pavements shall be established by stringline at least 150 meters ahead of spreading, unless placement is adjacent to curb and gutter, concrete pavement, or other allowed grade control.

The mixture shall be spread to the depth and width that will provide the specified compacted thickness, line, grade and cross section. Placing of the mixture shall be as continuous as possible. On areas where mechanical spreading and finishing is impracticable, the mixture may be spread, raked and luted by hand tools.

Immediately after screeding and prior to compaction, the surface shall be checked by the Contractor and irregularities adjusted. When the edge is feathered as in a wedge lift, it may be sealed by rolling. Irregularities in alignment and grade along the edges shall be corrected before the edges are rolled.

Hauling, spreading and finishing equipment shall be furnished that is capable of and operated in such a manner that the rolling operation will satisfactorily correct any surface blemishes.

The longitudinal joint in the subsequent lift shall offset that in the underlying lift by approximately 150 millimeters. However, the joint in the top lift shall be at the centerline or lane line.

**907-401.03.11--Compaction.** After the mixture has been spread and surface irregularities corrected, it shall be thoroughly and uniformly compacted to the required line, grade, cross section and density.

**907-401.03.12--Joints.** Joints between previously placed pavement and pavement being placed shall be so formed as to insure thorough and continuous bond.

Transverse construction joints shall be formed by cutting the previously placed mixture to expose the full depth of the lift.

The contact surface of transverse joints and longitudinal joints, except hot joints, shall be sprayed with a thin uniform tack coating before additional mixture is placed against the previously placed material.

Longitudinal joints shall be formed by overlapping the screed on the previously placed material for a width of at least 25 millimeters and depositing the quantity of mixture to form a smooth, tight joint.

**907-401.03.13--Pavement Samples.** The Contractor shall cut samples from each lift of HMA at the time and locations designated by the Engineer. The samples shall be taken for the full depth of each lift and shall be of a size approved by the Engineer but not to exceed 77 500 square millimeters. Tools used for cutting or coring of samples shall be of the revolving blade type such as saw or core drill. Cores shall be taken using a 75.0 to 100.0-mm inside diameter coring bit. The sample hole shall be filled, compacted and finished by the Contractor to conform with the surrounding area. No additional compensation will be allowed for furnishing samples and repairing the areas with new pavement.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-403-8M**

**CODE: (SP)**

**DATE: 11/04/2005**

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

Section 403, Hot Bituminous Pavement, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is deleted in toto and replaced as follows:

**SECTION 907-403 - HOT MIX ASPHALT PAVEMENT**

**907-403.01--Description.** This work consists of constructing one or more lifts of HMA pavement meeting the requirements of Section 907-401 on a prepared surface in accordance with the requirements of this section and in reasonably close conformity with the lines, grades, thicknesses, and typical cross sections shown on the plans or established by the Engineer. This work shall also include applicable in-grade preparation of the underlying course in accordance with Section 321.

**907-403.02--Material Requirements.** Materials and their use shall conform to the applicable requirements of 907-401.02.

**907-403.03--Construction Requirements.**

**907-403.03.1--General.** Construction requirements shall be as specified in 907-401.03 except as otherwise indicated in this section or applicable special provisions.

**907-403.03.2--Smoothness Tolerances.** Except as noted herein, the finished smoothness of each lift shall conform to the designated grade and cross section within the following tolerances from grade stakes or other grade reference points set at 10-meter intervals:

	Lower* & Leveling Lifts	Lower* Intermediate Lift	Top Intermediate Lift	Surface Lift
Maximum deviation from grade and cross section at any point	13 mm	10 mm	6 mm	6 mm
Maximum deviation from a three-meter straight edge	10 mm	6 mm	3 mm	3 mm
Profile Index (PI) (millimeters/kilometer)	-	-	710	475

Note: Where more than four (4) lifts of HMA are required, all lifts, excluding the top three (3) lifts, shall meet the requirements of the lower lift.

- \* When tested longitudinally from a stringline located equidistant above points 15 meters apart, the distance from the stringline to the surface at any two points located approximately four meters apart shall not vary one from the other more than the maximum deviation allowed above from a three-meter straight edge.

Where only one intermediate lift is required, it shall meet the smoothness requirements for lower intermediate lifts and shall have a Profile Index of not more than 945 millimeters per kilometer. The surface lift shall have a Profile Index of not more than 475 millimeters per kilometer.

Where only a leveling lift and a surface lift are required, the surface lift shall meet the smoothness requirements for lower intermediate lifts, and shall have a Profile Index of not more than 945 millimeters per kilometer.

Where only a surface lift is required, the Contractor shall determine the existing surface profile index at no additional cost to the State. The finished surface lift shall have a profile index of sixty percent (60%) of the profile index of the existing surface or 945 millimeters per kilometer, whichever is greater.

Where milling is required to remove undesirable material and/or correction of the cross-slope and only one (1) lift is required, the lift shall have a Profile Index of not more than 710 millimeters per kilometer

Where milling is required to remove undesirable material and/or correction of the cross-slope and a leveling lift and a surface lift are required, the surface lift shall have a Profile Index of not more than 710 millimeters per kilometer.

Where milling is required to remove undesirable material and/or correction of the cross-slope and two (2) lifts are required, the lower lift shall have a Profile Index of not more than 710 millimeters per kilometer and the surface lift shall have a Profile Index of not more than 475 millimeters per kilometer

In the placement of full depth HMA pavement, where the chemically treated base is constructed, graded and/or trimmed, full lane width, to a surface tolerance of  $\pm 10$  millimeters from design grade, stringline grade controls may be eliminated for the placement of the asphalt drainage course and all HMA lifts. In addition, where the base course is crushed stone or crushed concrete and is constructed to a surface tolerance of  $\pm 10$  millimeters from design grade using a stringline controlled spreader, stringline grade controls may be eliminated for the placement of the asphalt drainage course and all HMA lifts.

All other tolerances as specified in Section 907-321 are applicable, except for bases, when tested longitudinally, the maximum deviation when measured at the 4-meter midpoint shall be  $\pm 10$  millimeters.

Acceptance and payment of HMA will be determined on a lot to lot basis by cores taken from the completed pavement as outlined in Subsection 907-403.03.3.

Grade stakes or other grade reference points set at 10-meter intervals and maximum deviation from grade and cross section will not be required provided an approved profile averaging device with extreme contact points with surface at least nine meters apart is furnished and properly used for the four conditions set forth herein; however, all other surface requirements are applicable.

- (a) Overlays with one overall lift.
- (b) Overlays with two or more overall lifts -- for each lift above the first overall lift provided each underlying overall lift is within the allowable tolerances.
- (c) Surface lift of new construction provided the underlying lift is within the allowable tolerances.
- (d) Full-depth asphalt construction for lifts above the lower lift provided the lower lift is within the specified tolerances for the lower intermediate lift.

Approved contacting type profile averaging devices are those devices capable of working in conjunction with a taut string or wire set to grade, or ski-type device with extreme contact points with the surface at least 10 meters apart. Approved non-contacting type profile averaging devices are laser type ski devices with at least four referencing mobile stations at a minimum length of 7.3 meters, or an approved equal.

When approved by the Engineer, a short ski or shoe may be substituted for a long ski on the second paving operation working in tandem.

During the finishing and compacting of pavement lifts, it shall be the responsibility of the Contractor to check the surface and joints for progress toward conformance to surface requirements set forth herein. Variations from surface requirements exceeding the allowable tolerances shall be corrected at the Contractor's expense.

When a portland cement concrete pavement is to be placed on a HMA lift, the finished top of the HMA lift shall meet the requirements of Sections 321 and 501.

When the Profile Index for the final surface lift is less than or equal to three hundred and forty seven millimeters per kilometer (347 mm / km), 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 millimeters / kilometer / segment	Contract Price Adjustment percent of HMA unit bid price
less than 158.0	108
158.1 to 221.0	106
221.1 to 284.0	104
284.1 to 347.0	102
347.1 to 475.0	100
over 475.0	100 (with correction of PI = 475.0)

Contract price adjustments for rideability shall only be applicable to the surface lift and furthermore to only the segment(s) or portions of the segment(s) of the surface lift that require smoothness be determined by using a profilograph and then only when the surface tolerance requirements include a profile index of 475 mm / km.

Segment(s) or portions thereof representing areas excluded from a smoothness test with the profilograph shall also be excluded from consideration for a contract price adjustment for rideability.

Any contract price adjustment for rideability will be applied on a segment to segment basis to the pay tonnage, determined in accordance with Subsections 907-401.02.6.5 and 907-403.04, for the segment(s) or portions thereof for which an adjustment is warranted.

**907-403.03.3--Thickness Requirements.** Hot mix asphalt overlay lifts shall be constructed as nearly in accordance with the thickness shown on the plans as the underlying pavement and foundation will permit. Periodic and cumulative yield tests will be made to determine practicable conformity to the thickness of each lift. The Engineer may order modifications in placement thicknesses to prevent unwarranted variations in plan quantities.

When the paver is operating off an established grade line, no thickness determination will be required for the various lifts of pavement. It is understood that the tolerances from design grade will control the thickness requirements.

When grade stakes are eliminated by Notice To Bidders or as outlined in 907-403.03.2(d) and where resulting in the placement of two (2) or more lifts, acceptance and payment will be determined on a lot to lot basis by cores taken from the completed pavement. Lots will be coincidental with acceptance lots for the surface lift as provided in 907-401.02.6.4, except that only lots resulting from the placement of mainline surface lift will be used for thickness assessment. One core will be obtained at random from each lot. Irregular areas will not be cored.

When the average thickness of all the cores from the lots representing a day's production (excluding any discarded by the Engineer for justifiable reason) is within 10 millimeters of the total pavement thickness shown on the plans, excluding lift(s) placed using an established grade line, corrective action will not be required and a price adjustment will not be made for non-conformity to specified thickness.

When the average thickness of all cores from the lots representing a day's production is deficient in thickness by more 10 millimeters of the total pavement thickness shown on the plans, excluding lift(s) placed using an established grade line, the deficiency shall be corrected by overlaying the entire length of the day's production. The thickness of the overlay shall be equal to the thickness deficiency but no less than the minimum single lift laying thickness for the specified mixture.

When the thickness of any core from the lots representing a day's production is more than 10 millimeters thicker than the total thickness shown on the plans, excluding lift(s) placed using an established grade line, a price adjustment will be made in accordance with 907-403.05.1.

The cores shall be cut and removed by the Contractor in the presence of the Engineer's representative and turned over to the Engineer's representative for further handling. The Contractor shall fill each core hole with surface lift mixture and compact to the satisfaction of the Engineer within 24 hours after coring.

**907-403.03.4--Lift Corrections.** Pavement exceeding the allowable surface tolerances shall be corrected at the Contractor's expense by the following methods:

Lower, Leveling and Lower Intermediate Lifts:

- (a) Removal or addition of mixture by skin patching, feather edging, wedge lift construction or full depth patching where appropriate and can be completed in a satisfactory manner.
- (b) Superimposing an additional layer which shall be an approved grade raise for the full roadway width and length of the area to be corrected.

Top Intermediate Lift:

- (a) Removal and the addition of sufficient mixture to provide the specified thickness. Corrections by this method shall be square or rectangular in shape and shall completely cover the area to be corrected.
- (b) Superimposing an additional layer (minimum lift thickness for mixture being used) which shall be an approved grade raise for full roadway width of the area to be corrected. Transverse joints shall be perpendicular to the centerline of the pavement.



**Surface Lift:**

- (a) Removal and the addition of sufficient mixture to provide new material of at least minimum single lift laying thickness for full lane width of the area to be corrected. Transverse joints shall be perpendicular to the centerline of the lane.
- (b) Superimposing an additional layer (minimum lift thickness for mixture being used) which shall be an approved grade raise for full roadway width of the area to be corrected. Transverse joints shall be perpendicular to the centerline of the pavement.

All mixtures used in the correction of unacceptable pavement shall be approved by the Engineer prior to use.

**907-403.03.5--Overlays or Widening and Overlays.** In addition to the requirements of 907-403.03.1 through 907-403.03.4 the following requirements will be applicable when an existing pavement is to be overlaid or widened and overlaid.

**907-403.03.5.1--Blank.**

**907-403.03.5.2--Sequence of Operations.** In order to expedite the safe movement of traffic and to protect each phase of the work as it is performed, a firm sequence of operations is essential. Unless otherwise provided in the traffic control plan and/or the contract, the following appropriate items of work shall be begun and continually prosecuted in the order listed:

- (a) In sections designated by the Engineer, trim the shoulders along the pavement edges to provide drainage from the pavement.
- (b) Perform prerolling to locate areas of pavement with excessive movement (Section 411).
- (c) Perform selective undercutting and patching as directed (Subsection 907-403.03.5.4).
- (d) Perform pressure grouting as specified (Section 412).
- (e) Clean and seal joints (Section 413).
- (f) Complete preparation on one side of roadway to be widened and place widening materials.
- (g) Reconstruct shoulders to elevation necessary to assure traffic safety.
- (h) Open the widened section to traffic.
- (i) Complete above work for other side of roadway.

- (j) Perform preliminary leveling as directed.
- (k) Apply interlayer as specified.
- (l) Place the first overall leveling lift.
- (m) After the first overall leveling lift, reconstruct shoulders as necessary to eliminate vertical differentials which may be hazardous to traffic.
- (n) Place first intermediate lift.
- (o) Construct shoulders to the contiguous elevation of the first intermediate lift.
- (p) Place remaining intermediate lift (if required).
- (q) Place surface lift.
- (r) Complete construction of shoulders.
- (s) Apply permanent traffic marking.
- (t) Final cleanup.

The above operations shall be performed in such a manner that traffic will be maintained on a paved surface at all times. Two-lane, two-way highways should not be restricted to a single lane in excess of a 1000-meter section.

**907-403.03.5.3--Widening of Pavement.** The foundation for widening shall be formed by trenching or excavating to the required depth and constructing a smooth, firm and compacted foundation. It shall have sufficient density and stability to withstand the placement and compaction of subsequent lifts. Soft, yielding and other unsuitable material which the Engineer determines will not compact readily shall be removed and backfilled with granular material or hot mix asphalt as directed.

Except as provided herein, excavation for widening, undercutting or other required excavation shall be spread along the edge of the shoulders, foreslopes or other adjacent areas as directed and will be an absorbed item. When the quantity is in excess of what may be used satisfactorily on adjacent areas, the Engineer may direct that the material be loaded, hauled and spread uniformly on other designated areas. In this case, compensation for handling surplus material will be in accordance with the appropriate pay items as provided in the contract or as extra work.

If the plans require widening of the shoulders or embankment with contractor furnished material, all suitable material obtained from widening excavation may be used and will be measured and paid for as Contractor furnished materials. No measurement for payment of haul will be made.

Removal and disposal of old stakes, forms and other debris encountered in excavating shall be in accordance with Section 201 and shall be considered as incidental to and included in the unit prices bid for other items. No separate measurement will be made therefor. Pavement edges and surfaces shall be cleaned prior to final shaping and compaction of adjacent trenching or undercut areas.

Granular material for widening shall be placed on a previously prepared, smooth, firm and unyielding foundation in accordance with the typical section. Density of the granular material shall be as specified.

Hot mix asphalt for widening, including trench widening, shall meet the applicable requirements of this section and Section 401 and shall be placed in one or more layers as shown on the plans or directed. The surface of the mixture shall be finished as a continuation of the adjacent pavement slope.

Trench rollers or other compaction equipment shall be used to compact the foundation, granular material and bituminous mixtures for widening when standard width rolling equipment cannot be used.

**907-403.03.5.4--Patching.** Existing pavement which has failed or unsatisfactorily stabilized shall be removed as directed. Removal of pavement will be measured and paid for under the appropriate pay items as provided in the contract.

Backfill shall consist of hot mix asphalt or a combination of compacted layers of granular material and hot mix asphalt. Unless otherwise specified, the Engineer will make this determination based on depth and field conditions.

Hot mix asphalt used for backfilling will be measured and paid for at the contract unit price for the mixture designated on the plans as the lowest lift. Granular material will be measured and paid for under the appropriate pay item as provided in the contract or as extra work.

**907-403.03.5.5--Preliminary Leveling.** All irregularities of the existing pavement that result in a thickness greater than approximately 65 millimeters for the first overall leveling lift shall be corrected by skin patching, feather edging or a wedge lift and shall be approved by the Engineer in advance of placing the first overall lift.

**907-403.03.5.6--Placement of Lifts.** The leveling lift shall be placed in a layer (or layers) not exceeding approximately 65 millimeters compacted thickness.

When single lane construction is required, placement of a lift on the adjacent lane may be performed by an approved profile averaging device provided the lane previously placed is within the allowable tolerances for all surface requirements. When any of the tolerances are exceeded, the contractor shall reestablish the control stringline for laying the adjacent lane should he elect to perform this work prior to correcting the deficiencies of the lane previously placed. In no case shall a "matching shoe" be used to control the grade of an adjacent lane.

In instances where there are only minor deviations from the allowable tolerances in the first overall lift, the Engineer may permit the Contractor to place the next higher lift by graded stringline in lieu of making the corrections.

Single lane placement of leveling, intermediate and surface lifts shall be limited to the distance covered in one and one-half days in advance of that placed in the adjacent lane.

**907-403.03.5.7--Protection of Pavement.** The pavement shall be protected and properly maintained until it has been compacted and cooled sufficiently for use by traffic.

**907-403.04--Method of Measurement.** HMA pavement, complete in place and accepted, will be measured by the metric ton. The mass of the composite mixture shall be determined in accordance with the provisions of 907-401.03.2.1.11.

Unless shown as a separate pay item, the furnishing and application of the tack coat will not be measured for payment. When payment is provided, tack coat will be measured as set out in Subsection 407.04.

The quantity of bituminous mixture required to correct the work, when made at the expense of the Contractor, will not be measured for payment.

Any trenching required for widening will not be measured for payment; the cost thereof shall be included in other items of work.

Undercut required by the Engineer will be measured for payment under the appropriate excavation item as provided in the contract or as extra work. Pavement removal and any required trenching will not be included in the measurement for undercut.

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

**907-403.05.1--Price Adjustment for Thickness Requirement.** When grade stakes are eliminated as provided in 907-403.03.3 and the average thickness of all cores from lots representing a day's production is more than 10 millimeters thicker than the total specified thickness of the pavement, excluding lift(s) placed using an established grade line, a lump sum reduction in payment for the surface lift of lots representing a day's production will be made as follows:

$$\text{Individual Day's L.S. Reduction} = \frac{\text{Monetary Value of the Day's Surface Lift Production}}{\text{Surface Lift Production}} \times \frac{(\text{D} - 10)}{\text{ST}}$$

Where:

D = The day's average deviation from total pavement thickness shown on the plans, excluding lift(s) placed using an established grade line.

ST = Specified thickness for surface lift.

The total L.S. reduction for the project is the summation of the individual day's reductions in payment.

**907-403.05.2--Pay Items.**

Payment will be made under:

907-403-A: Hot Mix Asphalt,  $\frac{(1)}{\text{Type}}, \frac{(2)}{\text{Mixture}}$  - per metric ton

907-403-B: Hot Mix Asphalt,  $\frac{(1)}{\text{Type}}, \frac{(3)}{\text{Mixture}}$ , Leveling - per metric ton

907-403-C: Hot Mix Asphalt,  $\frac{(1)}{\text{Type}}, \frac{(4)}{\text{Mixture}}$ , Trench Widening - per metric ton

907-403-D: Hot Mix Asphalt, HT,  $\frac{(3)}{\text{Mixture}}$ , Polymer Modified - per metric ton

907-403-E: Hot Mix Asphalt, HT,  $\frac{(3)}{\text{Mixture}}$ , Polymer Modified, Leveling - per metric ton

- (1) ST, MT or HT
- (2) 4.75 mm mixture, 9.5 mm mixture, 12.5 mm mixture, 19 mm mixture or 25 mm mixture
- (3) 4.75 mm mixture, 9.5 mm mixture, 12.5 mm mixture or 19 mm mixture
- (4) 19 mm mixture or 25 mm mixture

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

## SUPPLEMENT TO SPECIAL PROVISION NO. 907-501-6M

**DATE:** 7/17/2003

**SUBJECT:** Transverse Grooving

Delete the last sentence of Subsection 907-501.04 on page 2 and substitute the following:

For bridge decks, the quantity will be computed by measuring the area between the face of barrier rail and the length of the span, or by the limits of transverse grooving shown in the plan. For concrete and bridge end pavements, the quantity will be computed by measuring the area between the edge of pavement and the length of the pavement, or by the limits of transverse grooving shown in the plan.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-501-6M**

**CODE: (IS)**

**DATE: 12/15/99**

**SUBJECT: Diamond Grinding and Grooving**

Section 501, Portland Cement Concrete Pavement, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-501.03--Construction Requirements.

907-501.03.18--Final Finish.

At the end of Subsection 501.03.18.5 on page 501-21, add the following:

907-501.03.18.6--Transverse Grooving. After the concrete has cured for a minimum of seven (7) days, the bridge deck and bridge end slabs shall be grooved with a self-propelled mechanical sawing device using diamond blades. Grooves shall be perpendicular to the centerline of the roadway and extend as close as possible to the gutter line but in no case more than 600 millimeters from the gutter line. The grooves shall be 3 millimeters wide and 5 millimeters deep and shall be spaced in such a manner to produce the following sequence: 20-mm, 28-mm, 15-mm, 25-mm, 15-mm, 28-mm, 20-mm in 150-mm repetitions across the width of one pass of the mechanical sawing device. The tolerance for the width of the groove is +2 to -0 millimeters and the tolerance for the depth and spacing of the grooves is  $\pm 2$  millimeters.

907-501.03.19--Surface Tests.

At the end of Subsection 501.03.19 on page 501-23, add the following:

907-501.03.19.1--Diamond Grinding. Grinding of concrete surfaces shall consist of diamond grinding the existing portland cement concrete surface to remove surface distortions to achieve the specified surface smoothness requirements.

907-501.03.19.1.1--Equipment. The grinding equipment shall be a power driven, self-propelled machine that is specifically designed to smooth and texture portland cement concrete surfaces with diamond blades. The effective wheel base of the machine shall not be less than 3.6 meters. It shall have a set of pivoting tandem bogey wheels at the front of the machine and the rear wheels shall be arranged to travel in the track of the fresh cut pavement. The center of the grinding head shall be no further than 0.9 meters forward from the center of the back wheels.

The equipment shall be of a size that will cut or plane at least 0.9 meter wide. It shall also be of a shape and dimension that does not encroach on traffic movement outside of the work area. The equipment shall be capable of grinding the surface without causing spalls at cracks, joints, or other locations.

907-501.03.19.1.2--Construction. The construction operation shall be scheduled and proceed in a manner that produces a uniform finish surface. Grinding will be accomplished in a manner to provide positive lateral drainage by maintaining a constant cross-slope between grinding extremities in each lane.

The operation shall result in pavement that conforms to the typical cross-section and the requirements specified in 907-501.03.19.1.3. It is the intent of this specification that the surface smoothness characteristics be within the limits specified.

The Contractor shall establish positive means for removal of grinding residue. Solid residue shall be removed from pavement surfaces before it is blown by traffic action or wind. Residue shall not be permitted to flow across lanes used by public traffic or into gutters or drainage facilities, but may be allowed to flow into adjacent ditches.

907-501.03.19.1.3--Finished Concrete Surface. The grinding process shall produce a pavement surface that is smooth and uniform in appearance with a longitudinal line type texture. The line type texture shall contain parallel longitudinal corrugations that present a narrow ridge corduroy type appearance. The peaks of the ridges shall not be more than 2 millimeters higher than the bottoms of the grooves.

The finished pavement surface will be measured for riding quality. The grinding shall produce a mainline riding surface which does not exceed either the specified profile index or the specified bump and dip limit.

The contract unit prices shall be full compensation for furnishing, loading, hauling, mixing, placing, rolling, and applying all materials; for all cleaning and sweeping; and for all labor, equipment, tools and incidentals necessary to complete the work.

907-501.04-Method of Measurement. After the last paragraph of Subsection 501.04 on page 501-28, add the following:

Transverse grooving will be measured by the square meter, complete in place and accepted. The quantity will be computed by measuring the bound area between the face of barrier rail, (edge of pavement, etc.) and the length of the span (pavement, etc.).

907-501.05--Basis of Payment.

907-501.05.1--General. After the third paragraph of Subsection 501.05.1 on page 501-28, add the following:

Transverse grooving will be paid for at the contract unit price per square meter, which price shall be full compensation for all grinding, cleaning and sweeping; and for all labor, equipment, tools and incidentals necessary to complete the work.

After the last pay item listed in Subsection 501.05.1 on page 501-29, add the following:

907-501-K: Transverse Grooving - per square meter



# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-503-3M

CODE: (IS)

DATE: 9/14/99

SUBJECT: Replacement of Concrete Pavement

Section 907-503, Replacement of Concrete Pavement, is added to the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

## 907-503 - REPLACEMENT OF CONCRETE PAVEMENT

907-503.01--Description. This work consists of replacing continuously reinforced and/or reinforced (jointed) concrete pavement and the removal and replacement of base materials at locations designated on the plans or as determined by the Engineer, all in accordance with the plans and specifications.

907-503.02--Materials. Materials shall meet the requirements of Subsection 700.01 and the following Subsections of Division 700, Materials and Tests.

Portland Cement -----	701.01 and 701.02
Fine Aggregate -----	703.01 and 703.02
Coarse Aggregate -----	703.01 and 703.03
Concrete Admixtures -----	713.02
Water -----	714.01
Concrete Reinforcement Bars -----	711.02
Longitudinal Joint Filler -----	707.02
Curing Materials -----	713.01

907-503.03--Construction Requirements.

907-503.03.1--Equipment. Equipment shall meet the requirements set out in Section 501 for hand placement and finishing Portland cement concrete pavement. Batching and mixing equipment shall meet the applicable requirements of Section 804. On-site mixers or truck mixers will be permitted.

907-503.03.2--Removal of Existing Pavement.

907-503.03.2.1--General. Existing pavement shall be removed in accordance with details shown on the plans and as specifically set out herein. Removal will be measured for payment as set forth in Section 202. The Contractor shall dispose of the concrete in accordance with Section 201.

Equipment and methods used in all of the work shall not damage any of the underlying base and materials that are to remain in place. All materials which are removed from the roadway shall be disposed of daily.

907-503.03.2.2--Reinforced Concrete Pavement. The removal of existing reinforced concrete pavement shall be accomplished by sawing the full thickness of the pavement along the edge of the repaired areas as shown on the plans and/or as directed by the Engineer.

907-503.03.2.3--Continuously Reinforced Concrete Pavement. The pavement within the lap area shall not be disturbed, damaged, or removed until the continuity of the concrete and steel has been severed between the failed area and the lap area. This shall be accomplished by sawing the full thickness of the pavement along the edge of the lap area. Jack hammers used for cutting and removal of the concrete in the lap area shall not exceed 10 kilograms.

The concrete in the lap area shall be removed in such a manner to result in a near vertical face at the saw line of the repair area. A chipping type removal is required to prevent spalling the bottom of the pavement to remain. Any spalling in excess of 40 millimeters shall be corrected by enlarging the repair area at no additional cost to the State. All shattered and damaged concrete shall be removed and the exposed faces cleaned.

The reinforcing steel in the lap area shall not be bent more than 100 millimeters in 500 millimeters from its original position. Where more than 10 percent of the steel is damaged in the lap area along any one edge of a removed area, the patch shall be enlarged at no additional cost to the State to provide the specified lap. Where less than 10 percent of the steel is damaged, the bars may be repaired by welding.

The steel shall be inspected for excessive rusting and evidence of distress during the removal process. The Engineer may enlarge the patch to remove deteriorated steel from the lap area. When the patch is enlarged by the Engineer, payment will be made for such removal.

907-503.03.3--Removal of Base Material. Base material referred to herein and on the plans shall be all types of material below the pavement that requires removal and backfill. The material shall be removed to the dimensions and depths designated by the Engineer. Removal of all undercut materials shall be in accordance with Section 202 and measured for payment by the square meter of base. The Contractor shall dispose of the material in accordance with Section 201.

907-503.03.4--Installation of Smooth Dowel Bars. Smooth dowel bars shall be installed in accordance with details shown on the plans and as specifically set out herein.

The commercial grout system used shall be one of the systems specified in 714.11.7. Installation and acceptance procedures are also included therein.

After the dowel bars are installed, the placement of reinforcing steel and any other work that may disturb the setting of the grout will not be permitted.

907-503.03.5--Installation of Tie Bars. The tie bars, except when directed otherwise on the plans, shall be No. 15 deformed bars, 750 millimeters long, placed on 600-millimeter centers and grouted using a commercial grout. The drilled holes shall be partially filled with an epoxy grout and the tie bars inserted to ensure that the holes are completely filled.

The commercial grout system used shall be one of the systems specified in 714.11.7. Installation and acceptance procedures are also included therein.

After the tie bars are installed, the placement of reinforcing steel and any other work that may disturb the setting of the grout will not be permitted.

907-503.03.6--Base and Pavement Replacement. Repair of the base and pavement shall conform to the requirements set forth herein and details shown on the plans. The exposed faces of the concrete pavement, the soil cement base and/or polyethylene covering the base repair shall be sprayed with water just prior to pouring the new slab.

The applicable provisions of Section 501 shall be adhered to with the following exceptions:

- (a) Concrete. Structural concrete for pavement repair shall be made of Portland cement or Portland cement with additives and/or admixtures. The use of additives or admixtures shall be in accordance with the manufacturer’s instructions. The structural concrete shall have a minimum compressive strength of 17 MPa in 12 hours or less, as determined by concrete cylinder compression tests. The Contractor shall submit a proposed concrete mix design to the Mississippi Department of Transportation Materials Division for approval at least two weeks prior to use on the project.

This concrete shall also meet the requirement for a compressive strength of 25 MPa within 72 hours. To meet these requirements, a Type F or G high range water reducing admixture shall be used. If the ambient temperature is less than 10° C, the addition of a Type C or E acceleration admixture shall be used. The usage of admixtures shall be in accordance with manufacturer’s instructions.

Air Content ----- 3 to 6%  
 Slump ----- 200-mm maximum\*

\* No requirement for an initial slump before the addition of the high range water reducer.

Field verification trial mix results must be provided to the Engineer prior to placement if there is no previous data to verify strength.

- (b) Forms. The forms may be metal or wood. Where at all possible, the forms shall be metal. Metal form shall meet the requirements of 501.03.6.2 and the wood forms shall be made of 50-mm x 200-mm lumber. Forms shall be graded to a specified elevation as directed by the Engineer.
- (c) Longitudinal Joints. Where a repair area is required to extend across a longitudinal joint, a preformed or sawed longitudinal joint shall be constructed and sealed as shown on the plans or as directed by the Engineer.
- (d) Consolidating and Finishing. All concrete shall be thoroughly consolidated by internal vibration. Finishing may be performed by either machine or hand methods. All patches less than six meters in length shall be screeded longitudinally unless otherwise permitted by the Engineer.

The surface of the pavement shall be finished as designated elsewhere in the contract and in accordance with the applicable portions of Section 501.

The screed shall be metal of a type used on bridges for finishing short patches and may be a mechanical or bridge type on long patches exceeding six meters. All replacement concrete shall be checked longitudinal with a 3-meter straightedge in accordance with 501.03.19 for concrete pavement other than main-line pavement.

- (e) Curing and Protection. Concrete cylinders used to represent the minimum compressive strength shall be field cured and cured by the same methods used on that portion of the roadway it represents. If the ambient temperature is less than 10°C, the field cured cylinders shall be placed in an insulated box.

The concrete repair area shall be cured up until the time of opening to traffic. All exposed surfaces, including vertical surfaces, shall be cured immediately after finishing operations have been completed.

Curing and protection shall be in accordance with 501.03.20. White pigmented curing compound shall be used and the sprayer shall be equipped with a container having a capacity of not less than 18 liters and maintain a constant pressure by mechanical means. Curing time shall be continued until the concrete has attained the required compressive strength as evidenced by test specimens.

- (f) Concrete Saw Cuts. The saw cut shall be at the locations and depth shown on the plans.
- (g) Contraction Joint Assembly. Contraction joint assemblies shall be installed as per the details shown in the plans.
- (h) Concrete Placement. Limitations on placing continuously reinforced concrete pavement are set forth in the following schedule:

CONCRETE PAVING SCHEDULE  
DURING DAYTIME HOURS

<u>Predicted High Temperature</u>	<u>Hours of Daytime Placement</u>
Below 20°C	Daylight hours
20° - 29°C	12:00 Noon to Sundown
30° - 32°C	1:30 PM to Sundown
33°C & Above	3:00 PM to Sundown

Note: The National Weather Service's predicted high temperature for the day shall govern. Unless lighting provisions have been made for nighttime work, sufficient time must be allowed for the finishing operation prior to sundown but no less than 30 minutes will be permitted.

CONCRETE PAVING SCHEDULE  
DURING NIGHTTIME HOURS

During nighttime operations, concrete pours may be made anytime between sundown and sunrise without regard to predicted high temperatures.

907-503.03.7--Opening to Traffic. Upon approval of the Engineer, the traffic lane shall be opened within 72 hours and may be opened when a 17-MPa compressive strength is obtained as verified by cylinder break. Side forms shall be removed and the shoulder repaired with hot mix asphalt pavement, and the area cleared of equipment and waste materials prior to opening to traffic.



- 907-503-E: Tie Bars (No. \_\_\_\_\_ Deformed) (Drilled and  
Epoxyed or Grouted) - per each
- 907-503-F: \_\_\_\_\_ Smooth Dowel Bars (Drilled and Epoxyed or Grouted)  
(Size) - per each

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-504-1M**

**CODE: (SP)**

**DATE: 01/30/2007**

**SUBJECT: Ultra-Thin and Thin Portland Cement Concrete Pavement**

Section 907-504, Thin Portland Cement Concrete Pavement, is hereby added to and made a part of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

**SECTION 907-504 - THIN PORTLAND CEMENT CONCRETE PAVEMENT**

**907-504.01--Description.** This work consists of ultra-thin and thin pavement composed of Portland cement concrete, without steel reinforcement, constructed in accordance with these specifications and in reasonably close conformity with the lines, grades, thicknesses, and cross sections shown on the plans or established by the Engineer.

Ultra-thin pavements are defined as pavements less than 100 millimeters in thickness.

Thin pavements are defined as pavements greater than or equal to 100 millimeters in thickness.

**907-504.02--Materials.** Materials shall meet the applicable requirements of Division 700, the following subsections and supplements thereto:

Portland Cement .....	701.01 and 701.02
Fine Aggregate .....	703.01 and 703.02
Coarse Aggregate .....	703.01 and 703.03
Curing Materials .....	713.01
Admixtures.....	713.02
Water .....	714.01
Calcium Chloride .....	714.02
Fly Ash.....	714.05
Ground Granulated Blast Furnace Slag (GGBFS).....	907-714.06

**907-504.02.1--Composition of Concrete.** Chemical admixtures of Types D, G, or MR in accordance with Subsection 713.02 shall be used in the concrete mix.

If fly ash or GGBFS are used as a replacement for Portland cement in accordance with the maximum values allowed in Subsection 701.02, then chemical admixtures of Types C or E in accordance with Subsection 713.02 or calcium chloride in accordance with Subsection 714.02 may be used. The maximum amount of calcium chloride which may be used is 1.0% by mass of the total cementitious materials.

Fibrillated Polypropylene fibers meeting the requirements of ASTM Designation: C1116, paragraph 4.1.3, shall be used in the concrete mix added at a rate of 1.8 kg/m<sup>3</sup>.

**907-504.02.1.1--Portland Cement Concrete Mix Design.** The concrete mix design shall be submitted by the Contractor to the Engineer for approval prior to production in accordance with the requirements in Subsection 907-804.02.10, with the exception that the mix shall meet the requirements of the “Master Proportion Table for Portland Cement Concrete Design” listed in Table 1 of this subsection. Additionally, prior to production the Contractor shall field verify production of the mix in accordance with Subsection 907-504.02.1.3 and submit this documentation with the proportioning information required in Subsection 907-504.02.1.2. If the maturity method is used to estimate the compressive strength for early opening to traffic, the Contractor shall also submit strength/maturity documentation developed in accordance with Subsection 907-504.02.2.5.2 for the mix prior to production of concrete.

**Table 1  
MASTER PROPORTION TABLE FOR PORTLAND CEMENT CONCRETE DESIGN**

Design Property	Requirements
Coarse Aggregate Size No.	
For Ultra-thin Pavements	67
For Thin Pavements	57
Maximum Water / Cementitious Ratio *	0.40
Maximum Slump, mm	100 **
Total Air Content, %	3 - 6
Minimum Compressive Strength, MPa	
For Opening to Traffic	18 in 18 hours
For Acceptance	25

\* The replacement limits of Portland cement by mass by other cementitious materials (such as fly ash, GGBFS, metakaolin, silica fume, or others) shall be in accordance with the values in Subsection 701.02. Other hydraulic cements may be used in accordance with the specifications listed in Section 701.

\*\* The slump may be increased up to 150 millimeters with an approved mid-range water reducer or up to 200 millimeters with an approved type G high range water reducer, in accordance with 713.02. Minus slump requirements shall meet those set forth in Table 3 of AASHTO Designation: M157 specifications.

**907-504.02.1.2--Proportioning of Concrete Mix Design.** Proportioning of Portland cement concrete shall meet the requirements of Subsection 907-804.02.10.1.

**907-504.02.1.3--Field Verification of Concrete Mix Design.** The Contractor shall furnish the Engineer documentation indicating that the mix meets requirements in Table 1 within the tolerances specified in the field verification requirements of Subsection 907-804.02.10.3. This



documentation must indicate that the mix achieves the requirements in Table 1 for:

- the compressive strengths required for acceptance within 28 days; and
- the compressive strengths required for early opening to traffic within the time specified.

Because the mix is being field verified by the Contractor prior to submittal of the mix for review, the requirement in Subsection 907-804.02.10.3 that the mix be proven to meet the field verification requirements within three attempts does not apply.

**907-504.02.2--Basis of Acceptance.** The Contractor shall furnish the concrete necessary for test specimens. Department personnel meeting the certification requirements of Subsection 907-804.02.9 shall be responsible for all concrete testing in accordance with the tests required in Subsection 907-804.02.13, Table 5: DEPARTMENT'S MINIMUM REQUIREMENTS FOR QUALITY ASSURANCE, Section B: Plastic Concrete. These tests shall be performed on the first load delivered and placed each day and then a minimum of once for each subsequent 38 cubic meters delivered and placed per day.

**907-504.02.2.1--Slump.** Slump of plastic concrete shall meet the requirements of Subsection 907-504.02.1.1, Table 1: MASTER PROPORTION TABLE FOR PORTLAND CEMENT CONCRETE DESIGN. A check test shall be made on another portion of the sample before rejection of any load.

**907-504.02.2.2--Air.** Total air content of concrete shall be within the specified range for the class of concrete listed in Subsection 907-504.02.1.1, Table 1: MASTER PROPORTION TABLE FOR PORTLAND CEMENT CONCRETE DESIGN. A check test shall be made on another portion of the sample before rejection of any load.

**907-504.02.2.3--Yield.** Perform a yield check in accordance each 305 cubic meters in accordance with AASTHO Designation: T121. 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 3%.

**907-504.02.2.4--Temperature.** The maximum plastic concrete acceptance temperature shall not exceed 35°C. Plastic concrete with a temperature more than 35°C shall be rejected and not used in Department work.

Plastic concrete with an acceptance temperature less than the minimum temperature in Subsection 907-804.03.16.1 shall be rejected and not used in Department work.

**907-504.02.2.5--Compressive Strength.**

**907-504.02.2.5.1--Strength Testing for Acceptance.** Compressive strength cylinders cast for acceptance of the pavement shall meet the minimum acceptance strength requirement listed in Table 1. These cylinders shall be standard cured in accordance with the requirements in AASTHO Designation: T23, Section 10.1 and its subsequent paragraphs.

**907-504.02.2.5.2--Strength Testing for Opening to Traffic.**

**Use of Cylinders.** In addition to compressive strength testing for acceptance of the pavement, compressive strength testing shall be performed to accommodate traffic movements. Compressive strength cylinders cast for early opening of the pavement to traffic shall meet the minimum opening to traffic strength requirement listed in Table 1. These cylinders shall be field cured next to the pavement until time of test in accordance with the requirements in AASHTO Designation: T23, Section 10.2 and its subsequent paragraphs. One pair of test cylinders shall be broken approximately 18 to 24 hours after casting.

**Use of Maturity Method.** In lieu of using concrete strength cylinders to determine when concrete pavement can be opened to traffic, if the Contractor has previously developed the strength/maturity relationship for the mix, an approved maturity meter may be used to determine concrete strengths. A maturity meter probe shall be inserted into the last concrete placed that represents the pavement area to be tested. The maximum amount of concrete which may be represented by a maturity meter probe is 38 cubic meters. The pavement may be opened to traffic when maturity meter reading indicates that the required in place strength is obtained.

Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO Designation: T325. Validation of the maturity curves shall be made at least once for every 380 cubic meters produced of each concrete mix used. Validation of the maturity curve shall be considered acceptable when the results of compressive strength tests are within 10% of the predicted value determined by the maturity curve. If the 10% requirement is not met, a new maturity curve shall be developed.

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. Training and maintaining a list of approved maturity technicians shall be the responsibility of the Mississippi Concrete Industries Association.

**907-504.03--Construction Requirements.**

**907-504.03.1--Removal of Existing Pavement.** Existing HMA pavement to be removed and replaced with thin or ultra-thin concrete pavement shall be removed by milling per Section 406. Prior to the milling operation, saw cuts shall be made to the neat lines, grades and depths, and in the locations shown on the drawings.

**907-504.03.2--Preparation of Grade.** The foundation upon which the concrete pavement is to be placed shall be prepared within the tolerances set out in Subsection 321.03.

**907-504.03.3--Setting Forms.** The requirements for setting forms shall meet the requirements of Subsection 501.03.8 and its subsequent paragraphs.

**907-504.03.4--Base Preparation.** Prior to placement of concrete, the milled HMA surface shall be thoroughly swept to remove all loose HMA material or dirt particles so as to ensure development of proper bond between the concrete inlay and the existing HMA surface. Additionally, the base shall meet the requirements of Subsection 501.03.9 and its subsequent

paragraphs.

**907-504.03.5--Placing, Spreading, and Finishing.** Concrete pavement shall be formed and constructed to the neat lines, grades, cross section, and thicknesses shown on the drawings. Concrete shall be placed and spread in an approved manner so as to distribute the concrete uniformly without segregation. Additional placement requirements are provided in Subsection 501.03.13 and its subsequent paragraphs.

Final finishing of the concrete pavement surface shall be in accordance with Subsection 501.03.17 and its subsequent paragraphs. The surface of the concrete pavement shall be transverse tined in accordance with Subsection 501.03.18.4.

**907-504.03.6--Joints.** All joints shall be created by sawing using equipment meeting the requirements of Subsection 907-504.03.7.2. Sawing of the joints shall commence as soon as the concrete has hardened sufficiently to support the mass of the saw. The spacing of joints shall meet the requirements of “Joint Spacing Requirements for Various Pavement Thicknesses” shown in Table 2.

**Table 2  
JOINT SPACING REQUIREMENTS FOR VARIOUS PAVEMENT THICKNESSES**

<b>Pavement Thickness (mm)</b>	<b>Joint Spacing Requirement (Transverse x Longitudinal)</b>
75	1.0 meter x 1.0 meter
100	1.2 meters x 1.2 meters
125	1.8 meters x 1.8 meters
150	3.0 meters x 3.7 meters

The depth of the joints shall be  $t/150$  mm ( $t$  is the pavement thickness) and the maximum width of the joint shall be three millimeters (3 mm), provided sawing is performed within two hours after final finishing. If sawing is performed more than two hours after final finishing, the depth shall be  $t/100$  mm and the maximum width of the joint shall be three millimeters (3 mm). In no case shall sawing commence any later than four hours after final finishing. The minimum depth of any joint shall be 38 millimeters. Because the use of “early entry” dry cut saws is required, corrugated plastic filler strips shall be used at the intersection of all saw cuts, and at locations where the wheels of the early entry saw cross a previously cut joint, to prevent future spalling at the corners of the intersection. The joints are not to be sealed but shall be cleaned of all deleterious material after sawing. Pavement thickness and other details shall be as specified in the plans or contract documents.

**907-504.03.7--Equipment.**

**907-504.03.7.1--Concrete Production and Transportation.** Equipment and processes used for concrete production shall meet the requirements of Subsection 907-804.02.11 with automatic systems for recording batch masses and compensating for the moisture in the fine aggregate.

Additionally, the requirements of AASHTO Designation: M157, Sections 8, 9, 10, and 11 shall be followed. Following AASHTO Designation: M157, Section 11.7, on arrival to the job site of a mixer truck, a maximum of 7.4 liters of water per cubic meter shall be allowed to be added to bring the slump within the required limits; water shall not be added at a later time. Batch ticket information shall meet the requirements of Subsection 907-804.02.12.3.

**907-504.03.7.1.1--Limitations of Mixing.** Except in emergencies, no concrete shall be mixed or placed when the natural light will be insufficient for finishing. In case of an emergency, the Engineer may permit finishing during periods of insufficient light provided adequate and approved lighting is furnished by the Contractor.

Concrete shall not be placed on a frozen foundation, nor shall frozen aggregate be used in the concrete.

**907-504.03.7.1.2--Cold or Hot Weather Concreting.** During periods of cold or expected cold weather, the limitations for beginning a concrete pour and the limitations for temperature control of the mix and its components shall be in accordance with the provisions of Subsection 907-804.03.16.1.

During periods of hot weather or arid atmospheric conditions the provisions of Subsection 907-804.03.16.2 shall be applicable.

**907-504.03.7.2--Concrete Saw.** The concrete pavement joints shall be cut utilizing only an "early entry" dry cut saw, approved by the Engineer. Other type saws may be used for other sawing applications, provided the saw meets the requirements of Subsection 501.03.6.1. Proper, approved sawing equipment and sufficient labor shall be present on the site prior to each day's placement of concrete. Placement shall not commence until said equipment and labor are on site.

**907-504.03.7.3--Other Equipment.** Other equipment and tools necessary for handling materials and performing all parts of the work shall be approved by the Engineer as to design, capacity, and mechanical condition, and meeting the requirements of Subsections 501.03.5, 501.03.6, and 501.03.20.1, and their subsequent paragraphs.

**907-504.03.8--Surface Test.** It is the intent of these specifications that the finished surface will have good riding qualities.

Any membrane curing damaged during the surface testing operation shall be repaired by the Contractor at no additional expense to the Department.

Any corrective work to the pavement surface necessitated to ensure that the applicable surface test limits are not exceeded shall be in accordance of 907-504.03.8.3.

**907-504.03.8.1--Projects containing more than 8360 Square Meters.** Profiles of the pavement surface will be established, evaluated and the pavement surface corrected, as necessary, so that the final surface variances shall not exceed a profile index of 1025

millimeters per kilometer per segment. Shoulders, tapers, and areas in horizontal curves having a radius of less than 300 meters at the centerline and within the superelevation transition of such curves are excluded from a test with the profilograph.

Determination of the profile index will be in accordance with test methods established by the Department.

A California profilograph meeting the requirements as set out in Section 401 shall be furnished and operated by the Contractor under supervision of the Engineer to provide recorded data to establish the profile index and identify locations requiring correction. Surface profile shall be obtained in the wheel path of each travel lane.

For the purpose of determining pavement smoothness and contract price adjustment for rideability, the pavement will be subdivided into sections of 0.10 kilometer. Where a segment less than 0.10 kilometer occurs at the end of a section, it will be combined with the preceding 0.10-kilometer segment for calculation of the profile index.

A profile index will be determined for each segment as millimeters per kilometer in excess of the "Zero" blanking band which is simply referred to as the "Profile Index". From the profilogram of each segment, the scallops above and below the "Zero" blanking band are totaled in millimeters. The totaled count is converted to millimeters per kilometers to establish a smoothness profile index for that segment.

In addition to the above requirements for the profile index, all areas represented by high points having deviations in excess of 10 millimeters in 7.5 meters shall be removed by the Contractor utilizing grinding methods and equipment specified. Deviations in excess of 10 millimeters will be determined from the profilogram in accordance with Department test methods.

After correcting individual deviations in excess of 10 millimeters in 7.5 meters, corrective action shall be made to reduce the profile index to 1025 millimeters per kilometer per segment or less.

On those segments where corrections are made, the pavement will be surface tested again to verify that corrections have produced a profile index of 1025 millimeters per kilometer per segment or less.

**907-504.03.8.2--Projects containing less than or equal to 8360 Square Meters.** Each continuous full or partial lane width of concrete pavement shall have a uniform surface and be in reasonably close conformity with the line, grade, and cross section shown on the drawings.

After a continuous full or partial lane width of concrete pavement is completed, the surface of the plastic concrete shall be tested for uniformity using a Contractor furnished and operated 3-meter straightedge. There shall be no deviations from the straightedge greater than six millimeters (6 mm) in three meters (3 m) in either the longitudinal or the transverse directions. Pavement not in compliance with the requirement shall be corrected.

Additionally, individual bumps or depressions in the pavement surface exceeding 10 millimeters, when measured from a chord length of 7.5 meters shall be corrected.

**907-504.03.8.3--Corrective Work for Smoothness.** Corrective work shall be done at no additional cost to the Department. Corrective work shall consist of diamond grinding in accordance with Subsection 501.03.19.1 and its subsequent paragraphs. Concrete removal by grinding shall be limited such that the thickness of the pavement after grinding shall not be less than plan thickness minus six millimeters (6 mm). Final pavement thicknesses, after any surface corrections, which are thinner than plan thickness minus six millimeters (6 mm) shall subject the area represented by such deviation to the provisions of Subsection 907-504.05.2.

All areas which are corrected shall be retested to ensure conformance to the applicable surface test requirements.

No reestablishment of transverse tining shall be required after surface corrections are made by diamond grinding.

All corrective work to ensure compliance with the applicable surface test requirements shall be completed prior to determining pavement thickness.

The Contractor shall be responsible for all traffic control associated with the testing and/or correction of the concrete pavement.

**907-504.03.9--Curing and Protection.** Curing and protection of the pavement shall be in accordance with Subsection 501.03.20 and its subsequent paragraphs with the exception listed in Subsection 907-504.03.9.1.

**907-504.03.9.1--White Pigmented Membrane.** Curing compound shall be applied per Subsections 501.03.20.1 and at a rate of not more than 3.1 liters to square meter. If the time period between floating and texturing of the concrete exceeds 30 minutes, the concrete shall be kept damp by fogging with water or by use of an evaporative retarder to prevent rapid evaporation of the surface. As a rule of thumb, the color of a pavement covered with the required amount of curing compound 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 1.5 meters away horizontally if standing on the same grade as the pavement.

**907-504.03.10--Removing Forms.** Removal of forms shall be in accordance with Subsection 501.03.21.

**907-504.03.11--Opening to Traffic.** The Engineer will decide when the pavement may be opened to traffic. No traffic will be allowed on the completed pavement until the concrete has attained a compressive strength of 18 MPa. Prior to opening to traffic, the pavement shall be cleaned.

**907-504.03.12--Pavement Thickness Determination.** For the purpose of determining pavement thickness, the pavement will be subdivided into separate sections of 300 meters in each traffic lane excluding turn-outs and ramps, extending from one end of the pavement to the other end. The last section in each traffic lane will be the length remaining unless the length of that section is less than 150 meters. If the length of the last section is less than 150 meters, include it with the previous section for determination of thickness.

One core will be taken at random by the Department from each section. The thickness of the sections will be determined as provided for in Subsection 907-504.05.1. Based on the thickness of each section, an adjusted unit price as provided in Subsection 907-504.05 and its subsequent paragraphs will be paid for each section represented.

Holes remaining in the pavement after coring shall be completely filled by the Contractor, at no additional cost to the Department, with concrete of the same quality as used to construct the pavement.

**907-504.04--Method of Measurement.** Fiber reinforced concrete pavement of the type specified will be measured by the square meters complete in place and accepted. The width for measurement will be the plan width, including widening where called for, or as otherwise authorized in writing by the Engineer. The length will be measured horizontally in accordance with Section 109.

Payment for removal of existing Hot Mix Asphalt (HMA) pavement, required to be removed and replaced with concrete pavement, will be measured and paid for under Pay Items 406-A, Cold Milling of Bituminous Pavement, All Depths and 907-503-C, Saw Cut (Equal to depth of concrete pavement), and shall include saw cutting, milling, and all handwork necessary to ensure removal of HMA to the neat saw cut lines.

**907-504.05--Basis of Payment.**

**907-504.05.1--General.** Fiber reinforced concrete pavement, measured as prescribed above, will be paid for at the contract unit price per square meter, adjusted when applicable for sections of pavement found deficient in thickness by more than 6.4 millimeters and not more than 12.5 millimeters, which shall be full compensation for concrete pavement placement, fiber reinforcement, finishing and curing, concrete volume, saw cutting of joints, and for all labor, equipment, tools, materials, all traffic control, and incidentals necessary for the construction of the concrete pavement.

In calculating the thickness of the pavement, measurements which are in excess of the plan thickness by more than six millimeters will be considered as the plan thickness plus 6.4 millimeters. Additionally, measurements which are less than the plan thickness by more than 12.5 millimeters, excluding exploratory cores, will be considered as the plan thickness minus 12.5 millimeters. When the measured thickness of a core is less than the plan thickness by more than 12.5 millimeters, the actual thickness of the pavement in this area will be determined by taking exploratory cores at not less than 3-meter intervals parallel to

the centerline in each direction from the affected location until in each direction a core is found which is not deficient by more than 12.5 millimeters.

Areas found deficient in thickness by more than 12.5 millimeters will be evaluated by the Engineer; and if in the judgment of the Engineer, the deficient areas warrant removal, they shall be removed and replaced with pavement of the thickness shown on the plans without cost to the Department. If the Engineer determines that the deficient areas do not warrant removal, the pavement may be left in place with no payment to the Contractor, or may be removed and replaced at the Contractor's option. Exploratory cores for deficient thickness will not be used in averages for areas for adjusted unit price.

Each area or section of pavement removed shall be at least three (3) meters in length and at least the full width of the lane involved. When it is necessary to remove and replace a section of pavement, any remaining portion of the slab adjacent to the joints that is less than two (2) meters in length shall also be removed and replaced. The new surface shall be textured as specified in the contract.

Concrete that fails to develop a 28-day compressive strength of 25 MPa shall be removed and replaced, or accepted at a reduced price, if an Engineering study indicates that the concrete is satisfactory to remain in place.

Payment will be made under:

907-504-A: \_\_\_-mm Fiber Reinforced Ultra-thin Concrete Pavement - per square meter

907-504-B: \_\_\_-mm Fiber Reinforced Thin Concrete Pavement - per square meter

**907-504.05.2--Price Adjustments for Thickness.** When the average pavement thickness, determined in accordance with Subsection 907-504.03.12, is deficient by more than 6.4 millimeters but not more than 12.5 millimeters, payment will be made at an adjusted price as specified in the following table:

**CONCRETE PAVEMENT DEFICIENCY**

<b>Thickness Deficiency Millimeters</b>	<b>Proportional Part of Contract Price Allowed</b>
0.0 to 6.4	100 percent
6.5 to 12.5	75 percent
>12.5	Remove and Replace At No Additional Cost to the Department or Receive No Pay

Any applicable price adjustment due to thickness deficiency applies to the full width of the deficient lane or shoulder.



## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-505-1M

CODE: (SP)

DATE: 02/13/2007

SUBJECT: Grinding Concrete Surfaces

Section 907-505, Grinding Concrete Surfaces, is hereby added to and made a part of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

### **SECTION 907-505 -- GRINDING CONCRETE SURFACES**

**907-505.01--Description.** This work shall consist of grinding portland concrete surfaces to substantially eliminate joint faulting, restore proper drainage, improve riding characteristics and/or improve skid resistance to the pavement surface. The work shall be accomplished in accordance with these specifications and in reasonably close conformity to the details on the plans.

**907-505.02--Blank.**

**907-505.03--Construction Requirements.**

**907-505.03.1--Equipment.** Equipment for grinding concrete surfaces shall meet the requirements set forth in Subsection 907-804.03.19.7.4.1.1.

**907-505.03.2--Grinding.**

**907-505.03.2.1--Grinding Bridge Deck and Bridge End Slab Surfaces.** The plans will designate the approximate areas to be ground for bidding purposes. The revised grinding areas will be determined by the Contractor and approved by the Engineer. The Contractor shall develop and submit to the Engineer for approval a Grinding Plan at least 45 days prior to starting any grinding operations.

Grinding operations shall be conducted in accordance with the requirements of Subsection 907-804.03.19.7.4.

**907-505.03.2.2--Grinding Concrete Pavements.** The plans will designate the areas of pavement surfaces to be ground.

The construction operation shall be scheduled and proceed in a manner that produces a uniform finished surface. Grinding will be accomplished in a manner that eliminates joint or crack faults while providing positive lateral drainage by maintaining a constant cross-slope between grinding

extremities in each lane. Auxiliary or ramp lane grinding shall transition as required from the mainline edge to provide positive drainage and acceptable riding surface.

The entire area designated on the plans shall be ground until the pavement surfaces of adjacent sides of transverse joints and cracks are in the same plane. Transverse joints and random cracks shall be visually inspected to insure that adjacent surfaces are in the same plane. Misalignment of the planes of the surfaces on adjacent sides of the joints or cracks which is in excess of 2.0 millimeters shall be ground until the surfaces are flush. The operation shall result in pavement that conforms to the typical cross-section and the ride requirements specified below. It is the intention of this specification that the faulting at joints and cracks be eliminated, that the overall riding characteristics be within the limits specified, and that substantially all of the uneven pavement surface be textured, except that extra depth grinding to eliminate minor depressions in order to provide texturing for 100 percent of the pavement surface will not be required.

The Contractor shall establish positive means for removal of grinding residue. Solid residue shall be removed from pavement surfaces before it is blown by traffic action or wind. Residue shall not be permitted to flow across lanes used by public traffic or into gutters or drainage facilities, but may be allowed to flow into adjacent ditches.

**907-505.03.2.3--Final Surface Finish.** The grinding process shall produce a pavement surface that is true to grade and uniform in appearance with a longitudinal line type texture. The line type texture shall contain parallel longitudinal corrugations that present a narrow ridge corduroy type appearance. The peaks of the ridges shall be approximately 2.0 millimeters higher than the bottoms of the grooves with approximately 173 to 187 evenly spaced grooves per meter for pavements constructed with limestone coarse aggregate and 183 to 205 evenly spaced grooves per meter for pavements constructed with aggregate other than limestone. Grinding chip thickness shall be a minimum of three millimeters thick for pavements constructed with limestone coarse aggregate and a minimum of two millimeters thick for pavements constructed with coarse aggregate other than limestone.

The finished pavement surface shall be measured for riding quality. The grinding shall produce a mainline riding surface which does not exceed the specified requirements indicated below.

Profiles of the mainline pavement surface will be established, evaluated and the pavement surface corrected, as necessary, so that the final surface variances shall not exceed a profile index of 1025 millimeters per kilometer when tested in accordance with Department procedures, except the profile index may be within the range provided below.

If a profile index exceeds 1025 millimeters per kilometer, the Contractor's operation shall be suspended and will not be allowed to resume until a revised plan of action has been taken to improved grinding results. Any areas which require re-grinding to meet the 1025 millimeters per kilometer value will not be measured for additional payment and shall be performed at no additional cost to the Department.

In addition to the above requirements for the profile index, all areas represented by high points having deviations in excess of 8.0 millimeters, when measured from a chord length of 7.5 meters or less, shall be removed by the Contractor utilizing grinding methods and equipment specified in this special provision. Deviations in excess of 8.0 millimeters will be determined from the profilogram in accordance with Department test methods.

After correcting individual deviations in excess of 8.0 millimeters, corrective action shall be made to reduce the average profile index to 1025 millimeters per kilometer or less, except as otherwise provided herein.

On those sections where corrections are made, the pavement will be tested to verify that corrections have produced a profile index of 1025 millimeters per kilometer or less.

Grinding along the inside edge of the existing pavement shall conform to the straightedge requirements.

The transverse slope of the pavement shall be uniform to a degree that no depressions or misalignment of slope greater than 6.0 millimeters in 3.6 meters are present when tested with a straightedge placed perpendicular to the centerline.

**907-505.04--Method of Measurement.** Grinding concrete bridge deck will be measured by the square meter. The quantity for bridge deck grinding will be determined by measuring the area actually ground.

Grinding concrete pavement will be measured by the square meter. The quantity of pavement grinding will be determined by multiplying the finished ground width by the total length ground.

**907-505.05--Basis of Payment.**

**907-505.05.1--General.** Grinding concrete bridge deck will be paid for at the contract unit price per square meter, which price shall be full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in grinding the existing surface, for removing residue and cleaning in accordance with these specifications and as shown on the plans, for testing for conformity to pavement surface requirements, providing maintenance of traffic and all necessary traffic handling devices to complete the work.

Payment will be made under:

- 907-505-A: Grinding Concrete Bridge Deck - per square meter
- 907-505-B: Grinding Concrete Pavement - per square meter

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-603-3M**

**CODE: (IS)**

**DATE: 5/02/2001**

**SUBJECT: Culverts and Storm Drains**

Section 603, Culverts and Storm Drains, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-603.01--Description. At the end of Subsection 603.01 on page 603-1, add the following:

When alternate pipe is shown in the contract, the Contractor may select an alternate pipe from the alternate pipe group (type) shown in the plans or contract documents. The type of pipe used for alternate pipe shall meet the material requirements of Subsection 603.02 for the type of pipe selected.

907-603.02--Materials. Delete the entry for "Corrugated Polyethylene Pipe" and add the following material to the list contained in Subsection 603.02, pages 603-1 and 603-2:

Corrugated Polyethylene Pipe,	907-708.17
Corrugated Poly (Vinyl Chloride) (PVC) Pipe	907-708.17

907-603.03--Construction Requirements.

907-603.03.4--Joining Conduit.

907-603.03.4.1--Storm Drainage. Delete the last paragraph of Subsection 603.03.4.1 on page 603-5, add the following:

In lieu of the preceding requirements and in addition to being supplied or recommended by the pipe manufacturer, coupling bands for joining corrugated polyethylene pipe shall be in accordance with AASHTO Designation: M 294 and shall meet or exceed the soil-tightness requirements of the AASHTO Standard Specifications for Highway Bridges, Section 26, paragraph 26.4.2.4 (e).

Corrugated polyethylene pipe may also be furnished with bell & spigot type joints with O-ring rubber gasket meeting ASTM Designation: F477 placed on the spigot end. At least two (2) corrugations of the spigot end must insert into the bell end.

Joints and fittings for poly (vinyl chloride) (PVC) pipe shall meet the requirements of ASTM Designation: F 949.

907-603.05--Basis of Payment. Delete the heading, pay item number description and unit for Corrugated Polyethylene Pipe on page 603-13, and add the following headings, pay item numbers, descriptions and units to the list contained in Subsection 603.05, pages 603-9 thru 603-13:

**CORRUGATED POLYETHYLENE**

907-603-PE: \_\_\_-mm Corrugated Polyethylene Pipe - per meter

**CORRUGATED POLY (VINYL CHLORIDE)**

907-603-PVC: \_\_\_-mm Corrugated Poly (Vinyl Chloride) Pipe - per meter

**ALTERNATE PIPE**

907-603-ALT: \_\_\_-mm Type \_\_\_ Alternate Pipe - per meter

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-605-5M**

**CODE: (SP)**

**DATE: 02/22/2002**

**SUBJECT: Geotextile Fabric**

Section 605, Underdrains, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby modified as follows:

**907-605.05--Basis of Payment.** Add the “907” prefix to pay item 605-AA on page 605-7.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-605-7M

CODE: (IS)

DATE: 05/14/2004

SUBJECT: Edge Drains

Section 605, Underdrains, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction, as amended by this special provision, is applicable for edge drains only:

**907-605.01--Description.** This work consists of furnishing and installing plastic pipe edge drains and edge drain outlets, vents and miscellaneous appurtenances as shown on the drawings in the plans (or contract documents) and as specified in the standard specifications and this special provision. This work also includes the video inspection and reporting of edge drain system installation.

**907-605.02--Materials.**

**907-605.02.1--Pipe and Pipe Fittings.** Pipe for edge drains and fittings shall be size DN 100, and shall be either Schedule 40 or Schedule 80 polyvinyl chloride (PVC) plastic pipe conforming to the requirements of ASTM Designation: D 1785.

Fittings, except for "Y" fittings, shall be socket-type fittings conforming to the requirements of ASTM Designation: D 2467 for Schedule 80 pipe and ASTM Designation: D 2466 for Schedule 40 pipe.

The Contractor may elect to furnish one of the following perforated pipe in lieu of the pipe mentioned above. Regardless of the pipe used, it shall be DN 100 nominal size.

- a) Pipe conforming to Subsection 708.18 of the Standard Specifications with SDR number ranging from 23.5 to 35 and shall have a minimum pipe stiffness value of 345 kPa.
- b) Corrugated polyethylene drainage tubing or corrugated high density polyethylene (HDPE) pipe conforming to the requirements of AASHTO Designation: M 252, Type SP with the stipulation that the minimum pipe stiffness value shall be 345 kPa. The pipe and fittings shall be made of virgin polyethylene compounds which conform with the requirements of cell class 324420C as defined and described in ASTM Designation: D 3350, except that the carbon black content shall not exceed 5%. Compounds that have higher cell classifications in one or more properties are acceptable provided product requirements are met.

Pipe used for the edge drain outlet/vents shall be either PVC or corrugated high density polyethylene (HDPE) pipe. PVC pipe shall meet the requirements of ASTM Designation: D 1785 as stated above, and HDPE pipe shall meet the requirements of AASHTO Designation: M 252 as stated above.

All "Y" fittings shall be [smooth interior wall fittings](#) fabricated from pipe conforming to the requirements for edge drain outlet pipe. The fitting shall provide an unobstructed passageway through both legs of the "Y".

Edge drain outlet and vent covers shall consist of commercial quality 75-mm x 75-mm galvanized hardware cloth, 1.6-millimeter wire or equal. The outlet and vent covers shall be installed at the end of each outlet pipe and vent pipe.

The Contractor shall furnish to the Engineer three copies of the manufacturer's certified test reports and certification covering each shipment of pipe stating the amount furnished and that the pipe, fittings, couplings, etc. comply with the requirements of the specifications.

**907-605.02.2--Untreated Permeable Material.** The untreated permeable material used to backfill the edge drain pipe and outlet/vent trench shall be Type 57 filter material and shall conform to the requirements of Subsection 703.03, Coarse Aggregate for Portland Cement Concrete, for Size 57 coarse aggregate. The type of aggregate may also be slag or granite. Mixing of different types of aggregate will not be permitted.

**907-605.02.3--Geotextile.** The [geotextile](#) used with edge drains and edge drain outlets shall be Type V geotextile meeting the requirements of Subsection 714.13.

**907-605.02.4--Miscellaneous.** Concrete for aprons shall be Class "C" concrete meeting the requirements of Subsection 804.02.7.2.

Mortar placed where edge drain outlets and vents connect to drainage pipes and existing drainage inlets shall conform to the provisions of Subsection 714.11.5, Masonry Mortar, except that the sand and cement shall be commercial quality.

**907-605.03--Construction Requirements.**

**907-605.03.1--Installation.** Edge drains, edge drain outlets, vents, untreated permeable material, and [geotextile](#) shall be installed in accordance with the details shown on the plans or in the contract documents, as specified herein and applicable Special Provisions. The vertical tolerance (height) for the trench shall be plus or minus 13 millimeters. The horizontal tolerance (width) shall be plus 25 millimeters.

[Immediately prior to placement](#), surfaces to receive [geotextile](#) shall be free of loose or extraneous material and sharp objects that may damage the [geotextile](#) during installation.

The [geotextile](#) shall be stretched, aligned and placed in a wrinkle-free manner.



Adjacent rolls of the [geotextile](#) shall be overlapped from 300 to 450 millimeters. The preceding roll shall overlap the following roll in the direction the material is being spread.

Should the [geotextile](#) be damaged during placing, the torn or punctured section shall be either completely replaced or shall be repaired by placing a piece of [geotextile](#) that is large enough to cover the damaged area and to meet the overlap requirement.

Damage to the [geotextile](#) resulting from the Contractor's vehicles, equipment or operations shall be replaced or repaired by the Contractor at no additional cost to the State.

Pipe and fittings shall be joined by solvent cementing with commercial quality solvent cement and primer specifically manufactured for use with rigid PVC plastic pipe and fittings. The solvent cement and primer used shall be made by the same manufacturer. The color of the primer shall contrast with the color of the pipe and fittings. The solvent cement and primer shall be used in accordance with the manufacturer's printed instructions.

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

When poly (vinyl chloride) corrugated sewer pipe is used, joints shall be made in accordance with the pipe manufacturer's recommendations and ASTM Designation: F 949.

The backfill of the trench along the pavement edge, across the shoulder and outside the shoulder shall be as shown in the details of the drawings.

The Contractor may dispose of the trenched materials on the slopes provided all material passes a 75-millimeter ring and blends into the existing or reconstructed roadway slopes. Otherwise, the material must be disposed of outside the right-of-way.

The edge drain and edge drain outlets and vents shall be clean at the time of installation and shall be free of obstructions after installation.

**907-605.03.2--Inspection.** The edge drain system shall be inspected by the Contractor after all roadway construction items are completed within a given section of roadway. A video record and written report for each line inspected shall be furnished to the Engineer. The line location (station number), distance traversed by the camera, and pipe deficiency shall be recorded on a standard VHS video tape and in a written report. As a minimum, fifty percent (50%) of the entire edge drain system shall be video inspected. Video inspection shall be performed in the presence of the Engineer or [the Engineer's](#) representative.

Video equipment used for inspecting the edge drain system shall be capable of the following minimum requirements:

- (1) Providing color video inspection of pipelines for 100-mm inside diameter pipe in a wet, corrosive environment and negotiating a 90° bend in a smooth bore or corrugated pipe. The color camera must have a minimum 400-line horizontal resolution.
- (2) Video inspecting up to 100 meters of edge drain pipe, by pushing, pull cabling, jetting or tractoring the camera through the line and recording the condition on video tape.
- (3) Equipped with a video monitor capable of allowing live viewing of the video inspection.
- (4) Displaying and recording on the video tape, the date, line identification, footage and type of pipe deficiency.
- (5) Recording the distance traversed by the camera to within 150 millimeters, allowing for overlapping of distances if a reversal is required to permit full-length inspection.

A written report of the drain system inspection shall be completed on the attached form.

Any foreign materials that restricts the movement of the inspection equipment or impairs the quality of the video within the drain system shall be flushed from the system. Flushing of the drain system will be by water jetting or other methods approved by the Engineer. Costs associated with flushing the system will not be made under separate payment. The system shall be re-inspected after flushing in the same manner as the initial inspection as described above. Re-inspection of the system shall be at no additional cost to the State.

Any drain system pipe that can not be cleared from obstructions, damaged or does not conform to the lines and grades shown on the plans shall be replaced at no additional cost to the State.

**907-605.04--Method of Measurement.** Edge drains and edge drain outlets/vents, complete in place, will be measured by the meter along the line of the trench. On slopes, the length to be paid for will be the slope length of the trench.

Edge drain inspection will be measured by the meter of edge drain and edge drain outlet/vent inspected. The length to be paid for will be the slope length of the trench.

The Class "C" Concrete for concrete aprons shall be measured by the cubic meter.

Wire mesh covers, pipe and pipe fittings, couplings, untreated permeable material, geotextile, granular material, bituminous pavement mixture, trenching, disposal of trenched materials and other miscellaneous appurtenances will not be measured separately for payment.

**907-605.05--Basis of Payment.** The contract unit prices paid for edge drain and edge drain outlets/vents shall be full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing edge drains and edge drain outlets/vents complete in place, including wire mesh covers, pipe and pipe fittings, couplings, untreated permeable material, geotextile, granular material, bituminous pavement mixture,

trenching, disposal of trenched materials and other miscellaneous appurtenances as shown on the plans and as specified in the standard specifications and in this special provision.

Edge drain inspection, completed and accepted, will be paid for at the contract unit price per meter of edge drain and edge drain outlet/vent inspected, which price shall be full compensation for furnishing all labor, equipment, VHS tapes, tools and incidentals necessary to complete the work.

Class "C" concrete for aprons, as shown on the plans and as specified herein, shall be paid for under Pay Item No. 221-A, Portland Cement Concrete Paved Ditch.

Payment will be made under:

907-605-FF: Edge Drain, Complete-in-Place	- per meter
907-605-GG: Edge Drain Outlets/Vents, Complete-in-Place	- per meter
907-605-HH: Edge Drain & Edge Drain Outlet/Vent Inspection	- per meter



# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-606-1M**

**CODE: (IS)**

**DATE: 4/24/98**

**SUBJECT: Terminal End Sections**

Section 606, Guard Rail, of the 1996 Metric Edition of Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-606.02--Materials. After the second paragraph of Subsection 606.02 on page 606-1 add the following:

Terminal end sections, installed as per manufacturer's recommendations, shall be National Cooperative Highway Research Program (NCHRP) Report 350 Test Level 3 (TL-3) approved. The following is a list of the current devices that have met NCHRP Report 350.

1. BEST
2. ET-2000
3. FLEAT-350
4. SKT-350
5. SRT-350

Terminal end sections shall be one of the above listed devices or an approved equal.

The Contractor shall furnish the Project Engineer two (2) copies of the manufacturer's installation instructions prior to beginning guard rail operations.

907-606.05--Basis of Payment. Add the following pay item to the list on page 606-4:

907-606-E: Guard Rail (Terminal End Section)

- per each

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-617-1M**

**CODE: (SP)**

**DATE: 02/03/2003**

**SUBJECT: Right-Of-Way Markers**

Section 907-617, Right-Of-Way Markers, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in toto Section 617 on pages 617-1 and 617-2, and substitute the following:

**907-617.01--Description.** This work consists of furnishing and placing right-of-way markers in accordance with the plans and these specifications and at points designated on the plans, or as directed. The work also shall include the removal of right-of-way markers from their original locations and resetting at new locations as specified or established.

**907-617.02--Materials.** The materials used in this construction shall conform to the requirements of Subsection 706.04, or as indicated in the plans / contract documents.

**907-617.03--Construction Requirements.**

**907-617.03.1--General.** Markers shall be manufactured in accordance with the details shown on the plans / contract documents, and the requirements of this section.

All letters, symbols, and other markings shall be as shown on the details and shall be neatly imprinted in the markers.

The markers shall be set at the locations designated on the plans, or as directed. They shall be set to within six millimeters of the lines indicated or established, even with the natural ground elevation, and in a vertical position within a tolerance of 10 millimeters per meter.

The layout and placement of right-of-way markers shall be performed by, or under the supervision of, or directed by, a Registered Professional Engineer or Registered Land Surveyor who is duly registered and entitled to practice as a Land Surveyor in the State of Mississippi. The duties performed by said Registrant shall conform to the definitions under the practice of "land surveying" in Mississippi Law. The location of the markers shall be as shown in the plans, and as required to meet the minimum standards of surveying. The Contractor shall not engage the services of any person in the employ of the Department for the performance of any of the work covered by this Section or any person who has been employed by the Department within the past six months, except those who have legitimately retired from service with the Department during this period.

**907-617.03.2--Removal and Resetting.** Markers which are specified to be removed and reset shall be carefully removed and reset at the location indicated or established in accordance with the provisions and requirements of 907-617.03.1.

The Contractor shall replace without additional compensation all markers damaged due to the removal and resetting operation.

**907-617.04--Method of Measurement.** Right-of-way markers, new or removed and reset, will be measured by the unit.

**907-617.05--Basis of Payment.** Right-of-way markers, complete in place, will be paid for at the contract unit price per each, which shall be full compensation for completing the work.

Payment will be made under:

- 907-617-A: Right-of-Way Markers (Type) - per each
- 907-617-B: Right-of-Way Markers Removed and Reset - per each

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-618-7M**

**CODE: (IS)**

**DATE: 11/10/98**

**SUBJECT: Placement of Temporary Traffic Stripe**

Section 618, Maintenance of Traffic and Traffic Control Plan, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-618.03 -- Construction Requirements.

907-618.03.3 -- Safe Movement of Traffic. Delete the third paragraph of Subsection 618.03.3 on page 618-3 and substitute the following:

A longitudinal pavement edge that traffic is expected to move across should have an elevation difference of not more than 55 millimeters. If the pavement edge is more than 40 millimeters and less than or equal to 55 millimeters, uneven pavement signs will be required as shown in the plans or contract documents. If the pavement edge is less than or equal to 40 millimeters, no uneven pavement signs will be required. Transverse pavement joints shall be sufficiently tapered to allow for the safe movement of traffic.

When a paving operation produces a longitudinal pavement edge that traffic is expected to move across, the adjacent lane shall be constructed to eliminate any uneven pavement edge within 48 hours, unless prohibited by weather conditions or an emergency arises.

Delete the sixth paragraph of Subsection 618.03.3 on page nos. 618-3 and 618-4 and substitute:

All centerline, lane lines, edge lines and no-passing stripes that have been covered or removed during the day's operations shall be replaced with temporary stripe before work is discontinued for the day or as soon thereafter as weather conditions will permit, except that:

- (1) Replacement of no-passing stripes may be delayed for a period not to exceed three (3) days for a two or three lane road.
- (2) Temporary edge lines may be eliminated on projects requiring shoulders constructed of granular material.
- (3) Temporary edge lines placed on the final pavement course of projects requiring paved shoulders without surface treatment shall be placed in the permanent stripe location, otherwise temporary edge lines on projects requiring paved shoulders may be placed on the adjacent shoulder in as near the permanent location as possible.

Temporary no-passing stripe is not considered a major item of work and such stripe which is eliminated because of placing the next course prior to expiration of the 3-day period shall not result in a monetary adjustment to the Contractor as provided in 104.02. All temporary stripe shall be placed in accordance with the plans and Subsection 907-619.03.2.

Delete the first sentence of the first full paragraph on page 618-4 under Subsection 618.03.3 and substitute the following:



In addition to the temporary no-passing stripe, the Contractor shall erect standard "DO NOT PASS," "NO-PASSING ZONE," and "PASS WITH CARE" signs in accordance with plan details or as specified in the MUTCD.

Delete the last sentence of the third full paragraph on page 618-4 under Subsection 618.03.3 and substitute the following:

All temporary stripe shall be maintained in good order until placement of the permanent pavement markings or placement of the next pavement course or until removed. Maintenance of temporary stripe may require more than one application over the life of the project. Payment will be made for one application only.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-619-11M

CODE: (IS)

DATE: 06/18/2003

SUBJECT: Traffic Control for Construction Zones

Section 619, Traffic Control for Construction Zones, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-619.02.4--Construction Signs.** Delete the fourth sentence of the second paragraph of Subsection 619.02.4 on page 619-1 and substitute:

Standards for height of construction signs shall be those shown for roadside signs in Chapter 6F of the Manual of Uniform Traffic Control Devices (MUTCD).

Delete the third paragraph of Subsection 619.02.4 on page 619-1 and substitute the following:

Unless specified otherwise, fluorescent orange reflective sheeting, meeting the requirements of Subsection 721.06, shall be used on all construction signs regardless of whether used during daytime or nighttime hours.

Delete the fourth paragraph of Subsection 619.02.4 on page 619-1 and substitute the following:

Unless otherwise specified on the plans, the material on which the reflective sheeting is to be applied shall be 1.52-millimeter (minimum) steel, 2.03-millimeter (minimum) aluminum, or 15-millimeter (minimum) high density overlaid plywood. Ungalvanized steel, exterior grade plywood and lumber shall have a minimum of two coats of paint on front, back, and edges. High density overlaid plywood shall have the edges painted. The material to which reflective sheeting is to be applied shall be prepared in accordance with the recommendations of the sheeting manufacturer.

Delete the third sentence of the first paragraph of Subsection 619.02.4 on page 619-2 and substitute the following:

If tested by the Central Laboratory, the reflective sheeting shall have at least 50 percent of the reflectivity specified for new sheeting.

**907-619.02.5--Advance Warning Flashing Arrow Panels.** Delete in toto Subsection 619.02.5 on page 619-2 and substitute:

**907-619.02.5--Advance Warning Flashing Arrow Panels.** Flashing arrow panels shall meet the requirements of Section 6F.53 of the MUTCD.

**907-619.02.6--Concrete Median Barrier and Delineators.** Delete in toto Subsection 619.02.6 on pages 619-2 & 619-3, and substitute:

**907-619.02.6--Concrete Median Barrier and Delineators.** Precast concrete median barrier shall meet the requirements of the plans, contract documents, and Section 615 except the surface may be a Class 1 ordinary surface finish unless designated otherwise. When precast concrete median barriers are no longer needed at one location, as determined by the Engineer, the barriers shall be removed and reset at other designated locations. When barriers have to be stored until needed at another location, payment for removing and resetting will not be made until they are reset at their designated location. The Contractor shall furnish the storage area.

The Engineer may allow the installation of used barriers for temporary traffic control upon an inspection and determination that the barrier units are structurally adequate for their intended purpose. Barriers with small chips or fractures not affecting their integrity may be accepted.

Precast concrete barriers used on this project which were purchased or manufactured after October 1, 2002 must meet the requirements of NCHRP Report 350. Precast median barriers purchased or manufactured prior to October 1, 2002 may be used until they complete their normal service life.

Certification of precast concrete barriers shall be as required in the Notice to Bidders titled "Certification of Traffic Control Devices".

Delineators shall be listed on the Department's "Approved Sources of Materials" and meet the requirements of the plans and Section 6F.68 of the MUTCD.

Delete in toto Subsection 619.02.7 on page 619-3 and substitute:

**907-619.02.7--Channelization Devices, Barricades, and Warning Lights.** Channelization devices, vertical panels, tubular markers, cones, drums, barricades and temporary raised islands shall meet the requirements of the plans and Sections 6F.55 through 6F.64 of the MUTCD. Drums shall be constructed of lightweight, deformable material capable of retaining reflective sheeting. Reflective sheeting for drums shall be Type III meeting the requirements of 721.06. Warning lights shall meet the requirements of Section 6F.72 of the MUTCD.

**907-619.02.8--Traffic Signals and Flashers.** Delete in toto Subsection 619.02.8 on page 619-3 and substitute:

**907-619.02.8--Traffic Signals and Flashers.** Traffic signals and flashers shall meet the requirements of the plans and Sections 6F.71 & 6F.74 of the MUTCD.

**907-619.02.9--Impact Attenuators.** Delete in toto Subsection 619.02.9 on page 619-3 and substitute:

**907-619.02.9--Impact Attenuators.** Impact attenuators must be listed on the Department's "Approved Sources of Materials".

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-619-13M

CODE: (IS)

| DATE: 04/27/2004

**SUBJECT: Temporary Pavement Markings**

Section 619, Traffic Control for Construction Zones, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

## **907-619.03--Construction Requirements.**

**907-619.03.2--Temporary Stripe.** Delete in toto Subsection 619.03.2 on page 619-4 and substitute the following:

Temporary stripes are pavement markings, temporary in nature, such as those used to direct traffic from its customary path or those to be removed from the pavement course under use for further temporary traffic control or those to be covered by the next pavement course and/or those to be replaced by permanent stripes. Temporary stripes shall be paint or preformed tape as designated on the plans or when not designated, the use of paint or tape will be at the Contractor's option. Temporary stripes on surface treatments shall be paint.

All temporary stripe shall be placed in accordance with the plans and the requirements set out in Section 625, except that alignment of temporary stripe placed on underlying courses shall have a tolerance of 100 millimeters in 15 meters from true alignment for skip stripes and edge lines and 25 millimeters in 15 meters from true alignment for no-passing stripes and lane lines. When preformed tape is used on the final pavement course for temporary traffic markings, it shall be removed at no additional cost to the State.

Temporary paint stripe requiring removal shall be removed by carefully controlled blast cleaning, approved grinding or other approved methods in such a manner that the surface to which the stripe was applied will not be unnecessarily marred or damaged. Preformed tape is to be removed in accordance with the manufacturer's recommendations.

Temporary paint stripe which has been placed on the final pavement course may be left in place and covered with permanent stripe of the same color provided the temporary stripe has been satisfactorily placed in the proper location. Under this condition, any remaining temporary paint stripe not covered by the permanent stripe shall be removed at no additional cost to the State.

Painted traffic stripe which has been removed from the final asphalt pavement surface shall be sealed with an approved sealant. The Engineer may wave the sealant requirement when the area to be sealed is insignificant. This sealing operation shall be performed at no additional costs to the State.

All temporary pavement markings placed and measured for payment under this section shall include any required removal. Removal of all temporary stripe will not be measured for separate payment.

Existing pavement markings conflicting with temporary markings shall be removed. Removal of such materials (paint, tape, marker, etc.) will be measured and payment made under Section 202. When measuring removal of pavement markings for payment, the skips will not be included in the measurement.

**907-619.03.3--Short-term Stripe.** Delete in toto Subsection 619.03.3 on pages 619-4 and 619-5.

**907-619.04--Method of Measurement.** Delete the third paragraph on page 619-7 and substitute the following:

Temporary stripe, completed and removed in accordance with the requirements of this Section, will be measured as provided for painted traffic markings in 625.04, except as follows: Detail traffic stripe will be measured by the meter from end-to-end of individual stripes. Measurement will be made along the surface of each stripe and will exclude nominal skip intervals where specified. Stripes more than 100 millimeters in width will be converted to equivalent lengths of 100-mm widths. Legend, which is to include railroad markings, pedestrian crosswalks and stop lines, will be measured by the square meter or meter. Pay areas of individual letters and symbols will usually be shown on the plans and measured by the square meter. Transverse railroad bands, pedestrian crosswalks and stop lines will generally be measured by the meter, in which case, stripes more than 100 millimeters in width will be converted to equivalent lengths of 100-mm widths.

**907-619.05--Basis of Payment.** Add the "907" prefix to pay item numbers 619-A1, 619-A2, 619-A5 and 619-A6 in Subsection 619.05 on page numbers 619-7 and 619-8.

Delete pay item numbers 619-A3 and 619-A4 on page 619-8 and substitute the following:

- |  |                       |                          |
|--|-----------------------|--------------------------|
| 619-A3: Temporary Traffic Stripe (Skip White)  | ( <u>        </u> * ) | - per meter or kilometer |
|  | Description           |                          |
| 619-A4: Temporary Traffic Stripe (Skip Yellow) | ( <u>        </u> * ) | - per meter or kilometer |
|  | Description           |                          |

Delete in toto the pay item numbers, descriptions and units for pay item numbers 619-B1, 619-B2, 619-B3, 619-B4, 619-B5 and 619-B6 from Subsection 619.05 on pages 619-8 and 619-9.

After pay item number 619-C5 on page 619-9 add the following:

907-619-C6: Red-Clear Reflective High Performance Raised Marker  
- per each

907-619-C7: Two-Way Yellow Reflective High Performance Raised Marker - per each

907-619-C8: One-Way Clear Reflective High Performance Raised Marker - per each

907-619-C9: One-Way Yellow Reflective High Performance Raised Marker - per each

907-619-C10: Yellow Clear Reflective High Performance Raised Marker - per each

Delete the last paragraph of Subsection 619.05 on page 619-10 and substitute the following:

- \* The description for temporary traffic stripe will be shown as "paint" or "tape". In the case of "tape" the type will also be designated. When the description is not designated, the use of "paint" or "tape" will be at the Contractor's option.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-625-2M

CODE: (IS)

DATE: 04/27/2004

SUBJECT: Painted Traffic Markings

Section 625, Painted Traffic Markings, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-625.03.3--Application.** Delete the second paragraph of Subsection 625.03.3 on page 625-2 and substitute the following:

For temporary traffic stripe, paint and Class A (Standard) glass beads shall be uniformly applied at the rate of not less than one liter of paint and 720 grams of beads per 21.2 meters of 100-mm stripe. For permanent traffic stripe, paint and Class B (High-Visibility) glass beads shall be uniformly applied at the rate of not less than one liter of paint and 1440 grams of beads per 14.1 meters of 150-mm stripe.

**907-625.04--Method of Measurement.** Delete the last sentence of the second paragraph of Subsection 625.04 on page 625-3 and substitute the following:

Stripes more than 150 millimeters in width will be converted to equivalent lengths of 150-mm stripe.

**907-625.05--Basis of Payment.** Add the “907” prefix to pay item numbers 625-C, 625-D, 625-E, 625-F, 625-G, 625-H & 625-I listed in Subsection 625.05 on page 625-3 and 625-4.

Delete pay item numbers 625-A and 625-B on page 625-3 and substitute the following:

619-A3: Temporary Traffic Stripe (Skip White) ( \_\_\_\_\_ \* \_\_\_\_\_ ) - per meter or kilometer  
Description

619-A4: Temporary Traffic Stripe (Skip Yellow) ( \_\_\_\_\_ \* \_\_\_\_\_ ) - per meter or kilometer  
Description

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-626-12M

CODE: (IS)

| DATE: 04/27/2004

**SUBJECT: Thermoplastic Markings**

Section 626, Thermoplastic Traffic Markings, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-626.03--Construction Requirements.**

**907-626.03.2--Construction Details.** Delete the first paragraph on page 626-2 under Subsection 626.03.2 and substitute the following:

Unless otherwise directed by the Engineer, traffic stripes that are coincidental with the thermoplastic stripe shall be removed prior to placement of the thermoplastic material, except that temporary paint stripe may be left in place when satisfactorily placed in the proper location. Any temporary stripe not covered shall be removed. Payment for removal of stripe, except temporary stripe, will be made under Section 202.

**907-626.04--Method of Measurement.** Delete the last sentence of the second paragraph of Subsection 626.04 on page 626-3 and substitute the following:

Stripes more than 150 millimeters in width will be converted to equivalent lengths of 150-mm stripe.

Delete the last sentence of Subsection 626.04 on Page 626-3 and substitute the following:

Transverse railroad bands, pedestrian crosswalks and stop lines will generally be measured by the meter, in which case, stripes more than 150 millimeters in width will be converted to equivalent lengths of 150-mm widths.

**907-626.05--Basis of Payment.** After the last pay item listed on page 626-3, add the following:

907-626-AA: 150-mm Thermoplastic Traffic Stripe (Skip White)

| ( )  
Thickness

- per meter or kilometer

907-626-BB: 150-mm Thermoplastic Traffic Stripe (Continuous White)

| ( )  
Thickness

- per meter or kilometer



907-626-CC: 150-mm Thermoplastic Edge Stripe (Continuous White)  
( )  
Thickness - per meter or kilometer

907-626-DD: 150-mm Thermoplastic Traffic Stripe (Skip Yellow)  
( )  
Thickness - per meter or kilometer

907-626-EE: 150-mm Thermoplastic Traffic Stripe (Continuous Yellow)  
( )  
Thickness - per meter or kilometer

907-626-FF: 150-mm Thermoplastic Edge Stripe (Continuous Yellow)  
( )  
Thickness - per meter or kilometer

907-626-GG: Thermoplastic Detail Stripe  
(150-mm Equivalent Length) ( ) ( )  
Color Thickness - per meter

907-626-HH: Thermoplastic Legend (White)  
( )  
Thickness - per meter or square meter

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-626-16M**

**CODE: (SP)**

**DATE: 03/15/2007**

**SUBJECT: Double Drop Thermoplastic Markings**

Section 626, Thermoplastic Traffic Markings, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-626.03.2--Construction Details.** After the second sentence of the sixth paragraph of Subsection 626.03.2 on page 626-2 and add the following:

When edge lines are placed on rumble strips, the thickness of the edge line shall be 1.50-millimeters.

After the last paragraph of Subsection 626.03.2 on page 626-2, add the following:

In addition to the bead requirement in Subsection 907-720.02, additional beads by the drop-on method shall be applied to double drop thermoplastic stripe at a rate of not less than 45 grams of Class B glass beads per meter of 150-mm stripe. The Class B glass beads shall be applied to the newly placed stripe first, followed by the application of the Class A glass beads.

**907-626.05--Basis of Payment.** Add the following to the list of pay items on page 446.

907-626-CC: 150-mm Thermoplastic Double Drop Edge Stripe  
(Continuous White) ( \* ) - per meter or kilometer

907-626-FF: 150-mm Thermoplastic Double Drop Edge Stripe  
(Continuous Yellow) ( \* ) - per meter or kilometer

\* Thickness may be specified

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-627-1M**

**CODE: (IS)**

**DATE: 4/25/2000**

**SUBJECT: Raised Pavement Markers**

Section 627, Raised Pavement Markers, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-627.02--Materials.** Delete the second paragraph of Subsection 627.02 on page 627-1 and substitute:

Type B through G High Performance reflective markers shall be listed on the Department's "Approved Sources of Materials" for high performance raised pavement markers.

**907-627.05--Basis of Payment.** Add the "907" prefix to pay items 627-J, 627-K, 627-L, 627-M, 627-N, and 627-O at the end of Subsection 627.05 on page 627-3.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-628-9M

CODE: (IS)

| DATE: 04/27/2004

**SUBJECT: Cold Plastic Pavement Markings**

Section 628, Cold Plastic Pavement Markings, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction, is hereby amended as follows:

Delete in toto Subsection 628.01 on page 628-1 and substitute the following:

**907-628.01--Description.** This work consists of furnishing materials and installing cold plastic pavement markings of the type specified in reasonably close conformity with the plans and these specifications.

**907-628.02--Materials.** After the first sentence of Subsection 628.02 on page 628-1, add the following:

High performance cold plastic marking material shall meet the requirements of 907-720.07.

**907-628.03--Construction Requirements.**

**907-628.03.1--Equipment.** After the first sentence of Subsection 628.03.1 on page 628-1, insert the following:

When high performance cold plastic pavement markings for lane lines are used, the manufacturer shall provide application equipment, manual or automatic as necessary for the job requirements. These applicators shall be capable of applying markings to the required alignment and dimensions shown on the plans or in the contract documents.

**907-628.05--Basis of Payment.** After the last pay item listed in Subsection 628.05 on page 628-2, substitute the following:

| 907-628-AA: 150-mm Cold Plastic Traffic Stripe (Skip White) - per meter or kilometer

| 907-628-BB: 150-mm Cold Plastic Traffic Stripe (Continuous White) - per meter or kilometer

| 907-628-CC: 150-mm Cold Plastic Edge Stripe (Continuous White) - per meter or kilometer

| 907-628-DD: 150-mm Cold Plastic Traffic Stripe (Skip Yellow) - per meter or kilometer

907-628-EE: 150-mm Cold Plastic Traffic Stripe (Continuous Yellow) - per meter or kilometer

- 907-628-FF: 150-mm Cold Plastic Edge Stripe (Continuous Yellow) - per meter or kilometer
- 907-628-GG: Cold Plastic Detail Stripe  
(150-mm Equivalent Length) (Color) - per meter
- 907-628-HH: Cold Plastic Legend (White) - per meter or square meter
- 907-628-II: 150-mm High Performance Cold Plastic Traffic Stripe  
(Skip White) - per meter or kilometer
- 907-628-JJ: 150-mm High Performance Cold Plastic Traffic Stripe  
(Continuous White) - per kilometer or meter
- 907-628-KK: 150-mm High Performance Cold Plastic Edge Stripe  
(Continuous White) - per meter or kilometer
- 907-628-LL: 150-mm High Performance Cold Plastic Traffic Stripe  
(Skip Yellow) - per meter or kilometer
- 907-628-MM: 150-mm High Performance Cold Plastic Traffic Stripe  
(Continuous Yellow) - per meter or kilometer
- 907-628-NN: 150-mm High Performance Cold Plastic Edge Stripe  
(Continuous Yellow) - per meter or kilometer
- 907-628-OO: High Performance Cold Plastic Detail Stripe  
(150-mm Equivalent Length) (Color) - per meter
- 907-628-PP: High Performance Cold Plastic Legend (White) - per meter or square meter

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-636-1M**

**CODE: (SP)**

**DATE: 3/19/2001**

**SUBJECT: Shielded Cable**

Section 908-636, Shielded Cable, of the 1996 Metric Edition of the Supplemental Specifications to the 1990 Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-636.02--Materials.**

**907-636.02.1--Shielded Cable.** Delete the first sentence of Subsection 908-636.02.1 on page 636-1 and substitute the following:

Shielded cable shall conform to IMSA Specification No. 50-2, 1984, for polyethylene insulated, polyethelene jacketed loop detector lead-in cable of the size specified.

**907-636.05--Basis of Payment.** Delete the last line of Subsection 908-636.05 on page 636-2 and substitute the following:

907-636-A: Shielded Cable, (AWG), (No. of Conductors) - per linear foot

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-639-2M**

**CODE: (SP)**

**DATE: 01/11/2007**

**SUBJECT: Traffic Signal Equipment Poles**

Section 908-639, Traffic Signal Equipment Poles, of the Supplemental Specifications to the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-639-02.3--Foundations.** Delete the first sentence of the first paragraph of Subsection 908-639.02.3 on page 639-1 and substitute the following:

Cast-in-place foundations for concrete, steel, and/or aluminum shafts shall be as specified on plans, and shall be cast of reinforced Class “DS” Concrete conforming to the requirements of Sections 601 and 602.

**907-639-03.1--Foundations.** Before the first paragraph of Subsection 908-639.03.1 on page 639-1, add the following:

Pole foundations shall be constructed as per the details on the plans, these specifications, and Section 803 of the Standard Specifications. Casings, as required, will be in accordance with Section 803 of the Standard Specifications.

In the first sentence of the first paragraph of Subsection 908-639.03.1 on page 639-1, change “Section 206” to “Section 801”.

After the first paragraph of Subsection 908-639.03.1 on page 639-1 add the following:

Due to soil conditions in certain locations, as noted on the plans, concrete shall be placed with a tremie. When a tremie is used, it shall perform in accordance with the requirements in Subsection 907-804.03.9 of the Standard Specifications.

It may be necessary to use slip casing to keep the holes open. Casing will be required in portions of the holes that are not stable. Casings authorized by the Engineer shall be of suitable size and strength to accommodate the drilling equipment and to withstand ground-pressures and removal operations without deformation of the poured shaft. When removed, the casings shall revert to the Contractor for disposal.

**907-639.04--Method of Measurement.** Delete the second sentence of the first paragraph of Subsection 908-639.04 on page 639-2, and substitute the following:

Such measurement shall include the pole, mast arms and all other incidentals necessary to complete the equipment pole.

After the last paragraph of Subsection 908-639.04 on page 639-2, add the following:

Pole foundations of the size specified will be measured by the cubic meter, which measurement shall be the area bounded by the vertical planes of the neat lines of the foundation.

Slip casings of the size specified will be measured by the meter from the ground elevation to the bottom of the strata needing to be cased.

**907-639.05--Basis of Payment.** Delete the first paragraph of Subsection 908-639.05 on page 639-2, and substitute the following:

Traffic signal equipment pole and traffic signal equipment pole shaft extension of the type specified, measured as provided in above, will be paid for at the contract unit price per each, which price shall be full compensation for furnishing all materials, erecting, installing, connecting and testing poles, pole bases, mast arms, caps, covers, ground wire, ground rods, hardware and for all equipment, tools, labor and incidentals necessary to complete the equipment pole.

Pole foundations, measured as prescribed above, will be paid for at the contract unit price per cubic meter, which price shall include full compensation for structure excavation, reinforcing steel, anchor bolts; for placing, curing, and installing concrete; for replacing sod and final clean-up; and for all equipment, labor, tools and incidentals necessary to complete the foundation.

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

Delete the list of pay items on page 482, and substitute the following:.

- 907-639-A: Traffic Signal Equipment Pole, Type \_\_\_\_\_ - per each
- 907-639-B: Traffic Signal Equipment Pole Shaft Extension, Description - per each
- 907-639-C: Pole Foundations, \_\_\_\_\_ Diameter - per cubic meter
- 907-639-D: Slip Casing, \_\_\_\_\_ Diameter - per meter



## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-640-1M

CODE: (SP)

DATE: 5/18/2001

SUBJECT: Traffic Signal and Pedestrian Heads

Section 908-640, Traffic Signal Heads, of the Supplemental Specifications to the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-640.02--Materials.** At the end of Subsection 908-640.02.8 on page 640-6, add the following:

**907-640.02.9--LED Traffic Signal Heads.** LED signal module shall be a sealed unit comprised of an outer lens, an optical lens, a printed circuit board for LEDs, and entirely enclosed power supply, a back cover and a gasket.

The assembly and manufacturing process for the LED signal modules shall be designed to assure all internal Led and electronic components are adequately supported to withstand mechanical shock and vibration from high winds and other sources as per MIL-STD-883.

The LED signal module shall be rated for use in the ambient operating temperature range of -40°C to +74°C.

The LED signal module lens shall be UV stabilized.

The light distribution of each LED shall be maximized by an internal beam controlling optical faceted lens designed and patented to meet the 44 points measurement of the VTCSH standard (Part-2). The outer cover made of ultraviolet stabilized polycarbonate shall be convex with a smooth outer surface and be an integral part of the module.

The chip in the ultra-bright 5-mm LEDs shall be made using AlInBaP for red and InGaN technology for the green, and be rated for 100,000 hours of continuous operation by the LED manufacturer.

Enclosures containing either the power supply or electronic components of the signal module shall be made of UL94VO flame retardant materials.

The measured chromaticity coordinates of LED signal modules shall conform to the chromaticity requirements of Section 8.04 and Figure 1 of the VTCSH standard. The LED manufacturers indicate the following X-Y coordinates for their respective LEDs. The X value for red LEDs varies from 0.690 to 0.708 and the Y value varies from 0.292 to 0.306. The value X for amber LEDs varies from 0.554 to 0.575 and the Y value varies from 0.424 to 0.445. The X value for the green LEDs varies from 0.1090 to 0.1138 and the Y value varies from 0.5673 to 0.5830.

All wiring and terminal blocks shall meet the requirements of Section 13.02 of the VTCSH

standard. Two secured, color coded, three feet long 600 V, 20 AWG minimum, jacketed wires, conforming to the National Electrical Code, rated for service at +105°C, are to be provided for electrical connection.

The module shall operate on a 60 Hz AC line voltage ranging from 80 volts rms to 135 volts rms with less than 10% light intensity variation. Nominal rated voltage for all measurements shall be 120 ±3 volts rms. The circuitry shall prevent flickering over this voltage range.

The individual LEDs be wired so that a catastrophic failure of one LED will result in the loss of only that one LED, and not the entire string of LEDs or the entire module.

The power supply must permit the regulation of the current supplied to the LEDs to maintain a constant current.

The LED signal and associated on-board circuitry must meet Federal Communications Commission (FCC) Title 47, Sub-Part B, Section 15 regulations concerning the emission of electronic noise.

The LED signal module shall provide a power factor of 0.90 or greater at 25°C and at the nominal operating voltage.

Total harmonic distortion (THD), (current and voltage), induced into an ac power line by a signal module shall not exceed 20 percent, over the operating voltage range specified in Section 14 and within the ambient temperature range specified in Section 4.

The signal module on-board circuitry shall include voltage surge protection to withstand high-repetition noise transients and low-repetition high-energy transients as stated in Section 2.1.6, NEMA Standard TS-2, 1992.

The LED signal module shall operate from a 60 ±3 HZ ac line power over a voltage range from 80 Vac rms to 135 Vac rms. The current draw shall be sufficient to ensure compatibility and proper triggering and operation of load current switches and conflict monitors in signal controller units the procuring traffic authority customer has in use. Load switches shall be compatible with NEMA (TS-1 or later) or Model 170 (1989 or later).

All LED signal modules shall be energized for a minimum of 24 hours, at 100 percent on-time duty cycle, in an ambient temperature of 60°C.

Each socket shall be provided with one black lead from the socket and one white lead from the shell. Terminal blocks shall be a six position, twelve block, terminal barrier strip placed in the top (red) section of all traffic signal heads. Terminal blocks shall be secured on both ends.

**907-640.05--Basis of Payment.** After the last pay item listed on page 640-7, add the following.

907-640-B: LED Traffic Signal Heads (Type \_\_\_\_\_) - per each

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-641-1M**

**CODE: (SP)**

**DATE: 01/30/2007**

**SUBJECT: Radar Detection System (RDS)**

Section 907-641, Radar Detection System (RDS), is hereby added to and becomes a part of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

## **SECTION 907-641--RADAR DETECTION SYSTEM (RDS)**

**907-641.01--Description.** This special provision specifies the minimum requirements for Radar Detection Systems (RDS) furnished and installed on this project. The work shall consist of providing all labor, materials, equipment, and incidentals necessary to furnish, install, test, and operate the RDS.

The RDS will provide roadway monitoring capabilities via microwave radar detectors. The data provided includes, but is not limited to, speeds, volume, lane occupancy and classification.

### **907-641.02--Materials.**

**907-641.02.1--Microwave Transmission.** The microwave radar detector shall transmit on a frequency band of 10.50 GHz  $\pm$ 25 MHz or another approved spectral band. It shall comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. The RDS shall not interfere with any known equipment.

**907-641.02.2--Area of Coverage.** The RDS's field of view shall cover an area with a minimum detection range of three (3) meters from the RDS and a maximum detection range of 60 meters from the RDS.

**907-641.02.3--Detection Zones.** The minimum number of detection zones defined shall be no less than eight (8). The range limits of each zone shall be user defined within the area of coverage limits described above.

**907-641.02.4--Capabilities.** The RDS shall be a true presence detector. It shall be suitable for mounting on roadside poles or on overhead structures and provide the following:

Presence indication of moving or stopped vehicles in its detection zones, provided by contact closure to existing controllers.

Traffic data, periodically accumulated over user defined time intervals in a 10 to 600 sec range, shall be transmitted to the TMC via the communications network.

Traffic data shall be available simultaneously with detection zone contact closures and serial communications.

Side-fired configuration data shall include the following in each of up to eight (8) detection zones (lanes):

- Volume
- Lane occupancy
- Average speed
- Vehicle classification by length in up to three (3) user defined classes.

RDS in forward-looking configuration shall monitor traffic in one lane and be capable of providing the following data:

- Volume, occupancy, average speed and travel direction in the lane. Furnish the unit with the required software for data collection, processing, configuration and set-up, and data logging and retrieval. An operator shall be able to use the software to set detector count periods, sensitivities, and other operational features and parameters. The software must be capable of providing both manual and automatic setup and calibration.

**907-641.02.5--Measurement Accuracy.** The following error levels shall be achievable and demonstrated during testing:

<u>Parameter</u>	<u>Error Percentage</u>
Volume	±8%
Average Speed	±10% or ±8 kph
Lane Occupancy	±10%

**907-641.02.6--Environmental Conditions and Protection.** Except as stated otherwise herein, the equipment shall meet all its specified requirements during and after subjecting to any combination of the following:

- Ambient temperature range of -37° to +74°C
- Relative humidity from 5 to 95 percent, non-condensing
- Winds up to 145 kph (sustained) with a 30% gust factor
- Rain and other precipitation up to 99 millimeters/hour
- Power surge that meets the EN 61000-4-5 standards shall be included.

**907-641.02.7--Mechanical.** The microwave radar detector shall be enclosed in a rugged weatherproof box and sealed to protect the unit from wind up to 145 kph, dust and airborne particles, and exposure to moisture (NEMA Type 3R or NEMA 250 Standard enclosure).

The mounting assembly shall have all coated steel, stainless steel, or aluminium construction, and shall support a load of nine (9) kilograms. The mounting assembly shall be constructed in a manner to provide the necessary degrees of rotation to ensure proper installation.

**907-641.02.8--Electrical.** The RDS unit and power supply shall operate on 120VAC input voltage. The AC to DC power converter shall be provided in the cabinet. The actual RDS shall consume less than 10 Watts with a DC input between 12VDC and 28VDC.

The RDS unit shall include a Low-Voltage disconnect feature for battery protection.

Surge Suppression shall be provided to protect the equipment from surges on the RDS power supply and the RS 232 communications wiring. Surge suppression shall meet all manufacturer recommendations.

**907-641.02.9--RDS Comm Cables.** The RDS Comm Cable shall be the connection between the RDS and the cabinet equipment. The RDS Comm Cable shall be included with the RDS.

Cable connectors and termination pin-out on all cables shall be in accordance with the manufacturer's recommendations.

Connection between the RDS and the cabinet equipment shall be provided by a single RDS Comm Cable meets all manufacturer's recommendations.

At a minimum, the RDS Comm Cable shall be outdoor wet/dry rated UV-resistant and provide multiple twisted pairs of stranded AWG #20 or #22 wire with a common shield rated at 300V with a temperature rating of 105°C.

The MS connector pins must be crimped to the cable conductors and assembled and tested by the manufacturer prior to installation and pulling of cable on site.

**907-641.02.10--Electrical Isolation and Surge Protection.** All power lines, contact closures and the serial port shall be surge protected within the unit. Contact closures and the serial port shall be isolated.

**907-641.02.11--Data Interface.** Data communications shall be full duplex asynchronous, configurable as:

- The RDS shall have an Ethernet port (TCP/IP) or a separate Serial to Ethernet converter shall be provided as part of the RDS unit.
- Any converter shall meet NEMA TS2 requirements and shall convert RS-232 communication to IP addressable Ethernet protocol and visa versa. All serial ports shall pass data on one port to all other ports. Any data coming to or from the Ethernet port shall simultaneously be sent to all RS-232 ports.
- If the RDS is serial at the unit, it shall include Opto-isolated RS-232 port at rates from 9600 up to 115200 bits per second.

- Serial data format shall be standard binary NRZ 8 bits data, 1 stop bit, No parity.
- Both point-to-point and multi-dropped configurations shall be supported.

**907-641.03--Construction Requirements.** The RDS shall be mounted in side-fired configuration on poles as shown in the Plans, using mounting brackets. The brackets shall be attached with approved 20-mm wide stainless steel bands.

The Contractor shall install the detector unit on a pole at the manufacturers recommended height above the road surface so that the masking of vehicles is minimized and that all detection zones are contained within the specified elevation angle as suggested by the manufacturer.

When installing a detector near metal structures, such as building, bridges, or sign supports, the sensor shall be mounted and aimed so that the detection zone is not under and does not pass through any structure to avoid distortion and reflection.

The RDS mode of operation, detection zones and other calibration and set up will be performed using a MS-Windows-based software and a Notebook PC. The software shall allow verification of correct setup and diagnostics. It shall include facilities for saving verification data and collected data as well as saving and retrieving sensor setup from disk file.

Unused conductors in the RDS Comm Cable shall be grounded or terminated in the cabinet in accordance with the manufacturer's recommendations. Unterminated conductors shall be individually doubled back and taped, then loosely bundled and secured.

**907-641.03.1--RDS Test Requirements.** The Contractor shall conduct a Project Testing Program as required below. All costs associated with the Project Testing Program shall be included in overall contract prices; no separate payment will be made for any testing.

The Contractor is responsible for planning, coordinating, conducting and documenting all aspects of the Project Testing Program. The Project Engineer and/or the Project Engineer's representatives are only responsible for attending and observing each test, and reviewing and approving the Contractor's test results documentation. The Project Engineer and/or the Project Engineer's representatives reserve the right to attend and observe all tests.

Each test shall fully demonstrate that the equipment being tested is clearly and definitely in full compliance with all project requirements. Test procedures shall be submitted and approved for each test as part of the project submittals. Test procedures shall include every action necessary to fully demonstrate that the equipment being tested is clearly and definitely in full compliance with all project requirements. Test procedures shall cross-reference to these Technical Specifications or the Project Plans. Test procedures shall contain documentation regarding the equipment configurations and programming.

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

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

The Contractor shall request in writing the Project Engineer's approval for each test occurrence a minimum of 14 days prior to the requested test date. Test requests shall include the test to be performed and the equipment to be tested. The Project Engineer reserves the right to reschedule test request if needed.

All tests shall be documented in writing by the Contractor in accordance with the test procedure and submitted to the Project Engineer within seven (7) days of the test. Any given test session is considered incomplete until the Project Engineer has approved the documentation for that test session.

All tests deemed by the Project Engineer to be unsatisfactorily completed shall be repeated by the Contractor. In the written request for each test occurrence that is a repeat of a previous test, the Contractor shall summarize the diagnosis and correction of each aspect of the previous test, the Contractor shall summarize the diagnosis and correction of each aspect of the previous test that was deemed unsatisfactory. The test procedures for a repeated test occurrence shall meet all the requirements of the original test procedures, including review and approval by the Project Engineer and ITS Manager.

The satisfactory completion of any test shall not relieve the Contractor of responsibility to provide a completely acceptable and operating system that meets all requirements of this project.

**907-641.03.2--Standalone Acceptance Test (SAT).** The Contractor shall perform a complete SAT on all equipment and materials associated with the field device site, including but not limited to electrical service, conduit, pull boxes, communication links (fiber, leased copper, wireless), control cables, poles, etc. An SAT shall be conducted at every field device site. Where applicable, a SAT shall be conducted for a fully installed and completed connection to the designated Traffic Management Center (TMC) or central data/video collection site.

The SAT shall demonstrate that all equipment and materials are in full compliance with all project requirements and fully functional as installed and in final configuration. The SAT shall also demonstrate full compliance with all operational and performance requirements of the project. All SATs will include a visual inspection of the cabinet and all construction elements at the site to ensure they are compliant with the specifications.

After a ninety (90) day burn-in period, the contractor must demonstrate the accuracy requirements of the Radar Detection System at selected intersections. The intersections to be tested will be randomly selected by the Project Engineer.

**907-641.03.3--Warranty.** The Radar Detection System shall be warranted to be free of manufacturer defects in materials and workmanship for a period of one year from the date of Final Acceptance. Equipment covered by the manufacturer's warranties shall have the registration of that component placed in MDOT's name prior to Final Inspection. The Contractor

is responsible for ensuring that the vendors and/or manufacturers supplying the components and providing the equipment warranties recognize MDOT as the original purchaser and owner/end user of the components from new. During the warranty period, the supplier shall repair or replace with new or refurbished material, at no additional cost to the State, any product containing a warranty defect, provided the product is returned postage-paid by the Department to the supplier's factory or authorized warranty site. Products repaired or replaced under warranty by the supplier shall be returned prepaid by the supplier.

During the warranty period, technical support shall be available from the supplier via telephone within four hours of the time a call is made by the Department, and this support shall be available from factory certified personnel. During the warranty period, updates and corrections to control unit software shall be made available to the Department by the supplier at no additional cost.

**907-641.03.4--Maintenance and Technical Support.** The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the Radar Detection System. The manufacturer of the Radar Detection System must provide, and have a parts support system capable of providing parts for a period of five (5) years from the date of system acceptance. Spare parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale of said spare parts.

The suppliers shall maintain an ongoing program of technical support for the Radar Detection System. This technical support shall be available via telephone or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale of said technical support services.

**907-641.04--Method of Measurement.** The Radar Detection System constructed and installed as specified in the plans will be measured in units of each, which shall include furnishing, installing, system integration and testing of a complete RDS including the unit, the RDS Comm Cable, Communication Converters (if required), all conduit, risers and weatherhead between the RDS and the cabinet, interconnection wiring, power supply, surge suppression, connections to support structures (includes all incidental components, attachment hardware, mounting brackets, mounting arms, bolts, or any other items to mount the RDS as intended), satisfactory completion of testing and training requirements and all work, equipment and appurtenances as required to effect the full operation including remote and local control of the RDS site complete in place and ready for use. The price bid shall also include all system documentation including: shop drawings, operations and maintenance manuals, wiring diagrams, block diagrams and other material necessary to document the operation of the RDS.

The Radar Detection System will be measured for payment on a per each basis as follows:

- 30% of the contract unit price upon delivery to the site. Delivery cannot be more than 60 days before anticipated installation.
- 70% of the contract unit price upon complete installation and Stand Alone testing of the Radar Detection System
- 90% of the contract upon Conditional System acceptance.



- 100% of the contract unit price upon Final System Acceptance.

**907-641.05--Basis of Payment.** Radar Detection System, measured and prescribed above, will be paid for at the contract unit price bid per each, which price shall be full compensation for furnishing all materials, construction installation, connecting, testing, for all equipment, tools, labor, and incidentals required to complete the work.

Payment will be made under:

907-641-A: Radar Detection System - per each

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-642-1M**

**CODE: (SP)**

**DATE: 02/20/2007**

**SUBJECT: Solid State Traffic Actuated Controllers**

**PROJECT: HSIP-6098-00(003) / 102252301 -- Forrest County**

Section 908-642, Solid State Traffic Actuated Controllers, of the Supplemental Specifications to the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-642.02--Materials.** Before Subsection 908-642.02.1 on page 642-1, add the following:

Materials shall meet the requirements of Subsection 908-642.02 with the following exceptions:

The controllers shall be the newest (M-52) controller. They shall be equipped with a fiber ethernet switch, a fiber patch panel and two fiber jumpers. The controller cabinets at Hardy Street & 40<sup>th</sup> Avenue and Hardy Street & U.S. Hwy. 49 are to be oversized. The controller cabinet at U.S. Hwy. 49 and Classic Drive shall be placed on the existing controller concrete foundation.

Controller modifications shall consist of installing a new controller (the newest M-52 controller) equipped with a fiber ethernet switch, a fiber patch panel and two fiber jumpers. The existing cabinets shall be made to accept new fiber and video equipment.

**907-642.04--Method of Measurement.** Delete the first sentence of Subsection 908-642.04 on page 642-23 and substitute the following.

Solid State Traffic Actuated Controllers and Solid State Traffic Actuated Controller Modifications, complete in place and accepted, will be measured as unit quantities per each, such measurement being inclusive of foundation, mounting, cabinet, relays, terminals, circuit breakers, modules, coordination and time base control programs, connectors wiring, overlap equipment and wiring, load switches, controller mechanism and housing and being inclusive of all materials, work, testing and incidentals necessary for a complete and operable unit in place and accepted.

**907-642.05--Basis of Payment.** Delete the first sentence of Subsection 908-642.05 on page 642-23 and substitute the following.

Solid State Traffic Actuated Controllers and Solid State Traffic Actuated Controller Modifications, measured as prescribed above, will be paid for at the contract unit price per each for each type(s) specified in the contract; which price shall be full compensation for foundation construction, for furnishing cabinets, relays, terminals, circuit breakers, modules, coordination and time connectors, overlap equipment, load switches, controller mechanism and housing, mounting material, and all other materials; for constructing, installing, connecting, testing and

final cleanup; and for all equipment, labor, tools, and incidentals necessary to complete the work.

Delete the pay item listed on page 642-24 and substitute the following:

907-642-A: Solid State Traffic Actuated Controllers (\_\_\_\_\_) - per each  
Type

907-642-B: Solid State Traffic Actuated Controller Modifications - per each

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-647-2M**

**CODE: (SP)**

**DATE: 02/13/2007**

**SUBJECT: Pullboxes**

Section 908-647, Pullboxes, of the Supplemental Specifications to the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction as hereby amended as follows:

Delete in toto Subsection 908-647.02 on page 647-1, and substitute the following:

**907-647.02--Materials.** Pull boxes shall meet one of the following specifications:

- (a) Cast iron, ASTM Designation: A 48; Hot Dipped Galvanized, ASTM Designation: A 153
- (b) Precast, Class "B" concrete
- (c) Cast Aluminum, ASTM Designation: B 108, SG70-T6
- (d) Welded Aluminum, A1002-6061-T6
- (e) Composite

All pull boxes shall be in accordance with the detail drawings on the plans.

The boxes shall have a gasketed cover secured by set screws or bolts and shall be the type indicated on the plans meeting the following requirements.

**Type 1** - Minimum Dimension: 200-mm x 200-mm x 150-mm

**Type 2** - Minimum Dimension: 375 mm x 625 mm x 300-mm

**Type 3** - Minimum Dimension: 400 mm x 300 mm x 300 mm

**Type 4** - Minimum Dimension: 600 mm x 900 mm x 450 mm

**Type 5** - Minimum Dimension: 750 mm x 1200 mm x 450 mm

The words "Traffic Signal", "Traffic", "Signal", "Fiber Optics", etc. shall be inscribed on top of the covers as applicable.

**907-647.05--Basis of Payment.** Add the "907" prefix to the pay items listed on page 647-2.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-649-1M

CODE: (SP)

DATE: 02/14/2007

SUBJECT: Video Vehicle Detection

Section 907-649, Video Vehicle Detection, is added to and made a part of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

## **SECTION 907-649 - VIDEO VEHICLE DETECTION**

**907-649.01--Description.** This work consists of furnishing all component materials required to enable video detection capabilities to traffic signal locations in lieu of other methods of vehicle detection and assembling, constructing, erecting, and installing same in conformity with these specifications, to insure properly operating unit(s) in accordance with the design(s) and at the locations shown on the plans or as directed. The video vehicle detection system shall detect vehicles on a roadway using only video images of vehicle traffic and provide detector outputs to a traffic controller or similar device.

**907-649.02--Materials.** Each location shall have one to four video image sensors as required, isolation amplifiers for video cabling, a control unit, and a pointing device. The system shall include personal computer software which allows detection of vehicles in multiple lanes using only video images.

**907-649.02.01--Functional Capabilities.** The control unit shall process video from up to four video sources simultaneously. The sources may be video image sensors or video tape players. The video signal shall be input to the control unit in RS 170 format. The video signal shall be digitized and analyzed in real time.

The control unit shall detect the presence of vehicles in up to 24 detection zones per image sensor. Each detection zone shall be approximately the width and length of one car. Detector zones shall be programmed via a menu displayed on a video monitor and a pointing device connected to the control unit. The menu shall facilitate placement of the detector zones. A separate computer shall not be required for programming detection zones.

The control unit shall store up to five different detector zone patterns for each image sensor field of view. The control unit shall be able to switch to any one of the up to five different detector zone patterns within one second of user request via menu selection with the pointing device. The control unit shall detect vehicles in real time as they travel across each detection zone.

The control unit shall have an RS232 port for communications with an external computer. The control unit shall accept new detector patterns from an external computer through the RS232 port, when the computer uses the correct communications protocol for unloading detector patterns.

**907-649.02.02--Vehicle Detection.** A total of up to 144 individual detection zones shall be supported. A single detection zone shall be capable of replacing multiple loops, and detection zones may be associated together by a Boolean logical or function to indicate vehicle presence on a single phase of traffic movement. Placement of detection zones shall be done by using only a pointing device and a graphical interface built into the control unit to draw the detection zones on the video image from each video image sensor. Detection zones shall be allowed to overlap one another. Up to five detection zone patterns shall be saved for each image sensor within the control unit memory, and this memory shall be protected from loss during power outages. Selection of the detector zone pattern for current use shall be done through a menu. When a vehicle is detected crossing a detector zone, the detector zone shall flash a symbol on the video image to confirm the detection of the vehicle.

Detection shall be no less than 99% accurate in good weather conditions, and no less than 96% accurate under adverse weather conditions such as rain, snow, or fog. Detection accuracy is dependent upon image sensor quality and placement, and these accuracy levels do not include allowances for occlusion or poor video due to image sensor location or quality. Detector placement from the image sensor shall not be more than the distance of ten times the mounting height of the image sensor. The control unit shall provide vehicle presence detection through either a NEMA TS1 or NEMA TS2 port.

**907-649.02.03--System Hardware.** The control unit shall be housed in a durable metal enclosure suitable for shelf mounting in a roadside controller cabinet. When mounted outdoors in the enclosure, the image sensor shall operate satisfactorily within the environmental conditions specified in NEMA Standards TS-1 Section 2. Surge ratings shall be as set forth in the NEMA TS2 specification.

The control unit shall include a RS232 port for serial communications with a remote computer. This port shall be a 'D' subminiature connector on the front of the control unit. The control unit shall include a port for transmitting detections to a traffic controller. This port shall be a 'D' subminiature connector on the front of the control unit.

The front of the control unit shall include four BNC video inputs for RS 170 video. Each video input shall include a switch selectable 75-ohm or high impedance termination to allow video to be routed to other devices, as well as input to the control unit for vehicle detection.

The front of the control unit shall include one BNC video output. Any one of the four video inputs shall be selectable for output on this BNC connection via the pointing device at the control unit, or through software and a personal computer connected to the RS232 port via a full duplex modem link. The video inputs to the control unit shall include transient voltage suppression and isolation amplification that shall assure the 1-volt peak-to-peak video signal integrity is maintained despite video cabling losses and externally induced transients.

The control unit enclosure shall be bonded to good earth ground.

**907-649.02.04--System Image Sensor.** The video cameras used for traffic detection shall be furnished by a control unit supplier and shall be qualified by the supplier to ensure proper video detection system operation. The image sensor shall produce a usable video image of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the image sensor shall produce a usable video image shall be the minimum range from night time to day time for the site, but not less than the range from 0.1 lux to 10,000 lux. The image sensor shall use a CCD sensing element, and shall output monochrome video with resolution of not less than 350 lines vertical and not less than 500 lines horizontal.

The camera shall include auto-iris control based upon average scene luminance and shall be equipped with an auto-iris lens with focal length and maximum aperture selected to suit the deployment site. The lens auto-iris shall be adjusted to minimize image variations. The image sensor shall include automatic gain control to produce a satisfactory image at night.

The image sensor shall be housed in an environmentally sealed enclosure pressurized with dry gas to minimize the formation of condensate and extend the life of the image sensor and lens. The image sensor enclosure shall be equipped with a sunshield that prevents sunlight from directly entering the lens. The sunshield shall include a lip to prevent water and ice from entering the image sensor field of view. The image sensor enclosure shall include a thermostatically controlled heater to assure proper operation of the lens iris at low temperatures and prevent moisture condensation on the optical face plate of the enclosure. When mounted outdoors in the enclosure, the image sensor shall operate satisfactorily within the environmental conditions specified in NEMA Standards TS-1 Section 2.

The image sensor shall be powered by 120-VAC 60-Hz, or 220-VAC 50-Hz power. The image sensor enclosure shall be equipped with separate weather tight connectors at the rear of the enclosure for power and video to allow diagnostic viewing of video at the image sensor while the image sensor is mounted and powered-up on a mast arm or pole. The video signal output by the image sensor shall be in RS 170 format. The video signal shall be fully isolated from the image sensor enclosure and power cabling.

**907-649.03--Construction Requirements.**

**907-649.03.01--Installation.** The supplier of the video detection system shall furnish complete documentation describing installation requirements within 10 days of placement of order. Such documentation shall include descriptions of all required cabling, mounting hardware, image sensors, cabinet space, and power. Suitable video cabling and connections shall be installed to ensure the video signal losses between each image sensor and the control unit do not exceed 3 db. All power cabling shall be installed to comply with the National Electrical Code, as well as local electrical codes.

The Contractor shall provide factory certified technicians to set detector zones initially and to adjust the zones as required should the project have multiple phases in the traffic control plan.

**907-649.03.02--Contractor Training.** Installation of the video detection system shall be as

recommended by the supplier and performed by a Contractor trained and certified by the supplier. Where time does not reasonably permit training of the installing Contractor, a supplier factory representative shall supervise and assist a Contractor during installation of the video detection system.

**907-649.03.03--User Training.** The supplier of the video detection system shall provide an eight-hour operations and maintenance training class with suitable documentation for up to five persons selected by the Department. The operations and maintenance class shall be scheduled at a mutually acceptable time and location.

**907-649.03.04--Warranty.** The video detection system shall be warranted to be free of defects in materials and workmanship for a period of two years from date of shipment. During the warranty period, the supplier shall repair or replace with new or refurbished material, at no additional cost to the State, any product containing a warranty defect, provided the product is returned postage-paid by the Department to the supplier's factory or authorized warranty site. Products repaired or replaced under warranty by the supplier shall be returned with transportation prepaid by the supplier.

During the warranty period, technical support shall be available from the supplier via telephone within four hours of the time a call is made by the Department, and this support shall be available from factory certified personnel. During the warranty period, updates and corrections to control unit software shall be made available to the Department by the supplier at no additional cost.

**907-649.03.05--Maintenance and Technical Support.** The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the video detection system. Spare parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale of said spare parts.

The suppliers shall maintain an ongoing program of technical support for the video detection system. This technical support shall be available via telephone or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale of said technical support services.

**907-649.04--Method of Measurement.** Video vehicle detection will be measured as a unit quantity per each for each type of video vehicle detection system installation. Measurement shall include controller modifications, hardware, connectors, wiring, software, incidentals, and all other items necessary for a complete and operable unit in place and accepted.

**907-649.05--Basis of Payment.** Video vehicle detection, measured as prescribed above, will be paid for at the contract unit price per each video vehicle detection system installed, which price shall be full compensation for furnishing all materials, for installing, connecting and testing, and for all equipment, labor, tools, and incidentals necessary to complete the work.

Payment will be made under:



907-649-A: Video Vehicle Detection, New Installation, \_\_\_ Cameras - per each

907-649-B: Video Vehicle Detection, Existing Installation, \_\_\_ Cameras - per each

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO, 907-657-1M

CODE: (SP)

DATE: 02/13/2007

SUBJECT: Fiber Optic Cable

Section 907-657, Fiber Optic Cable, is hereby added to the Supplemental Specifications to the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

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

**907-657.01--Description.** All outside plant trunk cables shall be stranded loose tube design. Drop cables shall be central core or stranded loose tube design. The cable configurations shall be dictated by the particular communication path, data rate, and distance of the optical path. Three possible designs are all multimode fiber, all single mode fiber cable, or a hybrid design containing multimode and single-mode fiber. In the case of a stranded loose tube hybrid design, single-mode and multimode fibers shall not occupy the same buffer tube. Single-mode tubes shall be placed in the first available tubes in the cable, i.e., blue, orange, etc., based on cable design, multimode tubes shall follow.

**907-657.02--Materials.** The fiber optic cable shall meet the requirements of Subsection 907-722.21, the United States Department of Agriculture Rural Utilities Services (RUS) 7 CFR1755.900 and the ANSI/ICEA Standard for Fiber Optic Outside Plant Communications Cable, ANSI/ICEA S-87-640-1992.

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

### **907-657.03--Construction Requirements.**

**907-657.03.1--Pre-Terminated Drop Cable Assemblies.** These assemblies shall be employed when connecting a camera, controller, VMS or other device the main cable when mid-span access techniques are used.

Cable used for Drop cable assemblies shall conform to Subsection 907-722.21.4.

Assemblies shall be factory assembled and terminated on one end with ceramic ferrule, ST compatible, heat cured epoxy connectors with an operational temperature of -40°C to +70°C. Each connector shall have a minimum of a 25-mm strain relief boot.

Insertion loss for each connector shall not exceed 0.30 dB for both single mode and multi-mode assemblies. Return loss for single mode connectors shall be >-45dB. Each assembly is to be fully tested and those test results placed on a test tag for each assembly. Each assembly is to be individually packaged within a box or reel, with the submitted manufacturer's part number

marked on the outside of the package.

Individual 250- $\mu$ m coated fibers shall be up-jacketed to three millimeters using fan-out tubing. This tubing shall contain a 900- $\mu$ m Teflon inner tube, aramid yam strength members, and an outer jacket. The fan-out tubing shall be secured to the cable in an hard epoxy plug transition. Length of the individual legs shall be a minimum of one meter with the length difference between the shortest and longest legs of the assembly being no more than 50 millimeters.

**907-657.03.2--System Configuration.**

**907-657.03.2.1--Drop and Insert Applications.** Signal from the MDOT Traffic Management Center (TMC) to local controllers, cameras, and/or variable message signs will be conveyed via the backbone and branch cables in a closed loop configuration. At each controller, the applicable fibers will be routed in and out of the applicable housing via a mid-span access splice point and a pre-terminated drop cable. Only fibers required for the drop and insert shall be cut, no other fibers in the cable shall be cut without the direction of the Engineer.

Fibers shall be routed to equipment via an Aerial Drop Cable Kit, PN DK111-B0431-XXX or Undergrade Drop Cable Kit, PN DK211-B0431-XXX or approved equal; where XXX denotes length of drop pigtail in feet. Drop Kit shall contain appropriate closure, splice tray, splice protection, and a preterminated drop cable of specified length, and shall also include a 12-port fiber distribution cabinet and appropriate interconnect adapters and jumpers. Shall also include a 12 port fiber distribution cabinet and appropriate interconnect adapters and jumpers. Splicing shall be fusion or mechanical. Splice loss in either case shall be 0.25 dB, measured in one direction only with an OTDR at 850 nm for multi-mode and 1310 for single-mode.

The type of mechanical splice, if used, shall be approved by the Engineer prior to use. The splice shall be stored in a splice organizer/tray specifically designed for the mechanical splice used. Fusion splices shall be protected using heat shrink protective sleeves and stored in a splice organizer/tray specifically designed for the protection device.

**907-657.03.2.2--Point-to-Point Applications.** Signal to the local controllers will be conveyed by routing fiber optic cable directly between equipment with an appropriate fiber count cable and be directly terminated with field installable ST compatible connectors. At the end points, the cable shall be terminated via one of two methods.

For Direct Connect Applications. The fiber optic cable shall be terminated using a Spider Fan-out Kit. Any substitute termination method must have at a minimum 600 millimeters of 3-mm fan-out material jacketing for fiber protection, provide for central member strain relief, provide for antirotation and pull out. Field installable ST compatible connectors will be terminated on the fan-out and connected directly to the transmission equipment.

For Cross Connect Applications Inside Controller Cabinets. The fiber optic cable shall be terminated using a 900- $\mu$ m fanout modular design for the fiber count being terminated. The non-metallic fan-out shall attach directly to the buffer tube and transition the 250- $\mu$ m coated fibers into the fan-out tubing. The fanout shall be housed in a wall mount distribution cabinet equipped

with the appropriate number of adapters. The fibers shall be connected to the transmission equipment via ST/ST fiber optic patch cables. This hardware scheme shall also be utilized for wall mount applications.

**907-657.03.2.3--Fiber Optic RS-232 Communications.**

Fiber Optic Data Transceiver. The transceiver(s) shall be located at the TMC and communicate directly with the traffic controllers in the closed loop system(s). They shall be rack mountable. The fiber optic data transceiver shall be compatible with the internal modem(s) installed internally in each traffic controller. The unit shall provide transmission of RS-232 data signals over standard 62.5/125 multi-mode fiber optic cable. Transceiver shall have L.E.D. receive and transmit indicators. Transceivers shall be capable of being linked together in either repeater or star configurations. Unit shall provide for transmission distances of up to 3962 meters without requiring manual adjustments or line attenuators. All printed circuit boards shall be manufactured from Mil Grade specification circuit board material. Housing shall be all metal construction with all connections identified with silk screened labels. Unit shall be available in both rack mount and surface mount versions. Units shall have solid state limiters on all power lines which shall provide for automatic reset. Rack mount configurations shall have an internal D.C. power supply and a short circuit in one unit shall not affect the operation of other units powered from the common power supply. Rack mount units shall be hot swappable with no risk of damage to other units during replacement. Transceiver shall be U.L. listed and shall have the following features and characteristics:

- Data Rate ..... DC-64 kbaud - NRZ
- Wavelength ..... 850 nm
- Number of Fibers ..... 2 fibers
- Size, mm ..... 105 x 90 x 25; Rack Mount: 195 x 125 x 25
- Operating Temperature ..... -20°C to +71°C
- Bit Error Rate ..... 1 in E+9
- Operating Mode ..... Asynchronous, simplex, or full duplex
- Input/Output Level ..... ±3.75 to ±12 volts
- Input/Output Impedance .... Per RS-232 specification
- Optical Budget ..... 14 dB; less 4 dB for 50/125 fiber
- Output Power ..... 25 W @ -16 dBm
- Input Sensitivity ..... 1 W @ -30 dBm

Connectors:

- Optical ..... AT&T type ST
- RS-232 ..... Female plug with screw clamps or adapter to DB-9 connector

Power:

- Rack ..... 115 VAC ±10%, 60 Hz PS-12 DC
- Stand-alone ..... 115 VAC ±10%, 60 Hz with module or +9 to 15 VDC @ 100mA

Fiber Optic Rack Mount Enclosure. The fiber optic rack shall be compatible with the RS-232 transceivers above. The unit shall provide 14 mounting slots for standard 25-mm wide rack mount version fiber optic modules. It shall have heavy duty construction and shall mount in industry standard equipment racks that accommodate 475-mm wide rack mount panels. Unit shall include a 20 VAC C.T. transformer power supply. All compatible rack mount fiber optic modules shall have an internal D.C. power supply with solid state limiters which provide automatic reset and a short circuit in one unit shall not affect operation of other units powered from the common power supply. Modules shall be hot swappable with no risk of damage to other units during replacement. Rack shall be U.L. listed and shall have the following features and characteristics:

Input Voltage .....	115 VAC - line cord
Power Supply .....	20 VAC C.T. @ 2.8A
Number of Module Slots .....	14 slots
Size, inches .....	19.0 W x 5.2 H x 7.0 D
Operating Temperature .....	-20°C to +71°C
Fusing .....	1 A slow-blow; plug-in modules individually fused

**907-657.03.3--Fiber Optic Patch Cables - Jumpers.** Any patch cords used for system configuration shall be compatible with fiber types and connectors specified herein. Multimode patch cords shall be orange in color. Single-mode patch cords shall be yellow in color. Jacketing material for both shall conform to the appropriate NEC requirement for the environment in which installed. All cordage shall incorporate a 900-µm buffered fiber, aramid yam strength members, and an outer jacket. Patch cords may be simplex or duplex, depending on the application. Multimode cordage attenuation shall be 3.75 dB/km @ 850 nm, 1.5 dB/km @ 1300 nm; for single-mode fibers shall be 1.0 dB/km @ 1310 nm, 0.75 dB/kin @ 1550.

**907-657.03.4--Fiber Optic Connectors.** All connectors used in the communication system shall be ST compatible, ceramic ferrule connectors. Factory terminated connectors shall be heat cured epoxy type with a maximum measured loss of 0.30 dB; Field installable connectors may be heat cured epoxy or no polish cleave and crimp technology, with a maximum measured loss of 0.50 dB per mated pair. The operating temperature of all connectors in the system shall be -40°C to +71°C with no more than a 0.20 dB change across the temperature range.

**907-657.03.5--Fiber Optic Closures.**

**907-657.03.5.1--OSP Closures for Aerial, Pole Mount, Pedestal, and Hand Hold Environments.** OSP closures for aerial, pole mount, pedestal, and hand hold shall be capable of accepting up to six cables in a butt splice. The closures shall be capable of storing up to eight 225-mm lengths of expressed buffer tubes.

Assembly shall be accomplished without power supplies, torches, drill kits or any special tools. Reentry shall require no additional materials. Sealing shall be accomplished by enclosing the splices in a polypropylene dome that is clamped together with a stainless steel latch and sealed with an O-ring.

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

Splice case shall be non-filled, non encapsulate to prevent water intrusion and shall allow re-entry without any special tools. The closure shall be capable of preventing a 3-meter water head from intruding into the splice compartment for a period of seven days. Testing of the closure is to be accomplished by the placing of the closure into a pressure vessel and filling the vessel with tap water to cover the closure. Continuous pressure shall be applied to the vessel to maintain a hydrostatic head equivalent to three meters on the closure and cable. This process shall be continued for seven days. Remove the closure, open to check for the presence of water. Any intrusion of water in the compartment containing the splices constitutes a failure. It is the responsibility of the Contractor to insure that the water immersion test has been performed by the manufacturer or an independent testing laboratory, and the appropriate documentation has been submitted to the Engineer.

**907-657.03.5.2--OSP Closures for Buried Environments.** OSP closures for buried applications will incorporate the following features.

Splice case must handle up to four cables. A butt adapter, if applicable could be used to increase capacity to eight cables.

Splice case shall be non-filled, non encapsulate to prevent water intrusion, and shall allow re-entry without any special tools. The closure shall be capable of preventing a 3-meter water head from intruding into the splice compartment for a period of seven days. Testing of the closure is to be accomplished by the placing of the closure into a pressure vessel and filling the vessel with tap water to cover the closure. Apply continuous pressure to the vessel to maintain a hydrostatic head equivalent to three meters on the closure and cable. This process shall be continued for seven days. Remove the closure, open to check for the presence of water. Any intrusion of water in the compartment containing the splices constitutes a failure. It is the responsibility of the Contractor to insure that the water immersion test has been performed by the manufacturer or an independent testing laboratory, and the appropriate documentation has been submitted to the Engineer.

The closure shall be capable of accommodating splice organizers which accept mechanical, single fiber fusion, or multi fiber splices. The closure shall have provisions for storing fiber splices and unspliced fiber/buffer tubes. The closure shall hold a minimum of two (2) splice trays to a maximum of 15 splice trays with each tray housing up to 24 splices. The closure shall be UL rated.

Closure re-entry and subsequent reassembly shall not require specialized tools or equipment.

For compression testing, the closure shall not deform more than 10% in its largest cross-sectional dimension when subjected to a uniformly distributed load of 1762 newtons at -17°C and +38°C. The test shall be performed after stabilizing at the required temperature for a minimum of two hours. It shall consist of placing an assembled closure between two flat parallel surfaces, with the longest, closure dimension parallel to the surfaces. The mass shall be placed on the upper

surface for minimum of 15 minutes. The measurement shall then be taken with the mass in place. It is the responsibility of the Contractor to insure that the compressions test has been performed by the manufacturer or an independent testing laboratory, and the appropriate documentation has been submitted to the Engineer.

**907-657.03.6--Fiber Optic Termination Hardware.** For cross connect applications inside controller cabinets, the fiber optic cable shall be terminated using a 900- $\mu$ m fanout modular design for the fiber count being terminated. The non-metallic fan-out shall attach directly to the buffer tube and transition the 250- $\mu$ m coated fibers into the fan-out tubing. The fanout shall be housed in a wall mount distribution cabinet equipped with the appropriate number of adapters. The fibers shall be connected to the transmission equipment via ST/ST fiber optic patch cables. This hardware scheme shall also be utilized for wall mount applications.

For rack mount applications, the fiber optic cable shall be terminated using a 900- $\mu$ m fanout modular design for the fiber count being terminated. The non-metallic fan-out shall attach directly to the buffer tube and transition the 250- $\mu$ m coated fibers into the fan-out tubing. The fan-outs shall be housed in a fiber distribution center sized for 50% growth based on the initial installation. Appropriate panels for ST adapters shall be included based on the population of the fiber cable installed. If fusion or mechanical pigtail splicing is used for termination points, a splice housing with appropriate 900- $\mu$ m pigtails and splice trays shall be used in conjunction with the fiber distribution center.

**907-657.03.7--Installation.** All fiber optic components will be installed in accordance with the manufacturer's instructions. All necessary interconnections, services, and adjustments required for a complete and operable data transmission system shall be provided. All pole attachments, service loops, and conduit risers will be placed to minimize the possibility of damage as well as to facilitate future expansion or modernization.

Cable between controllers shall be lashed to a 6-mm EHS messenger with stainless steel lashing wire for aerial installations. The installation will be accomplished in accordance with accepted OSP construction practices. Precautions shall be taken to insure the installation specifications for the cable are not exceeded, i.e. tension, minimum bend radius. The cable shall be marked with an orange weatherproof identifying tag at each pole location, with print "Caution, Fiber Optic Cable".

The cable shall be installed in continuous runs as indicated on the plans. Splices shall be allowed only at drop points. Only those fibers necessary to complete the communication path shall be spliced, i.e. mid-span access. All other fibers in the cable(s) shall be left undisturbed; with a minimum of five feet of buffer tube coiled inside the closure.

Sufficient slack shall be left at each drop point to enable access of the cable components and splicing to occur on the ground typical two times the strand height plus 4.5 meters. For undergrade installations, the following minimum slack requirements shall apply: 15 meters at the pull box or controller location for mid-spans, 4.5 meters for point to point applications for each cable. For aerial slack storage at splice points, a radius controlling device, commonly referred to as a SNO-SHOE shall be used for securing resulting cable slack at aerial splice points and shall

be mounted directly to the strand.

For aerial cable runs exceeding 6-pole spans between splice points as indicated on the plans, two opposing SNO-SHOES shall be placed on the span 15 meters apart to provide for a 30-meter service loop for future drops and for slack for repair and pole relocations.

Drop cable shall be routed to the controller cabinets via conduit risers as illustrated in the plans. The cable entrance shall be sealed to prevent water ingress.

The minimum requirement for fiber protection outside a fiber optic enclosure in ALL cases shall be 3-mm fanout tubing, containing a hollow 900- $\mu$ m tube, aramid strength members and an outer jacket, and shall be secured to the cable sheath.

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

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

Warning tape shall be placed 300 millimeters above the cable not to deviate  $\pm$ 450 millimeters from the centerline of the optical cable. Warning tape shall be at least two inches wide and colored orange.

Permanent above-ground markers shall be placed at line-of-sight intervals. Each marker shall be visible from each adjacent marker but separated by no more than 300 meters.

### **907-657.03.8--Testing and Documentation.**

**907-657.03.8.1--OTDR Testing.** Prior to the installation, the Contractor shall perform on-site on the reel testing. The Contractor is required to test all fibers in each reel of cable prior to installation. This testing is for both continuity and attenuation. The tests shall be conducted at 850 nm for multimode fibers and at 1310 nm for single mode fibers. The testing shall be performed using an Optical Time Domain Reflectometer (OTDR) via a "pigtail" splice. The resultant OTDR trace(s) shall reflect overall length and attenuation expressed in db/km. All test results shall be within +3.0% of factory supplied attenuation measurements for multi-mode fibers and single mode fibers. Testing shall be done in one direction only. Hard copy or disk based with applicable software OTDR traces for the testing shall be supplied to the Engineer by the Contractor prior to installation of cables. The Contractor may opt to accept factory results and install cable at the Contractor's risk. In either case, On-the-reel test results shall be provided to the Engineer for each cable installed.

Following installation, each section of the installed cable shall be tested for continuity and attenuation as indicated above. The traces shall demonstrate that no change in transmission characteristics has occurred during installation and that any splices meet the requirements herein. This testing can be done in conjunction with the End-to-End testing described below. The traces



shall be included in the documentation package provided at the conclusion of the contract.

**907-657.03.8.2--Attenuation Testing.** Only connectorized spans will be tested for final End-to-End attenuation or power loss. The testing shall be performed at 850 nm and 1300 nm for multimode and at 1300 nm for single-mode fibers. The testing shall be conducted using "hand-held" optical test sets and shall be conducted using a two jumper reference. The testing shall be in one direction only. The results shall be tabulated and be include in the documentation package provided at the conclusion of the contract. Overall loss for each link shall not exceed the cumulative specified losses of the components in the link. EXAMPLE: At 850 nm, a 1-km link with two splices and a connector on each end shall not exceed 5.0 dB ((3.5dB + 0.25dB + 0.25dB + 0.5dB +0.5dB))

At the conclusion of the contract, two copies of system documentation package shall be provided. It shall include at a minimum:

Post installation OTDR traces for each fiber.

End-to-End Attenuation measurement for each fiber.

A splice plan showing the location and configuration of any splices in the system as well as how the transmission scheme is set up.

Reference manuals for equipment provided.

**907-657.03.9--Training and Equipment.** After the installation is complete the Contractor shall provide formal classroom training and "hands-on" operations training for proper operation and maintenance of the fiber optic plant. The training shall be conducted by a trainer with a minimum of four years of experience in training personnel on the operation and maintenance of fiber optic systems. The training shall be provided for up to six personnel designated by the Engineer and shall be a minimum of one day in duration. All training materials shall be provided by the Contractor.

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

Fiber optic drop cable and video drop cable will be measured by the meter from the trunk line to the controller cabinet.

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

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

Payment will be made under:

907-657-A: Fiber Optic Cable, No. of fibers, No. / mode - per meter

907-657-B: Fiber Optic Drop Cable, No. / mode - per meter

907-657-C: Fiber Optic Video Drop Cable, No. / mode - per meter

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-668-1M**

**CODE (SP)**

**DATE: 05/18/2001**

**SUBJECT: Traffic Signal Conduit (Underground), Roll Pipe**

Section 908-668, Traffic Signal Conduit, of the Supplemental Specifications to the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction as amended by this special provision is applicable for Roll Pipe Conduit Only:

907-668.01--Description. This work consists of furnishing conduit of specified materials and dimensions and installing them in accordance with these specifications and the details shown on the plans, or directed. It shall include the furnishing and installing related hardware to be used in the construction of traffic signals.

907-668.02--Materials.

907-668.02.1--General. The Roll Pipe Conduit (duct) shall be manufactured from virgin high density polyethylene. The addition of clean rework material is permissible if generated in the manufacturer's own plant. The ducts shall be supplied with either smooth, ribbed or corrugated walls and available in a multitude of colors. The duct shall be capable of being coiled (reeled) in continuous lengths, transported, stored outdoors and subsequently uncoiled for installation without affecting its properties or performance.

907-668.02.2--Environmental Performance. The duct shall perform in underground and above-ground installations in an ambient temperature range of minus 0°C to 55°C without degradation of material properties. The duct specified for aerial installation shall be ultraviolet light-resistant. The duct shall be capable of being bent to a minimum (supported) radius of 10 diameters.

907-668.02.3--Workmanship. The duct shall be free of visible cracks, holes or other physical defects that would degrade its performance. It shall be as uniform as practicable in respect to overall dimensions, color, density, thickness, etc.

907-668.02.4--Color. The duct for exposed areas (black) shall have a minimum of carbon black. All other colors shall have a UV light stabilizer which will protect the duct for a minimum of 12 months in direct sunlight.

907-668.02.5--Markings. The duct shall have a durable identification showing the name or trademark of the manufacturer, duct size (i.e., 50-mm IPS SCH-80), date and reference code. Duct for electrical cable should have "CAUTION – HIGH VOLTAGE" printed at regular intervals.

907-668.02.6--Capping. The open ends of each length of reeled duct shall be sealed by plastic caps to prevent the entrance of dirt and/or moisture.

907-668.02.7--Dimensions. The dimensions of the duct shall be as per ASTM Designation: D 3035. Wall thickness to be identified by either SDR, SIDR or SCH ratings. The manufacturer should advise the wall thickness required for a particular installation and/or conditions.

907-668.02.8--Pull Rope and Lubricant. The duct should be equipped with a factory installed rope or tape and prelubed to aid in the installation of cable. The rope can be provided with varying strengths as needed for a particular installation.

907-668.02.9--Couplings. Couplings should be available to quickly connect the duct and should be air and water-tight (i.e., Duct-Lok type couplings in either plastic or aluminum, depending on type of installation).

907-668.02.10--Packaging. The duct should be provided on lightweight metal reels in maximum lengths possible with no joints or splices. This will keep coupling requirements to a minimum. Special reel sizes and/or dimensions should be available for special installations.

907-668.02.11--Corrosion. The duct shall be resistant to most harsh chemicals and/or protected against degradation due to oxidation or general corrosion.

907-668.02.12--Installation. The duct shall be capable of being direct buried by plowing or trenching with no special consideration to using selective backfill. The duct shall also be capable of being encased in concrete pulled through a drilled hole.

907-668.02.13--Tests on Resins and Finished Duct. Lab tests on resins and finished products shall include, but are not limited to, the following:

ASTM-D3035	Polyethylene Plastic Pipe Based on Controlled Outside Diameter
ASTM-D1238	Flow Rates of Thermoplastics by Extrusion Plastometer
ASTM-D1505	Density of Plastics by the Density Gradient Technique
ASTM-D1693	Environmental Stress Crack Resistance (ESCR) of Polyethylene Pipe
ASTM-D1599	Short-Time Hydraulic Failure Pressure of Plastic Pipe
ASTM-D638	Tensile Properties of Plastics
ASTM-D2444	Impact Resistance of Plastic Pipe by Means of Tup.
ASTM-D2412	External Loading of Plastic Pipe

907-668.03--Construction Requirements. The duct shall be installed in accordance with the plans and the requirements of Subsection 908-668.03.

907-668.04--Method of Measurement. Signal conduit of the type specified will be measured by the meter computed horizontally along the signal conduit, complete in place; the measurement being made from the point of beginning to the point of termination of all sections of conduit, in trench, under roadways, or supported on structures. No extra length will be allowed for risers to controller cabinets, pole handholes, or pull boxes.

907-668.05--Basis of Payment. This item will be paid for at the contract unit price per meter for the various types and sizes of conduit, completed and accepted; which price shall be full compensation for furnishing, laying, placing, boring, connecting, cleaning and testing all conduit, and incidental materials; for all excavating, backfilling necessary for installations; final cleaning up; and for all labor, equipment, tools and incidentals necessary to complete the work.

Payment will be made under:

907-668-E: Traffic Signal Conduit (Type) (Roll Pipe) (Size) - per meter

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-700-2M

CODE: (IS)

| DATE: 4/1/99

| SUBJECT: Use of Crushed Reclaimed Concrete Pavement as an Aggregate  
Component of All Hot Mix Asphalt Pavements

Division 700, Materials and Tests, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-700.01--General.

Remove the period at the end of the second paragraph of Subsection 700.01 on page 700-1 and add the following:

| , except that crushed reclaimed concrete pavement meeting the requirements of Section 703, as amended, may be used to produce aggregate for all hot mix asphalt pavements.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-701-2M**

**CODE: (IS)**

**DATE: 01/12/2006**

**SUBJECT: Portland Cement**

Section 701, Hydraulic Cement, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

**907-701.02--Portland Cement.** Delete the third paragraph of Subsection 701.02 on page 701-1 and 701-2, and substitute the following:

When Portland cement concrete or cement for 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 (FA), ground granulated blast furnace slag (GGBFS), or metakaolin shall be as follows:

**Cementitious Materials for Soluble Sulfate Conditions**

Sulfate Exposure	Water-soluble sulfate (SO <sub>4</sub> ) in soil, % by mass	Sulfate (SO <sub>4</sub> ) in water, ppm	Cementitious material required
Moderate and Seawater	0.10 - 0.20	150 - 1500	Type II <sup>*,**</sup> cement, or Type I cement with one of the following replacements of cement: 25% Class F, FA, or 50% GGBFS, or 10% metakaolin
Severe	0.20 - 2.00	1500 - 10,000	Type II <sup>*</sup> cement with one of the following replacements of cement: 25% Class F, FA, or 50% GGBFS, or 10% metakaolin

\* Type I cement with a maximum 8% tricalcium aluminate may be used in lieu of Type II cement.

\*\* Class F, FA or GGBFS may be added as a replacement for Portland cement in accordance the proportions as listed in this table.

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

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-702-7M**

**CODE: (IS)**

**DATE: 2/17/98**

**SUBJECT: Petroleum Asphalt Cement and Polymer Modified Petroleum Asphalt Cement**

Section 702, Bituminous Materials, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in toto Subsection 702.05, Petroleum Asphalt Cement, on page 702-2 and substitute the following:

**907-702.05--Petroleum Asphalt Cement.** Asphalt cement shall be homogeneous, free of water and shall not foam when heated to a temperature of 175°C.

Except for use in hot mix asphalt, asphalt cement of the grade specified shall conform to the requirements of 702.12, Table I or II.

Bituminous material conforming to AASHTO Designation: MP 1, Grade PG 58-28 may be used in lieu of petroleum asphalt cement, Grade AC-10.

The bituminous material used in all types of hot mix asphalt shall conform to AASHTO Designation: MP 1, Grade PG 67-22 as modified in the table below, except when otherwise specified or when polymer modified hot mix asphalt are specified.

SPECIFICATIONS FOR PERFORMANCE GRADED ASPHALT BINDERS NOT ADDRESSED BY AASHTO MP 1		
	Grade	
Property	PG 67-22	
	Specifications	Test Method
	Original Binder	
Flash Point Temperature	minimum 230°C	AASHTO T 48
Rotational Viscosity	maximum 3 Pa•s @ 135°C	AASHTO TP 48
Dynamic Shear, G*/sin δ	minimum 1.00 kPa @ 67°C	AASHTO TP 5
	Rolling Thin Film Oven Residue (AASHTO T 240)	
Mass Loss (RTFO)	maximum 1.00 %	AASHTO T 240
Dynamic Shear, G*/sin δ	minimum 2.20 kPa @ 67°C	AASHTO TP 5
	Pressure Aging Vessel Residue (AASHTO PP1)	
Dynamic Shear, G*/sin δ	maximum 5000 kPa @ 25°C	AASHTO TP 5
Creep Stiffness, S	maximum 300 MPa @ -12°C	AASHTO TP 1
m-value	minimum 0.300 @ -12°C	AASHTO TP 1



The bituminous material used in polymer modified hot mix asphalt shall conform to AASHTO Designation: MP 1, Grade PG 76-22.

Asphalt cement Grade PG 76-22 shall be the product resulting from the addition of a polymer modifier to a PG 67-22 or lower grade asphalt cement and not by some other refining technique. The polymer shall meet the requirements of Subsection 907-702.08.3.

**907-702.08--Asphalt Additives.**

At the end of Subsection 702.08.2 on page 702-4, add the following:

**907-702.08.3--Polymers.** The polymer shall be a Styrene Butadiene Styrene (SBS), a Styrene Butadiene Rubber (SBR) or an equal approved by the Engineer. The polymer shall be thoroughly blended with the asphalt cement at the refinery or terminal prior to shipment to the hot-mix plant. Producers of polymer modified asphalt cement must be listed on MDOT's Approved List of Suppliers of Polymer Modified Asphalt Cement. The producer of the polymer modified asphalt cement shall perform or have performed by an approved laboratory all tests contained in AASHTO Designation: MP 1 on a lot basis. A lot shall consist of one (1) refinery or terminal storage tank not to exceed 852 000 liters. The Producer shall furnish two copies of a certified test report (one copy for the Contractor and one copy for the Department Representative) with each shipment. A third copy of the certified test report shall be mailed to the State Materials Engineer. The certified test report shall contain the following:

- (1) Test results showing complete conformance to AASHTO Designation: MP 1
- (2) Type and percentage of polymer added
- (3) A statement certifying that the transport vehicle was inspected prior to loading and was found to be empty
- (4) A statement certifying that the shipment conforms to Mississippi Department of Transportation specifications for the grade of polymer modified asphalt cement specified
- (5) A copy of the temperature-viscosity curve attached to the certified test report.

Crumb rubber used as a polymer modifier shall meet the following additional requirements:

Crumb rubber shall be produced by ambient grinding methods. The rubber shall be sufficiently dry so as to be free flowing and to prevent foaming when mixed with asphalt cement. The rubber shall be free of contaminants including fabric, metal, minerals and other non-rubber substances. Up to four percent (by mass of rubber) of talc (such as magnesium silicate or calcium carbonate) may be added to prevent sticking and caking of the particles.

The crumb rubber shall be tested in accordance with AASHTO Designation: T 27 with the following exceptions: a 100-gram sample size and up to 25% dusting agent (talc). Rubber balls may also be used to aid in the sieving of finely ground rubber. The resulting rubber gradation shall meet the gradation limits shown herein.

**Gradations of Crumb Rubber**

**Type A**

<u>Sieve Size</u>	<u>% Passing</u>
2.00 mm	--
850 µm	--
600 µm	--
425 µm	100
250 µm	98-100
180 µm	90-100
150 µm	70-90
75 µm	35-60

The specific gravity of the rubber shall be  $1.15 \pm 0.05$  when tested in accordance with ASTM Designation: D 297, pycnometer method.

The moisture content shall be determined in accordance with AASHTO Designation: T 255, with the exception that the oven temperature shall be  $60 \pm 3^\circ\text{C}$  and the mass of the sample shall be 50 grams. The moisture content shall not exceed 0.75% by mass.

No more than 0.01% metal particles shall be detected when thoroughly passing a magnet through a 50-gram sample.

The chemical composition of the crumb rubber shall be determined in accordance with ASTM Designation: D 297 and shall meet the following requirements:

Acetone Extract	- Maximum 25 percent
Rubber Hydrocarbon Content	- 40 to 55 percent
Ash Content	- Maximum 10 percent
Carbon Black Content	- 20 to 40 percent
Natural Rubber	- 16 to 34 percent

Crumb rubber meeting these specifications shall be supplied in moisture resistant packaging such as either disposal bags or other appropriate bulk containers. Each container or bag of crumb rubber shall be labeled with the manufacturer's designation for the rubber and the specific type, maximum nominal size, mass and manufacturer's batch or lot designation.

The producer of the polymer modified asphalt cement shall furnish the State Materials Engineer one copy of the manufacturer's certified test results covering each shipment of crumb rubber. These reports shall indicate the results of tests required by this specification. The reports shall also include a certification that the material conforms with the specifications, and shall be identified by manufacturer's batch or lot number.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-703-4M

CODE: (IS)

DATE: 06/10/97

SUBJECT: Aggregates for Hot Mix Asphalt (HMA)

Section 703, Aggregates, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete Subsections 703.04, 703.05, 703.09, 703.10, 703.11, and 703.12 in toto, and substitute -

**907-703.06--Aggregates for Hot Mix Asphalt.**

**907-703.06.1--General.**

**907-703.06.1.1--Coarse Aggregates.**

Coarse aggregate, material retained on the 2.36 mm sieve, shall be either crushed stone, slag, or granite; shell; expanded clay; expanded shale; crushed gravel or combination thereof. Crushed reclaimed concrete pavement shall also be allowed as a coarse aggregate provided it meets the quality requirements below and the final product produced therefrom meets all other specification requirements.

The percentage of wear shall not exceed 45 when tested in accordance with AASHTO Designation: T 96.

When tested in accordance with AASHTO Designation: T 19, the dry rodded unit mass of all aggregates except expanded clay and shale shall not be less than 1120 kilograms per cubic meter, and crushed slag used in the surface course shall have a dry rodded unit mass of not more than 1440 kilograms per cubic meter except the maximum unit mass is waived for chromium slag.

The coarse aggregate shall be free of any injurious coating which will prohibit the adherence of asphalt to the aggregate particles.

The percentage of loss shall not exceed 20 when tested for soundness using magnesium sulfate in accordance with AASHTO T 104.

Shell shall consist of durable, washed particles of dead clam or dead reef oyster shell, or combination thereof. The shell shall be free of objectionable matter such as sticks, mud, clay lumps, cannery or live shell, or other deleterious matter. Not more than five percent by mass of the dredged material shall pass the 75  $\mu$ m sieve; any such material shall be dispersed throughout the mass.

**907-703.06.1.2--Fine Aggregates.**

Fine aggregate, material passing the 2.36 mm sieve, shall consist of hard, durable particles of naturally disintegrated rock, or material obtained by crushing stone, slag, gravel, reclaimed concrete pavement, or combinations thereof. Fine aggregate produce from crushing reclaimed concrete pavement shall be manufactured from material meeting the quality requirements for coarse aggregate.

Fine aggregate shall be free of lumps of clay and friable particles, loam, organic or foreign matter.

Fine aggregate produced by crushing stone, slag or gravel shall be manufactured from aggregate meeting the quality requirements of coarse aggregate.

Individual sources of fine aggregate shall be non-plastic when tested in accordance with AASHTO Designation: T 90.

Natural deposits of fine aggregate shall contain no more than 10 percent by mass passing the 75  $\mu\text{m}$  sieve when tested in accordance with AASHTO Designation: T 11.

Individual fine aggregate components shall be of such consistency and dryness that a uniform and even flow from the cold feed will be provided.

Fly ash shall not be used in hot mix asphalt pavements.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-703-5M

CODE: (SP)

DATE: 01/22/2007

SUBJECT: Aggregate for Crushed Stone Courses

Section 703, Aggregates, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is amended as follows:

**907-703.04--Aggregate for Crushed Stone Courses.** Delete in toto Subsection 703.04 on page 703-5 & 6, and substitute the following.

**907-703.04--Aggregate for Crushed Stone Courses.**

**907-703.04.1--Coarse Aggregate.** Coarse aggregate, defined as material retained on the 2.36-mm sieve, shall be either crushed stone, slag, granite, shell; gravel, or combination thereof. When the required properties of the mix are not obtained with uncrushed gravel, the addition of crushed gravel or other approved material is required.

Individual sources of coarse aggregate shall conform to the following quality requirements:

Percentage of wear shall not exceed 45 when tested in accordance with AASHTO Designation: T 96.

The coarse aggregate shall have a minimum dry rodded unit mass of 1120 kilograms per cubic meter when tested in accordance with AASHTO Designation: T 19.

**907-703.04.2--Fine Aggregate.** Fine aggregate, defined as material passing the 2.36-mm sieve, shall consist of hard, durable particles of naturally disintegrated rock, or material obtained by crushing stone, slag, gravel or combination thereof. Fine aggregate, when manufactured, shall be manufactured from material meeting the quality requirements for coarse aggregate, and it shall be free of lumps of clay and friable particles, loam, organic or foreign matter.

Individual sources of fine aggregate shall be non-plastic when tested in accordance with AASHTO Designation: T 90.

Natural deposits of fine aggregate shall contain no more than 10 percent by mass passing the 75 $\mu$ m sieve when tested in accordance with AASHTO Designation: T 11.

Fly ash, when used as a portion of the fine aggregate to obtain desired properties of the mixture, shall be from an approved source.

When the fine aggregate is combined with other aggregate fractions in the proper proportion, the resultant mixture shall meet the requirements of the job-mix formula.

**907-703.04.3--Gradation.** Aggregates for crushed stone shall be well-graded from coarse to fine, and shall conform to the following:

**TABLE OF SIZES AND GRADATION OF CRUSHED STONE AGGREGATE**

Sieve Size	Percent Passing By Mass					
	Size 100-mm to 50-mm	Size 50-mm to 20-mm	Size 20-mm and Down	Size No. 610	Size No. 825	Size No. 825 B
100 mm	100					
90 mm	90 - 100					
63 mm	25 - 60	100				
50 mm		95 - 100			100	100
37.5 mm	0 - 5			100	90 - 100	90 - 100
25.0 mm		35 - 70	100	90 - 100	75 - 98	75 - 98
19.0 mm				70 - 100		
12.5 mm				62 - 90	60 - 85	60 - 85
9.5 mm			50 - 85	50 - 80		
4.75 mm		0 - 5	35 - 65	40 - 65	40 - 65	40 - 70
2.36 mm					28 - 54	28 - 54
2.00 mm			25 - 50			
1.18 mm					19 - 42	19 - 42
425 µm			15 - 30	12 - 26		
300 µm					9 - 27	9 - 32
75 µm			5 - 15	5 - 12	4 - 18	4 - 18

**907-703.07.2--Gradation.** At the end of Subsection 703.07.2 on page 703-9, add the following.

**Granular Material, Crushed Stone**

Sieve Size	Percent Passing by Mass
37.5 mm	100
25.0 mm	90 - 100
12.5 mm	62 - 90
4.75 mm	30 - 65
2.00 mm	15 - 40
75 µm	3 - 16

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-708-4M

CODE: (IS)

DATE: 01/12/2006

SUBJECT: Non-Metal Drainage Structures

Section 708, Non-Metal Structures and Cattlepasses, of the 1996 Metric 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 708-1, change “20 percent” to “25 %”.

**907-708.02.3.2--Marking**. Delete the second sentence of Subsection 708.02.3.2 on page 708-2, 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.

**907-708.22.2--Exceptions to AASHTO**. Delete the sixth paragraph of Subsection 708.22.2 on page 708-10.



## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-710-1M**

**CODE: (IS)**

**DATE: 5/7/96**

**SUBJECT: Fast Drying Acrylic Waterborne Traffic Paint**

Section 710, Paint, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Construction is hereby amended as follows:

907-710.02.2.1--Composition of Formulation. Delete the first paragraph of Subsection 710.02.2.1 on pages 710-2 and insert the following:

The composition of the paint shall be left to the discretion of the manufacturer as long as the finished product is composed of 100% acrylic emulsion, Rohm and Haas Emulsion E-2706 or Dow Chemical Emulsion DT 211NA, and meets the requirements of this specification and of any applicable Federal, State or Local regulations for products of this type.

907-710.02.2.1.3--Non-Volatile Vehicle. Delete the first sentence of Subsection 710.02.2.1.3 on pages 710-2 and substitute the following:

The non-volatile portion of the vehicle shall be composed of a 100% acrylic polymer (Rohm and Haas Emulsion E-2706 or Dow Chemical Emulsion DT 211NA) and shall not be less than 44% by mass.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-711-1M**

**CODE: (IS)**

**DATE: 5/8/96**

**SUBJECT: Reinforcing Steel**

Section 711, Reinforcement and Wire Rope, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is amended as follows:

**907-711.02--Reinforcing Steel.**

Delete the first paragraph of Subsection 711.02.1 on page 711-1 and substitute:

**907-711.02.1--Bar Reinforcement.** Bar reinforcement shall conform to the requirements of AASHTO Designation: M 31M, as herein amended, (Grade 420) for billet steel bars.

AASHTO Designation: M 31M is hereby amended as follows:

***1. Sections 1.2 and 1.3, and Note 2 shall be replaced in their entirety with:***

**1.2** Bars are of three minimum yield levels: namely, 300, 420, and 520 MPa, designated as Grades 300, 420, and 520, respectively.

**1.3** Hot-rolled plain rounds, in sizes up to and including 50.8 mm in diameter in coils or cut lengths, when specified for dowels, spirals, and structural ties or supports, shall be furnished under the specification in Grades 300, 420, and 520 (Note 2). For bending properties, test provisions of the nearest nominal diameter deformed bar size shall apply. Those requirements providing for deformations and marking shall not be applicable.

**NOTE 2** - The mass for plain rounds smaller than 9.5 mm in diameter shall be computed on the basis of the size in ASTM A 510M.

***2. Note 4 shall be replaced in its entirety with:***

**NOTE 4** - A typical ordering description is as follows: 19 metric tons, deformed and plain billet-steel bars for concrete reinforcement, No. 25, 18.3 m long, deformed, Grade 420 in secured lifts, to AASHTO M 31M as herein amended. Certified mill test reports are required.

***3. Section 11.1 shall be replaced in its entirety by:***

**11.1** The permissible variation in mass shall not exceed 6 percent under nominal mass, except for bars smaller than 9.5 mm plain round, the permissible variation in mass shall be computed on the basis of the permissible variation in diameter in Specification ASTM A 510M. Reinforcing bars are evaluated on the basis of nominal mass. In no case shall the overmass of any bar be the cause for rejection.

4. *Section 14 shall be replaced in its entirety with:*

**14. NUMBER OF TESTS**

**14.1** For bar sizes No. 10 to 36, inclusive, one tension test and one bend test shall be made of the largest size rolled from each heat. If, however, material from one heat differs by three or more designation numbers, one tension and one bend test shall be made from both the highest and lowest designation number of the deformed bars rolled.

**14.2** In the case of No. 43 and 57 bars, one tension test and one bend test shall be made of each size from each heat.

5. *Replace Section 20.3.4 in its entirety with:*

**20.3.4 Minimum Yield Designation** - For Grade 420 bars, either the number 4 or a single continuous longitudinal line through at least 5 spaces offset from the center of the bar side. For Grade 520 bars, either the number 5 or two continuous longitudinal lines through at least 5 spaces offset each direction from the center of the bar. (No marking designation for Grade 300 bars.)

6. *Table 1 shall be replaced in its entirety by:*

**TABLE 1 Deformed Bar Designation Numbers, Nominal Masses, Nominal Dimensions, and Deformation Requirements**

Bar Designation No. <sup>B</sup>	Nominal Mass, kg/m	Nominal Dimensions <sup>A</sup>			Deformation Requirements, mm		
		Diameter, mm	Cross-Sectional Area, mm <sup>2</sup>	Perimeter, mm	Maximum Average Spacing	Minimum Average Height	Maximum Gap (Chord of 12.5% of Nominal Perimeter)
10	0.560	9.5	71	29.9	6.7	0.38	3.6
13	0.994	12.7	129	39.9	8.9	0.51	4.9
16	1.552	15.9	199	49.9	11.1	0.71	6.1
19	2.235	19.1	284	59.8	13.3	0.97	7.3
22	3.042	22.2	387	69.8	15.5	1.12	8.5
25	3.973	25.4	510	79.8	17.8	1.27	9.7
29	5.060	28.7	645	90.0	20.1	1.42	10.9
32	6.404	32.3	819	101.3	22.6	1.63	12.4
36	7.907	35.8	1006	112.5	25.1	1.80	13.7
43	11.38	43.0	1452	135.1	30.1	2.16	16.5
57	20.24	57.3	2581	180.1	40.1	2.59	21.9

<sup>A</sup> The nominal dimensions of a deformed bar are equivalent to those of a plain round bar having the same mass per meter as the deformed bar.

<sup>B</sup> Bar designation numbers approximate the number of millimeters of the nominal diameter of the bar.

7. *Table 2 shall be replaced in its entirety with:*

**TABLE 2 Tensile Requirements**

	Grade 300 <sup>A</sup>	Grade 420	Grade 520 <sup>B</sup>
Tensile strength, min, MPa	500	620	690
Yield strength, min, MPa	300	420	520
Elongation in 203.2 mm, min, %:			
Bar Designation No.			
10	11	9	-
13, 16	12	9	-
19	12	9	7
22, 25	-	8	7
29, 32, 36	-	7	6
43, 57	-	7	6

<sup>A</sup> Grade 300 bars are furnished only in sizes 10 through 19.

<sup>B</sup> Grade 520 bars are furnished only in sizes 19 through 57.

8. *Table 3 shall be replaced in its entirety with:*

**TABLE 3 Bend Test Requirements**

Bar Designation No.	Pin Diameter for Bend Tests <sup>A</sup>		
	Grade 300	Grade 420	Grade 520
10,13,16	$3\frac{1}{2}d$ <sup>B</sup>	$3\frac{1}{2}d$	-
19	$5d$	$5d$	$5d$
22, 25	-	$5d$	$5d$
29, 32, 36	-	$7d$	$7d$
43, 57 (90°)	-	$9d$	$9d$

<sup>A</sup> Test bends 180° unless noted otherwise.

<sup>B</sup>  $d$  = nominal diameter of specimen.

Delete the Standard Reinforcing Bars table on page 711-1 and substitute:

### STANDARD REINFORCING BARS

Bar Designation No.(2)	Nominal Mass, kg/m	Nominal Dimensions (1)		
		Diameter, mm	Cross-Sectional Area, mm <sup>2</sup>	Perimeter, mm
10	0.560	9.5	71	29.9
13	0.994	12.7	129	39.9
16	1.552	15.9	199	49.9
19	2.235	19.1	284	59.8
22	3.042	22.2	387	69.8
25	3.973	25.4	510	79.8
29	5.060	28.7	645	90.0
32	6.404	32.3	819	101.3
36	7.907	35.8	1006	112.5
43	11.38	43.0	1452	135.1
57	20.24	57.3	2581	180.1

Delete in toto Subsection 711.02.2 on page 711-2 and substitute:

**907-711.02.2--Bar Mats.** Bar mats for concrete pavement reinforcement shall be Grade 420 billet steel, AASHTO Designation: M 31M, as amended by special provision, and shall conform to the requirements of AASHTO Designation: M 54.

Delete the first paragraph of Subsection 711.02.4 on page 711-2 and substitute:

**907-711.02.4--Dowel Bars and Marginal Bars.** Unless otherwise indicated, dowel bars used to span transverse joints and marginal bars shall be plain round bars. They shall be Grade 420 billet steel, AASHTO Designation: M 31M, as amended by special provision.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-711-2M**

**CODE: (SP)**

**DATE: 4/24/96**

**SUBJECT: Reinforcing Steel**

Section 711, Reinforcement and Wire Rope, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is amended as follows and the contents of which are applicable ONLY when using non-metric size reinforcement.

Delete in toto Subsection 711.02 beginning on page 711-1, and substitute the following:

**907-711.02--Reinforcing Steel.**

**907-711.02.1--Bar Reinforcement.** Bar reinforcement shall conform to the requirements of AASHTO Designation: M 31 (Grade 60) for billet steel bars.

Bars shall be fabricated as indicated on the plans; shall be cold-bent, unless otherwise permitted, to the shapes shown on the plans or as directed; and shall be bent prior to being wholly or partially embedded in concrete.

Unless otherwise authorized or provided on the plans, bends or hooks shall not be fabricated to a smaller diameter than that indicated for the bend test.

Rail steel bars shall be bent to the specified shapes at the mill or fabricating plant.

The areas and weights to be used in calculations for the various size reinforcing bars shall be as follows:

### STANDARD REINFORCING BAR

Numbers*	Weight Lbs.per Foot	Nominal Dimension ----- Round Sections		
		Diameter (Inches)	Cross-Sectional Area (Sq. In.)	Perimeter (Inches)
2 (1)	.167	.250	.05	.786
3	.376	.375	.11	1.178
4	.668	.500	.20	1.571
5	1.043	.625	.31	1.963
6	1.502	.750	.44	2.356
7	2.044	.875	.60	2.749
8	2.670	1.000	.79	3.142
9 (2)	3.400	1.128	1.00	3.544
10 (2)	4.303	1.270	1.27	3.990
11 (2)	5.313	1.410	1.56	4.430
14	7.65	1.693	2.25	5.32
18	13.60	2.257	4.00	7.09

\* The bar numbers are based on the number of 1/8 inch increments in the nominal diameter of the bar, except as noted in (2) below.

- (1) No. 2 bars in plain rounds only.
- (2) Nos. 9, 10, and 11 are round bars and equivalent in weight and nominal cross-sectional area to the old type 1 inch, 1 1/8 inch, and 1 1/4 inch square bars, respectively.

**907-711.02.2--Bar Mats.** Bar mats for concrete pavement reinforcement shall be Grade 60 billet steel, AASHTO Designation: M 31, and shall conform to the requirements of AASHTO Designation: M 54.

**907-711.02.3--Steel Wire Fabric.** Steel wire fabric shall conform to the requirements of AASHTO Designation: M 55 or AASHTO Designation: M 221.

**907-711.02.4--Dowel Bars and Marginal Bars.** Unless otherwise indicated, dowel bars used to span transverse joints and marginal bars shall be plain round bars. They shall be Grade 60 billet steel, AASHTO Designation: M 31.

Before installation, each dowel bar shall be painted with one coat of industrial grade zinc base primer, epoxy or other approved rust inhibitive primers.

One half of each dowel bar shall be greased with a heavy grease equivalent to 600W or cup grease to prevent bonding with concrete. The greased end is to be inserted into the dowel bar sleeve described in the following paragraph.

Sleeves for dowel bars shall be metal or plastic of an approved design, mortar-tight, of sufficient strength to prevent collapse, and at least two inches in length. A suitable stop shall be provided in the sleeve to permit movement of the dowel bar within the sleeve of not less than the thickness of the expansion filler used.

Dowel bars shall be free from burring or other deformations restricting slippage in the concrete.

**907-711.02.5--Tie Bars.** Unless otherwise indicated, tie bars used to span longitudinal joints shall be deformed bars, billet steel, meeting the requirements set forth in 907-711.02.1.

**907-711.02.6--Cold-Drawn Steel Wire.** Cold-drawn steel wire shall conform to the requirements of AASHTO Designation: M 32.

**907-711.02.7--Supports for Bar Reinforcement.** Metal bar supports shall be fabricated from stainless steel wire conforming to ASTM Designation: A 493 (16% chromium minimum) or cold-drawn wire with a minimum of 1/2 inch of the height of the leg above the form surface protected by one of the following:

- Plastic coating conforming to CRSI Standards.
- Galvanized, conforming to ASTM Designation: A 153, Class D.
- Stainless steel conforming to ASTM Designation: A 493. (16% chromium minimum)
- Other protective coating as approved by the Engineer.
- Other supports as approved by the Engineer may be used.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-711-5M

CODE: (IS)

DATE: 09/26/2005

SUBJECT: Synthetic Structural Fiber Reinforcement

Section 711, Reinforcement and Wire Rope, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

After Subsection 711.03.4.3 on page 711-5, add the following:

907-711.04--Synthetic Structural Fiber. Synthetic structural fibers shall meet the requirements of ASTM Designation: C 1116, Section 4.1.3, Note 3. The fibers shall be monofilament made of polypropylene or polypropylene/polyethylene blend meeting the following conditions:

<u>Property</u>	<u>Results</u>
Length, minimum .....	38 millimeters
Aspect Ratio (length / equivalent diameter) .....	90
Breaking tenacity, minimum * .....	530 mN/tex
(Tensile Strength, minimum .....	482 MPa)
Chord modulus, minimum * .....	980 cN/tex
(Modulus of Elasticity, minimum .....	8963 MPa)

\* When tested in accordance with ASTM Designation: D 3822

The dosage rate for the fibers shall be a minimum of 1.78 kilograms per cubic meter (1.78 kg / m<sup>3</sup>). The dosage rate for the fibers when used in pile encasements shall be a minimum of 2.97 kilograms per cubic meter (2.97 kg / m<sup>3</sup>).

The manufacturer shall furnish the Engineer three copies of the certified test report(s) showing results of all required tests, and certification that the material meets the specifications.



## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-714-9M

CODE: (IS)

DATE: 12/11/2003

SUBJECT: Geotextiles

Section 714, Miscellaneous Materials, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in toto Subsection 714.13 beginning on page 714-15 and substitute the following:

### 907-714.13--Geotextiles.

**907-714.13.1--General.** Unless specified otherwise, the [geotextile](#) may be woven or non-woven. The fibers used in the manufacture of the geotextiles and the threads used in joining geotextiles by sewing, shall consist of long-chain synthetic polymers, composed of at least 95% by mass polyolefins, polyesters, or polyamides. They shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including selvages. The [geotextile](#) shall be mildew resistant and inert to biological degradation and naturally encountered chemicals, alkalines and acids. [Geotextile](#) which is not protected from sunlight after installation shall contain stabilizers and/or inhibitors to make it resistant to deterioration from direct sunlight, ultraviolet rays, and heat.

The edges of the [geotextile](#) shall be selvaged or finished in such a manner to prevent the outer yarn of filaments from raveling. The [geotextile](#) shall be free of defects or flaws, which affect the required physical properties.

[Geotextile](#) for silt fence shall be manufactured in widths of not less than 900 millimeters, and [geotextile](#) for other applications shall be manufactured in widths of not less than 1800 millimeters. Sheets of [geotextile](#) may be sewn or bonded together at the factory or other approved locations, but deviation from the physical requirements will not be permitted.

Acceptance testing, [except geotextile for silt fence](#), will be conducted with [geotextile](#) samples from each lot shipped to the project, as per [Subsection 907-714.13.10](#).

**907-714.13.2--Geotextile for Silt Fence.** The [geotextile](#) shall conform to the physical requirements of Type I or II as shown in Table I. Unless a specific type is specified in the plans or contract documents, the Contractor may select Type I or II.

**907-714.13.2.1--Woven Wire Backing.** Except as provided herein, silt fence shall be reinforced with a woven wire backing. The wire backing shall be at least 800 millimeters high and have no less than six horizontal wires. Vertical wires shall be spaced no more than 300 millimeters apart. The top and bottom wire shall be 3.43-mm diameter or larger. All other wire shall be no smaller than 2.51-mm diameter.

**907-714.13.2.2--Posts.** Wood or steel posts may be used. Wood posts shall have a minimum diameter of 75 millimeters and length of 1.5 meters and shall be straight enough to provide a fence without noticeable misalignment. Steel tee posts shall be 1.5 meters long, approximately 35 millimeters wide, 35 millimeters deep, and three millimeters thick with a nominal mass of 1.98 kilograms per meter prior to fabrication. The posts shall have projections, notches or holes for fastening the wire backing or [geotextile](#) to the posts.

**907-714.13.2.3--Staples.** Staples shall be made of 3.76-mm wire with a minimum length of 25 millimeters after bending.

**907-714.13.3--Geotextile for Subsurface Drainage.** For normal drainage applications, the [geotextile](#) shall conform to the physical requirements of Type III as shown in Table I.

**907-714.13.3.1--Geotextile for Edge Drains.** The [geotextile](#) shall conform to the physical requirements of Type V as shown in Table I, except the AOS for the woven [geotextile](#) shall have a range of 0.15 mm to 0.43 mm.

**907-714.13.4--Geotextile Underseal.** The [geotextile](#) shall be non-woven polyester or polypropylene, which is satisfactory for use with asphalt cements. Unless otherwise specified, the [geotextile](#) shall conform to the physical requirements of Type IV in Table I.

**907-714.13.5--Geotextile for Use Under Riprap.** Unless otherwise specified, the [geotextile](#) shall conform to the physical requirements of Type V in Table I. The requirements for grab tensile, puncture, and trapezoidal tear strengths may be reduced 50 percent when the [geotextile](#) is cushioned from rock placement by a 150-mm minimum layer of sand.

**907-714.13.6--Geotextile Stabilization.** The [geotextile](#) shall meet the physical requirements as shown in Table I for the Type specified in the plans or contract documents.

**907-714.13.7--Securing Pins.** Steel pins used for anchoring the [geotextile](#) shall be five millimeters in diameter, minimum length of 375 millimeters, pointed at one end and fabricated with a head for retaining a steel washer. A minimum 38-mm diameter washer shall be installed on each pin.

**907-714.13.8--Identification.** Each roll of [geotextile](#) or container shall be visibly labeled with the name of the manufacturer, type of [geotextile](#) or trade name, lot number, and quantity of material.

**907-714.13.9--Shipment and Storage.** During shipment and storage, the [geotextile](#) shall be protected from direct sunlight, ultraviolet rays, temperatures greater than 60°C, mud, dirt, dust, and debris. The [geotextile](#) shall be wrapped and maintained in a heavy-duty protective covering, including ends of roll.

**907-714.13.10--Certification, Acceptance Sampling and Testing.** The Contractor shall furnish to the Engineer three copies of the manufacturer's certification that each lot in a shipment

complies with the requirements of the contract. Certification of geotextile for silt fence shall include a material conformance statement, as per Subsection 700.05.1, that the geotextile meets or exceeds the minimum average roll values specified in Table 1. All fabric, steel pins, washers, fence posts, woven wire and wire staples are subject to approval by the Engineer upon delivery to the work site.

**Acceptance testing shall be completed prior to incorporating in the work.** Acceptance of geotextile to be used in the work, except geotextile for silt fence, will be based on the results of tests performed by the Department on verification samples submitted from the project. The Engineer will select one roll at random, from each lot in a shipment, for sampling. A sample extending full width of the randomly selected roll and containing at least five square meters of geotextile will be obtained and submitted by the Engineer. The sample shall be provided at no additional cost to the State.

**TABLE I  
GEOTEXTILES**

Type Designation	I <sup>a</sup>	II <sup>a</sup>	III	IV	V	VI		VII		
Application	Sediment Control		Drainage	Paving	Separation & Drainage	Separation, Stabilization & Reinforcement				
Physical Properties										Test Method
Grab Strength (N)	225	400	490	400	900	W 1250	NW 800	W 2000	NW 1250	ASTM D 4632
Elongation %	----	50% max @ 200 N	20% min	50% min @ break	50% min	50% max min	50%	50% max min	50%	ASTM D 4632
Seam Strength (N)	----	----	310	----	800	1070	710	1780	1070	ASTM D 4632
Puncture Strength (N)	----	----	175	----	360	490	330	800	510	ASTM D 4883
Trapezoidal Tear (N)	----	----	175	----	360	445	310	665	445	ASTM D 4533
Asphalt Retention (L/m <sup>2</sup> )	----	----	----	0.9	----	----	----	----	----	ASTM D 6140
Permittivity (Sec <sup>-1</sup> )	0.05	0.05	0.5	----	0.15	0.2	0.2	0.2	0.2	ASTM D 4491
AOS Woven (mm)	0.15 - 0.84	0.15 - 0.84	0.15 - 0.43	----	0.21 - 0.43	0.15 - 0.21	----	0.15 - 0.21	----	ASTM D 4751
AOS Non-Woven (mm)	<0.84	<0.84	<0.43	----	<0.43	----	<0.43	----	<0.43	ASTM D 4751
Tensile Strength after UV (% Retained)	70@500 Hr.	70 @ 500 Hr.	70 @ 150 Hr.	----	70 @ 150 Hr.	70 @ 150 Hr.		70 @ 150 Hr.		ASTM D 4355
Melting Point (°C)	----	----	----	165°F	----	----		----		ASTM D 276

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S. P. No. 907-714-9M -- Cont'd.

a. All property values, with the exception of apparent opening size (AOS), represent minimum average roll values in the weakest principal direction. Values for AOS represent the maximum average roll values.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-714-10M

CODE: (IS)

DATE: 01/23/2006

SUBJECT: Miscellaneous Materials

Section 714, Miscellaneous Materials, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

After the fifth line of Subsection 714.05.2 on page 714-4, add the following:

The available alkalis, as Na<sub>2</sub>O, not to exceed 1.5 percent

Delete in toto Subsection 714.06 on page no. 714-4 and substitute:

### **907-714.06--Ground Granulated Blast Furnace Slag (GGBFS).**

**907-714.06.1--General.** GGBFS shall be obtained from an approved source. 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 Standard Operating Procedures.

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 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, subbases or bases.

In addition to these requirements, GGBFS shall meet the following specific requirements.

**907-714.06.2--Specific Requirements.** GGBFS shall meet the requirements of AASHTO Designation: M302, Grade 120. GGBFS shall contain no chlorides.

Delete Subsection 714.07 on page 714-4 and substitute the following:

### **907-714.07--Other Cementitious Materials.**

#### **907-714.07.1--Metakaolin.**

**907-714.07.1.1--General.** Metakaolin shall only be used to bring the cementitious materials in Portland cement concrete and cement for soil stabilization into compliance with the requirements for cementitious materials exposed to soluble sulfate conditions. The approval of each metakaolin source shall be on a case by case basis as determined by the State Materials Engineer. Source approval will be based on, but not limited to, review of the proposed source's quality control program, production history, certified test reports, certification of shipment from the supplier, and job control sampling and testing requirements.

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.

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.

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. In addition to these requirements, metakaolin shall meet the following specific requirements.

**907-714.07.1.2--Specific Requirements.** Metakaolin shall meet the requirements of AASHTO Designation: M 295 Class N with the following modifications:

1. The sum of  $\text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{Fe}_2\text{O}_3$  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 alkalis, as equivalent  $\text{Na}_2\text{O}$ , 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%.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-716-1M

CODE: (IS)

DATE: 05/16/2002

SUBJECT: Miscellaneous Materials

Section 716, Miscellaneous Metals, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete Subsection 716.04 on page 716-1 and substitute the following:

**907-716.04--Gray Iron Casings.** Gray iron castings shall conform to AASHTO Designation: M 105. Class 30B shall be furnished unless otherwise specified. For testing purposes a lot size shall be defined as the lesser of either a total of 15 875 kilograms or one week's production for the Department. The test bars shall be made from a melt of iron used in production of units for the Department. The test bar length shall be a minimum of 400 millimeters.

**907-716.07--Copper Bearings and Sheet Copper.**

Delete Subsection 716.07.1 on page 716-1 and substitute the following:

**907-716.07.1--Rolled Copper-Alloy Bearings and Expansion Plates.** Rolled copper-alloy bearings and expansion plates shall conform to ASTM Designation: B 100. Alloy UNS No. C51000 shall be furnished unless otherwise specified.

Delete Subsections 716.10 on page 716-2 and substitute the following:

**907-716.10--Lead Plates, Pipes, Etc.** Lead used for plates, pipes, etc. shall conform to ASTM Designation: B 29, Grade: Pure Lead.

**907-716.14--Bar Grates.**

Delete Subsection 716.14.1 starting on page 716-2 and substitute the following:

**907-716.14.1--Material Requirements.** Plain round steel bars and strap bars shall conform to the following requirements:

B-9 Grates and Bar Grates:	AASHTO Designation M 270M, Grade 250.
MI, GI, & SS-3 Grates:	AASHTO Designation: M270M, Grade 345W, or as specified in the plans.

Delete the last paragraph of Subsection 716.14.2 on page 716-3 and substitute the following:

After fabrication, the bar grate shall be coated with an approved commercial quality coating designed for coating steel castings and fabricated units. The State Materials Engineer shall approve the coating material prior to application.



# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. 907-720-3M

CODE: (IS)

| DATE: 10/7/97

SUBJECT: High Performance Cold Plastic Pavement Markings

Section 720, Pavement Marking Materials, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction, is hereby amended as follows:

At the end of Section 720 on page 720-15, add the following:

| 907-720.07--High Performance Cold Plastic Pavement Markings.

| 907-720.07.1--General. The preformed high performance pavement markings shall consist of white or yellow films with ceramic beads incorporated to provide immediate and continuing retroreflection.

| Preformed high performance cold plastic pavement markings shall be listed on the Department's list of "Approved Sources of Materials" for Preformed High Performance Profile Cold Plastic Pavement Marking Tape. Prior to use, the Contractor shall furnish the Engineer three copies of the manufacturer's certification for each shipment stating that the material furnished is of the same composition as that originally approved by the Department and that the material has not been changed or altered in any way.

The preformed pavement markings shall be capable of being adhered to the pavement by a pre-coated pressure sensitive adhesive. A primer may be used to precondition the pavement surface. When a primer is specified by the manufacturer, it shall be installed as recommended by the manufacturer at no additional cost to the State. The preformed pavement markings shall conform to pavement contours by the action of traffic. After application, the markings shall be immediately ready for traffic. A representative of the manufacturer shall be present to identify proper solvents and/or primers (where necessary) to be applied at the time of application, to identify all equipment necessary for proper application, and to make recommendations for application that will assure effective product performance.

907-720.07.2--Classification. The preformed pavement markings shall be highly durable retroreflective pliant polymer materials designed for longitudinal markings subjected to high traffic volumes.

907-720.07.3--Requirements.

907-720.07.3.1--Composition. The retroreflective pliant polymer pavement marking film shall consist of a mixture of high quality polymeric materials, pigments and glass beads distributed throughout its base cross-sectional area, with a reflective layer of ceramic beads bonded to a durable polyurethane top surface. The surface shall have approximately 50% ( $\pm 15\%$ ) of the surface area raised and presenting a near vertical face (angle of  $0^\circ$  to  $60^\circ$ ) to traffic from any direction. The channels between the raised areas shall be substantially free of exposed beads or particles.

907-720.07.3.2--Retroreflectance. The white and yellow markings shall have the following initial minimum retroreflectance values as measured in accordance with the testing procedures of

ASTM Designation: D 4061. The photometric quantity to be measured shall be coefficient of retroreflected luminance ( $R_L$ ), and shall be expressed as millicandelas per square meter per lux ( $\text{mcd}/\text{m}^2/\text{lx}$ ).

**INITIAL MINIMUM RETROREFLECTANCE VALUES**

	White		Yellow	
	$86.0^\circ$	$86.5^\circ$ *	$86.0^\circ$	$86.5^\circ$ *
Entrance Angle	$86.0^\circ$	$86.5^\circ$ *	$86.0^\circ$	$86.5^\circ$ *
Observation Angle	$0.2^\circ$	$1.0^\circ$	$0.2^\circ$	$1.0^\circ$
Retroreflected Luminance $R_L$ ( $\text{mcd}/\text{m}^2/\text{lx}$ )	1100	700	800	500

\* These retroreflectance values are based on dark room photometric readings per ASTM D 4061. The Ecolux™ Retroreflectometer measurement geometry is an  $86.5^\circ$  entrance angle and a  $1.0^\circ$  observation angle.

907-720.07.3.3--Glass Beads. The size and quality of the beads shall be such that the performance requirements for the retroreflective pliant polymer shall be met.

907-720.07.3.3.1--Index of Refraction. All ceramic beads bonded to the polyurethane coated patterned surface of the material shall have a minimum index of refraction of 1.70 when tested using the liquid oil immersion method. The glass beads mixed into the pliant polymer shall have a minimum index of refraction of 1.5 when tested by the liquid oil immersion method.

**TESTING PROCEDURE FOR  
REFRACTIVE INDEX OF BEADS BY LIQUID IMMERSION**

**EQUIPMENT REQUIRED:**

- A. Microscope (minimum 100X magnification).
- B. Light Source - preferably sodium light or other monochromatic source, but not absolutely essential.
- C. Refractive Index Liquids.\*
- D. Microscope Slide and Slide Cover.
- E. Mortar and Pestle.

\* Available from R.P. Cargille Laboratories, Inc., Cedar Grove, NJ.

**PROCEDURE:**

- A. Using the mortar and pestle, crush a few representative beads and place a few of these crushed particles on a microscope slide.
- B. Place a drop of a refractive index liquid, with an index as close to that of the glass as can be estimated, on the crushed bead particles.

- C. Cover the slide with a microscope slide cover and view the crushed particles by transmitted light normal to the slide surface (illuminated from the bottom).
- D. Adjust the microscope mirror to allow a minimum light intensity for viewing. This is important when sodium light is not used.
- E. Bring a relatively flat and transparent particle into focus.
- F. By slightly raising and lowering the microscope tube, look for one or both of the following:
  - 1. Becke Line - This light line will appear to move either into the particle or away from it. In general, when the microscope tube is raised, the line will move toward the material of higher refractive index; when the microscope tube is lowered, the line will move toward the material of lower index.
  - 2. Variation in Particle Brightness - When raising the microscope tube from sharp focus, the particle will appear to get brighter or darker than the surrounding field. If it becomes brighter, the glass has a higher refractive index than the liquid. If it becomes darker, the glass has a lower refractive index than the liquid. In both cases, the opposite will be true when the microscope tube is lowered.
- G. This test can be used to confirm that the beads are above or below a specified index. It can also be used to give an accurate determination of the index ( $\pm 0.001$ ). This is done by using several refractive index liquids until a match or near match of indices occurs. The index of the glass will equal that of the liquid when no Becke line and no variation in bead brightness can be observed.

907-720.07.3.3.2--Acid Resistance. The beads shall show resistance to corrosion of their surface after exposure to a 1% solution (by mass) of sulfuric acid. The 1% acid solution shall be made by adding 5.7 mL of concentrated acid into 1000 mL of distilled water. **CAUTION:** Always add the concentrated acid into the water, not the reverse. The test shall be performed as follows:

Take a 25-mm x 50-mm sample, adhere it to the bottom of a glass tray and place just enough acid solution to completely immerse the sample. Cover the tray with a piece of glass to prevent evaporation and allow the sample to be exposed for 24 hours under these conditions. Then decant the acid solution (do not rinse, touch, or otherwise disturb the bead surfaces) and dry the sample while adhered to the glass tray in a 66°C oven for approximately 15 minutes.

Microscopic examination (20X) shall show no more than 15% of the beads having a formation of a very distinct opaque white (corroded) layer on their entire surface.

907-720.07.3.4--Color. The preformed pavement markings shall consist of white and yellow films with pigments selected and blended to conform to standard highway colors.

907-720.07.3.5--Skid Resistance. The patterned surface of the retroreflective pliant polymer shall provide an initial average skid resistance value of 45 BPN when tested according to ASTM Designation: E 303, except values will be taken at downweb and at a 45 degree angle from downweb. These two values will then be averaged to find the skid resistance of the patterned surface.

907-720.07.3.6--Patchability. The pavement marking material shall be capable of use for patching worn areas of the same type in accordance with manufacturer's instructions.

907-720.07.3.7--Thickness. The patterned material, without adhesive, shall have a minimum caliper of 1.651 mm at the thickest portion of the patterned cross-section and a minimum caliper of 0.508 mm at the thinnest portion of the cross-section.

907-720.07.4--Effective Performance Life. The film, when applied according to the recommendations of the manufacturer, shall provide a neat, durable marking that will not flow or distort due to temperature if the pavement surface remains stable. The film shall be weather resistant and, through normal traffic wear, shall show no appreciable fading, lifting or shrinkage throughout the useful life of the marking, and shall show no significant tearing, roll back, or other signs of poor adhesion.

907-720.07.5--Manufacturer's Certification. The Contractor shall furnish the Engineer three copies of the manufacturer's certification stating that each lot in a shipment complies with the requirements of the contract.

907-720.07.6--Acceptance Sampling and Testing. Final acceptance of each lot will be based on results of tests performed by the Department on verification samples submitted from each lot shipped to the project. The Engineer will select one sample at random from each lot in the shipment for testing. A sample extending full width of the randomly selected sample and 1.5 meters in length will be obtained and submitted by the Engineer. The sample from each shipment shall be provided at no cost to the State.

907-720.07.7--Warranty. All manufacturer's standard warranties and guarantees on high performance cold plastic pavement marking material, which are provided as customary trade practice, shall be delivered to the Engineer at the final inspection. All warranties and guarantees shall be made out to the Mississippi Department of Transportation.

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

| SPECIAL PROVISION NO. **907-720-5M**

CODE: (IS)

| DATE: **9/21/99**

SUBJECT: **Glass Beads**

Section 720, Pavement Marking Materials, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

| 907-720.01.3--Packaging and Marking. Delete the first sentence of Subsection 720.01.3 on page 720-1 and substitute the following:

The beads shall be packaged in 22.7-kilogram or 25-kilogram moisture proofed bags.

| 907-720.02--Thermoplastic Pavement Markings. Delete the second paragraph of Subsection 720.02 on page 720-2 and substitute the following:

Additional beads by the drop-on method shall be applied at a rate of not less than 45 grams of beads per meter of 150-mm stripe.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENT TO SPECIAL PROVISION NO. 907-720-8M**

**DATE: 10/1/2001**

**SUBJECT: Reflective Pavement Markers and Adhesive for Pavement Markers**

Delete the first paragraph of Special Provision 907-720-8M and substitute the following:

Section 720, Pavement Marking Materials, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-720-8M

CODE: (IS)

DATE: 7/07/2000

SUBJECT: Reflective Pavement Markers and Adhesive for Pavement Markers

Section 720, Pavement Marking Materials, of the 1990 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete Subsection 720.03.3.1.1 on page 720-3 and substitute:

**907-720.03.3.2--Marker Type B through G.** The Contractor shall furnish the Engineer three copies of the manufacturer's certification covering all pavement markers shipped to the project. The certification shall state that the raised pavement markers meet the applicable requirements of ASTM Designation: D 4280.

The pavement markers will be tentatively accepted on the basis of the manufacturer's certification. The Department reserves the right to obtain check samples as deemed necessary for determining compliance with this specification.

Change the number of Subsection 720.03.3.2 on page 720-3 to **'907-720.03.3.3'**.

Delete Subsection 720.03.4.2 on page 720-4 and substitute the following:

**907-720.03.4.2--Tolerances.**

**907-720.03.4.2.1--Tolerances For Marker Type A, H & I.** At least 90% of the original sampling of each lot of markers shall pass all tests with the following exceptions:

When less than 90% but more than 70% pass all tests, a resample of that lot will be allowed at the request of the Contractor. When less than 70% of the markers from the original sample comply with the requirements, the lot represented by the samples will be rejected and no resample will be allowed. Tolerances for resamples shall be in the same ratio as specified above.

At least two of three specimens, randomly selected for strength, water absorption, and autoclave, and also the averages of the three, must pass the stated requirements; otherwise, three additional markers selected at random shall be tested, and if the same conditions for passing are not met for these latter three markers, the lot will be rejected.

**907-720.03.4.2.2--Tolerances For Marker Type B through G.** At least 90% of the check sampling of each lot of markers shall pass the strength test required in the Physical Properties Section of ASTM Designation: D 4280 with the following exceptions:

When less than 90% but more than 70% pass the test, a resample of that lot will be allowed at the request of the Contractor. When less than 70% of the markers from the check sample comply with the requirements, the lot represented by the samples will be rejected and no resample will be allowed. Tolerances for resamples shall be in the same ratio as specified above.

Delete in toto Subsection 720.03.6 on pages 720-6 & 720-7 and substitute the following:

**907-720.03.6--Reflective Pavement Markers.** Reflective pavement markers shall be listed on the Department's "Approved Sources of Materials" and shall meet the applicable requirements of ASTM Designation: D 4280.



## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-721-5M**

**CODE: (SP)**

**DATE: 1/09/2001**

**SUBJECT: Flexible Delineators**

Section 721, Materials for Signing, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in toto Subsection 721.07.1 beginning on page 721-12 and substitute the following:

**907-721.07.1--Flexible Posts.** Flexible posts for delineators shall be composed of high impact fiberglass reinforced composite, engineering blended plastic or thermosetting polymers which is reasonably unaffected by long term U.V. exposure.

Flexible posts for delineators must be one from the Department's "Approved Sources of Materials". Prior to use, the Contractor shall furnish the Engineer three copies of the manufacturer's certification for each shipment stating that the material furnished is of the same composition as that originally approved by the Department and that the material has not been changed or altered in any way.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-721-7M**

**CODE: (IS)**

**DATE: 05/01/2002**

**SUBJECT: Materials for Signing**

Section 721, Materials for Signing, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete the sixth paragraph of Subsection 721.02.2.1 on page 721-1 and substitute the following:

Structural steel shapes, bars, and plates used for bracing, framing and other accessories, including base plates for steel posts, per ASTM Designation: A 36.

Delete the fourth paragraph of Subsection 721.02.2.2 on page 721-2 and substitute the following:

Structural shapes, plates, and bars per ASTM Designation: A 36.

Delete the first paragraph of Subsection 721.02.5 beginning on page 721-2 and substitute the following:

**907-721.02.5--Bolts, Nuts, Washers, Screws, and other Hardware.** Except as otherwise specified, all bolts, nuts, washers, sheet metal screws, and machine screws shall be coated by the zinc chromate process. The zinc chromate process shall be in accordance with the requirements of ASTM Designation: B633. Bolts shall have a 13 millimeter head and shall meet the requirements of ASTM Designation: A307, Grade A. Nuts shall be self-locking and shall meet the requirements of ASTM Designation: A563. Flat washers shall be installed between the sign support and the self-locking nut and shall meet the requirements of ANSI Designation: B27.2. Sheet metal screws shall meet the requirements of ANSI Designation: B18.6.4. Machine screws shall meet the requirements of ANSI Designation: B18.6.3. Vinyl spacers shall be installed between the bolt head and the sign face and shall meet the following maximum dimensions: 22 mm outside diameter by 10 mm inside diameter by 1.5 mm thickness.

At the end of Subsection 721 on page 721-13, add the following:

**907-721.10--Direct Applied Copy.** Direct applied copy which is to be provided on guide directional signs, ground mounted or overhead, shall be directly applied to the sign face. Direct applied copy shall include letters, numerals, symbols and borders. The designs for capital and lower case shall be as required by the plans. All type of copy other than caps and lower case shall be as required by the plans. All type faces (fonts) shall conform to the recommendations contained in standards published by the Federal Highway Administration. All direct applied copy shall be attached to the sign face by means of pressure sensitive adhesive meeting the requirements of Subsection 721.06.5--Adhesive. Direct applied copy shall consist of encapsulated lens silver retroreflective sheeting meeting the requirements of Subsection 721.06--Reflective Sheeting.

All signs shall be delivered to the site of their erection in one piece with all bolts, rivets, moldings, extrusions, copy, and other required appurtenances thereto attached, complete and ready to be mounted to the sign support structure. Any required supplemental (temporary) supports required for stability during transport shall be firmly attached but easily removed prior to erection.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-721-8M

CODE: (IS)

DATE: 01/18/2002

SUBJECT: Reflective Sheeting

Section 721, Materials for Signing, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete in toto Subsection 721.06 beginning on page 721-4 and ending on page 721-12, and substitute the following:

## 907-721.06--Reflective Sheeting.

**907-721.06.1--General.** Retroreflective sheeting materials shall comply with all applicable requirements of ASTM Designation: D 4956, except as specifically modified herein, and be listed on the Department's "Approved Sources of Materials".

Reflective sheeting shall be one of the following types.

Type III A high-intensity retroreflective sheeting. This shall be an encapsulated glass-bead or unmetallized microprismatic retroreflective material. This sheeting shall have a protected, pre-coated, pressure-sensitive adhesive backing.

Type VII A super high-intensity retroreflective sheeting. This shall be an unmetallized microprismatic retroreflective material. This sheeting shall have a protected, pre-coated, pressure sensitive adhesive backing.

Type VIII A super high-intensity retroreflective sheeting. This shall be an unmetallized microprismatic retroreflective material. This sheeting shall have a protected, pre-coated, pressure sensitive adhesive backing.

Type IX A very-high intensity retroreflective sheeting. This shall be an unmetallized, microprismatic retroreflective material. This sheeting shall have a protected, pre-coated, pressure sensitive, adhesive backing.

All other retroreflective sheeting shall be as shown in the plans.

**907-721.06.2--Performance Requirements.** The retroreflective sheeting shall have the following minimum brightness values at 0.2° and 0.5° observation angle (in addition 1.0° for Type IX sheeting) expressed as average candelas per lux per square meter of material.

Sheetings and inks processed and applied in accordance with the manufacturer's recommendations, shall perform effectively for the number of years stated below. The sheeting will be considered unsatisfactory if it has deteriorated due to natural causes to the extent that: (1) the sign is ineffective for its intended purpose when viewed from a moving vehicle under normal day and night driving conditions or (2) the coefficient of retroreflection

is less than the minimum specified for that sheeting during the periods listed below. For screen printed transparent colored areas on white sheeting, the coefficients of retroreflection shall not be less than 70% of the values for the corresponding color in the table.

Type III Sheeting Retain 85% of initial values listed in Table 1 through 7 years  
Retain 80% of initial values listed in Table 1 between 7 & 10 years

Type VII Sheeting Retain 85% of initial values listed in Table 2 through 7 years  
Retain 80% of initial values listed in Table 2 between 7 & 10 years  
Retain 50% of initial values listed in Table 2 through 3 years (Fluorescent Orange)

Type VIII Sheeting Retain 85% of initial values listed in Table 3 through 7 years  
Retain 80% of initial values listed in Table 3 between 7 & 10 years  
Retain 50% of initial values listed in Table 3 through 3 years (Fluorescent Orange)  
Retain 80% of initial values listed in Table 3 through 7 years (Fluorescent Yellow/Green) (Fluorescent Yellow)

Type IX Sheeting Retain 85% of initial values listed in Table 4 through 7 years  
Retain 80% of initial values listed in Table 4 between 7 & 10 years  
Retain 80% of initial values listed in Table 4 for 7 years (Fluorescent Yellow/Green)(Fluorescent Yellow)

**MINIMUM COEFFICIENTS OF RETROREFLECTION**

(Candela per lux per square meter) - cd/lx/m<sup>2</sup>

(Per ASTM E 810)

**TABLE 1  
Type III Sheeting**

Observation Angle	Entrance Angle	White	Orange	Yellow	Green	Red	Blue	Brown
0.2°	-4°	250	10	170	45	45	20	12
0.2°	+30°	150	60	100	25	25	11	8.5
0.5°	-4°	95	30	62	15	15	7.5	5.0
0.5°	+30°	65	25	45	10	10	5.0	3.5

**TABLE 2  
Type VII Sheeting**

Observation Angle	Entrance Angle	White	Yellow	Green	Red	Blue	Brown	Fluorescent Orange
0.2°	-4°	750	560	75	150	34	23	200
0.2°	+30°	430	320	43	86	20	10	85
0.5°	-4°	240	180	24	48	11	8	90
0.5°	+30°	135	100	14	27	6.0	4	50

**TABLE 3  
Type VIII Sheeting**

Observation Angle	Entrance Angle	White	Yellow	Green	Red	Blue	Brown	Fluorescent Orange	Fluorescent Yellow/Green	Fluorescent Yellow
0.2°	-4°	700	525	70	105	42	21	200	480	375
0.2°	+30°	325	245	33	49	20	10	85	240	170
0.5°	-4°	250	190	25	38	15	7.5	90	235	165
0.5°	+30°	115	86	12	17	7	3.5	50	110	85

**TABLE 4  
Type IX Sheeting**

Observation Angle	Entrance Angle	White	Yellow	Green	Red	Blue	Fluorescent Yellow/Green	Fluorescent Yellow
0.2°	-4.0°	380	285	38	76	17	325	240
0.2°	+30.0°	215	162	22	43	10	205	150
0.5°	-4.0°	240	180	24	48	11	240	165
0.5°	+30.0°	135	100	14	27	6.0	110	75
1.0°	-4.0°	80	60	8	16	3.6	65	45
1.0°	+30.0°	45	34	4.5	9	2.0	35	25

**907-721.06.3--Certification.** The Contractor shall require the supplier to furnish certified evidence and/or samples to the Engineer showing conformance to these requirements. Manufacturer's warranties or guarantees provided as customary trade practice shall be furnished the Department.

**907-721.06.4--Color.** Reflective sheeting shall meet the color requirements of ASTM Designation: D 4956. See Table 5 below for color specifications for fluorescent yellow green, fluorescent orange, and fluorescent yellow sheeting.

**TABLE 5  
Color Specification Limits for New Sheeting (Daytime)**

Color	Chromaticity Coordinate 1		Chromaticity Coordinate 2		Chromaticity Coordinate 3		Chromaticity Coordinate 4		Total Luminance Factor Limit Y? Min.
	x	y	x	y	x	y	x	y	
Fluorescent Yellow Green	0.387	0.610	0.460	0.540	0.438	0.508	0.376	0.568	60%
Fluorescent Orange	0.562	0.350	0.645	0.355	0.570	0.429	0.506	0.404	30%
Fluorescent Yellow	0.521	0.424	0.557	0.442	0.479	0.520	0.454	0.491	40%

**907-721.06.5--Adhesive.** The retroreflective sheeting shall include a pre-coated pressure sensitive adhesive (ASTM Designation: D 4956, Class I) applied without the necessity of additional adhesive coats on the retroreflective sheeting or application surface.

The Class I adhesive shall be a pressure sensitive adhesive of the aggressive tack type requiring no heat solvent or other preparation for adhesion to smooth clean surfaces.

The protective liner attached to the adhesive shall be removed by peeling without soaking in water or other solutions and shall be easily removed after accelerated storage for four hours at 70°C under a mass of 1750 kilograms per square meter.

**907-721.06.6--Additional Contract Requirements.** In addition to the above requirements, the following requirements are applicable only when the sheeting material is being purchased for use in the MDOT Sign Shop.

**907-721.06.6.1--Sheeting Manufacturer's Replacement Obligation** Where it can be shown that retroreflective traffic signs with Type III, Type VII, Type VIII, or Type IX sheeting supplied and used according to the sheeting manufacturer's recommendations have not met the performance requirements, the sheeting manufacturer shall replace the sheeting required to restore the sign surface to its original effectiveness during the entire 10 years. In addition, during the first seven (7) years the manufacturer of Type III, Type VII, Type VIII, or Type IX sheeting shall cover the cost of restoring the sign surface to its original effectiveness at no cost to the Department for materials and labor for both sign manufacture and installation.

**907-721.06.6.2--Technical Assistance Requirements.**

**Instruction and Training.** The manufacturer supplying the retroreflective sheeting shall provide at no additional cost the services of a qualified technician for instruction and training at the sign manufacturing facility. This instruction shall be provided bi-annually or when requested, and shall include but not be limited to training films, material application, equipment operation, silk screening techniques, packaging, storage, and other proven sign shop practices as they apply to the retroreflective sheeting supplied by the manufacturer, and to assure that the resulting signs can comply with the applicable specifications.

**Technical Service.** The sheeting manufacturer shall, without additional cost to the Department, provide the sign shop with competent technical service and product information including service on screen printing problems with the inks furnished by the manufacturer.

**Equipment.** The manufacturer supplying the retroreflective sheeting shall provide technical assistance for the recommended sheeting application equipment and certify that trained personnel shall be available on 72 hours notice to render such service necessary to adjust ink consistency or otherwise modify the application of silk screen equipment to accommodate use of manufacturer's sheeting. "Service" is understood to mean the capability of calibration and trouble shooting, as well as the training and retaining of personnel as required.

**907-721.06.6.3--Warranty.** Any warranties prepared by the manufacturer shall be included with the bid documents.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

## SUPPLEMENT TO SPECIAL PROVISION NO. 907-804-17M

**DATE:** 12/14/2006

**SUBJECT:** Maturity Meters

**907-804.03.15--Removal of Falsework, Forms, and Housing.** After the third paragraph of Subsection 907-804.03.15 on page 24, add the following:

In lieu of using concrete strength cylinders or minimum curing time to determine when falsework, forms, and housing 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 1. Falsework, forms, and housing may be removed when maturity meter readings indicate that the required concrete strength (Column B) is achieved. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO T 325 and ASTM 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 1**

<u>Structure Component</u>	<u>Quantity of Concrete</u>	<u>No. of Probes</u>
Slabs, beams, walls, & miscellaneous items	0 - 23 m <sup>3</sup>	2
	> 23 to 46 m <sup>3</sup>	3
	> 46 to 69 m <sup>3</sup>	4
	> 69 m <sup>3</sup>	5
Footings, Columns & Caps	0 - 10 m <sup>3</sup>	2
	> 10 m <sup>3</sup>	3
Pavement, Pavement Overlays	1000 m <sup>2</sup>	2
Pavement Repairs	Per repair or 750 m <sup>2</sup> Whichever is smaller	2

**907-804.03.16.1--Cold Weather Concreting.** After the third paragraph of Subsection 907-804.03.16.1 on page 25, add the following:

In lieu of the placement, protection and curing of concrete in cold weather as described in the second and third paragraphs of Subsection 907-804.03.16.1, at the option of the Contractor with the approval of the Engineer, when concrete is placed during cold weather and there is a probability of ambient temperatures lower than 4°C, 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 1 of Subsection 907-804.03.15. An approved insulating blanketing



material shall be used to protect the work when ambient temperatures are less than 4°C and shall remain in place until the required concrete strength (Column B, Subsection 907-804.03.15) is achieved. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO T 325 and ASTM C 1074 specifications. Technicians using the maturity meter or calculating strength/maturity graphs shall be required to have at least two hours of training prior to using the maturity equipment.

**907-804.03.22.6--Handling, Storage, and Installation.** After the fourth paragraph of Subsection 907-804.03.22.6 on page 46, add the following:

When using maturity meters, concrete piling shall not be shipped to the job site until maturity calculations and/or concrete strength/maturity graphs indicate that piling from a casting bed meets the required design strength. A thermocouple or maturity meter probe shall be inserted into the last concrete placed on the piling casting bed. Procedures for using the maturity meter and developing the strength/maturity relationship shall follow the requirements of AASHTO T 325 and ASTM 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.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION NO. 907-804-17M**

**CODE: (IS)**

**DATE: 01/24/2006**

**SUBJECT: Concrete Bridges and Structures**

Section 804, Concrete Bridges and Structures, of the 1996 Metric Edition of the Mississippi Standard Specifications for Road and Bridge Construction is deleted in toto and replaced as follows:

**SECTION 907-804--CONCRETE BRIDGES AND STRUCTURES**

**907-804.01--Description.** This work consists of constructing concrete bridges and structures in accordance with these specifications and in reasonably close conformity with the dimensions, designs, lines, and grades indicated on the plans or established.

Construction of box bridges shall be in accordance with Sections 601 and 602.

**907-804.02--Materials.**

**907-804.02.1--General.** Concrete produced and controlled from this specification shall be accepted upon proper certification of concrete production through an approved quality control program and verification by job site acceptance criteria. The Contractor shall develop and implement a quality control program that will be used to maintain the required properties of concrete. For large volume projects, 1525 cubic meters and more, quality control and acceptance shall be achieved through statistical evaluation of test results. For small volume projects of more than 152 but less than 1525 cubic meters, quality control and acceptance shall be achieved by individual test results. For projects less than or equal to 152 cubic meters, refer to the requirements of TMD-20-05-00-000M "Sampling and Testing of Small Quantities of Miscellaneous Materials".

The materials for concrete bridges and structures, when sampled and tested in accordance with Subsection 700.03, shall meet the requirements of the following Subsections:

Portland Cement .....	701.01 and 701.02
Admixtures .....	713.02
Fly Ash .....	714.05
Water .....	714.01.1 and 714.01.2
Fine Aggregate .....	703.02
Coarse Aggregate .....	703.03
Curing Materials .....	713.01
Joint Materials .....	707.01, 707.02, and 707.07
Structural Steel Joints and Bearing Devices .....	717.01
Sheet Copper .....	716.07.2
Bronze Bearing Devices .....	716.06
Copper-Alloy Bearing Devices .....	716.07.1

Self-Lubricating Bearing Plates ..... 716.08  
 Bearing Pads ..... 714.10  
 Wire Rope or Wire Cable for Prestressed Concrete ..... 700.01 and 711.03  
 Sprayed Finish for Concrete Surface ..... 714.12  
 Reinforcing Steel ..... 711.02  
 Ground Granulated Blast Furnace Slag (GGBFS).....714.06  
 Metakaolin .....714.07.01

**907-804.02.2--Use, Care and Handling.** The use, care and handling of materials shall conform to the applicable requirements of Subsection 501.03.10 and the specific requirements of Subsections 907-804.02.4 and 907-804.02.5. Unless otherwise authorized, only fine aggregate or coarse aggregate of one type and from the same source shall be used in the construction of any one unit of a structure. Should the Contractor, with written permission of the Engineer, elect to substitute high early strength cement for cement of the type specified, the Contractor will not receive additional compensation for the substitution.

**907-804.02.3--Sampling & Testing.** Sampling and testing shall meet the requirements of these specifications.

**907-804.02.4--Care and Storage of Concrete Aggregates.** The handling and storage of aggregates shall be such as to prevent segregation or contamination with foreign materials. The Engineer may require that aggregates be stored on separate platforms at satisfactory locations.

When specified, coarse aggregates shall be separated into two or more sizes in order to secure greater uniformity of the concrete mixture. Different sizes of aggregate shall be stored in separate stock piles sufficiently removed from each other to prevent the material at the edges of the piles from becoming intermixed.

**907-804.02.5--Storage of Cement.** All cement shall be stored in suitable weather-proof buildings or bins. These buildings or bins shall be placed in locations approved by the Engineer. Provision for storage shall be ample, and the shipments of cement as received shall be stored separately or other provisions made to the satisfaction of the Engineer for easy access for the identification, inspection, and sampling of each shipment as deemed desirable. Stored cement shall meet the test requirements at any time after storage when a retest is ordered by the Engineer.

On small jobs, open storage consisting of a raised platform and ample waterproof covering may be permitted by written authorization from the Engineer.

When specified, the Contractor shall keep accurate records of deliveries of cement and of its use in the work. Copies of these records shall be supplied in the form required by the Engineer.

**907-804.02.6--Classification and Uses of Concrete.** When a specific class of concrete is not specified on the plans or in the contract documents, the structure or parts thereof shall be constructed with the class of concrete as directed by the Engineer.

The classes and their uses are as follows:

- (1) Class AA - Concrete for bridge construction and concrete exposed to seawater.
- (2) Class A - Concrete for use where indicated.
- (3) Class B - General use, heavily reinforced sections, cast-in-place concrete piles, and conventional concrete piles.
- (4) Class C - Massive sections or lightly reinforced sections.
- (5) Class D - Massive unreinforced sections and riprap.
- (6) Class F - Concrete for prestressed members.
- (7) Class FX - Extra strength concrete for prestressed members, as shown on plans.
- (8) Class S - For all seal concrete deposited under water.
- (9) Class DS - Drilled Shaft Concrete

**907-804.02.7--Composition of Concrete.** The composition of concrete mixtures shall meet the requirements of these specifications.

**907-804.02.8--Laboratory Accreditation.** The Contractor shall be responsible for furnishing the laboratory used to perform concrete quality control tests. The laboratory may be the Contractor’s facility, the concrete producer’s facility, or a certified independent testing laboratory.

Only laboratories certified by the Mississippi Department of Transportation are qualified to perform material testing. Certification by AASHTO Accreditation Program (AAP) will be acceptable if the laboratory is listed in the latest AASHTO Accreditation Program publication and maintains accreditation to completion of concrete work.

The Contractor’s laboratory designated for quality control testing shall have equipment necessary to test aggregates and concrete for the test methods listed in Table 1.

**Table 1**

AASHTO: T 2	Sampling Aggregates
AASHTO: T 19	Bulk Density (“Unit Weight”) and Voids in Aggregates
AASHTO: T 22	Compressive Strength of Cylindrical Concrete Specimens
AASHTO: T 23	Making and Curing Concrete Test Specimens in the Field
AASHTO: T 27	Sieve Analysis of Fine and Coarse Aggregates
AASHTO: T 84	Specific Gravity and Absorption of Fine Aggregate
AASHTO: T 85	Specific Gravity and Absorption of Coarse Aggregate
AASHTO: T 119	Slump of Hydraulic Cement Concrete
AASHTO: T 121	Mass per Cubic Meter (Cubic Foot), Yield, and Air Content (Gravimetric) of Concrete
AASHTO: T 126	Making and Curing Concrete Test Specimens in the Laboratory
AASHTO: T 141	Sampling Freshly Mixed Concrete
AASHTO: T 152	Air Content of Freshly Mixed Concrete by Pressure Method *

AASHTO: T 196	Air Content of Freshly Mixed Concrete by the Volumetric Method *
AASHTO: T 231	Capping Cylindrical Concrete Specimens
AASHTO: T 248	Reducing Field Samples of Aggregate to Testing Size
AASHTO: T 255	Total Evaporable Moisture Content of Aggregate by Drying
ASTM: C 1064	Temperature of Freshly Mixed Portland Cement Concrete

\* Equipment necessary for either pressure or volumetric air content.

Testing equipment shall have been inspected by the Department or through AAP. Testing equipment calibration files shall be made available upon request by the Department.

**907-804.02.9--Testing Personnel.** Technicians testing Portland cement concrete, for either acceptance or production control purposes, shall be certified by an accepted certification program. Recertification is required for each Class after five years. Certification requirements are listed in Table 2.

**Table 2**

<b>Required Certification</b>	<b>Concrete Technician’s Tasks</b>
MDOT Class I or ACI Grade I	Field 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 II	Aggregate Sampling, Total Moisture, and Sieve Analysis, AASHTO Designation: T 2, T 27, T 248, T 255
MDOT Class III	Unit Weight and Voids of Aggregates, Specific Gravity*, Concrete Mix Design, Capping and Compressive Strength of Cylindrical Concrete Specimens*, AASHTO Designation: T 19, T 22, T 84, T 85, T 126, T 231

\* Technicians performing specific gravity or compressive strength tests shall be either Certified Class III or may be supervised by a Certified Class III Technician. Also, technicians performing these tests are required to demonstrate the specific gravity and compressive strength tests during the inspection of laboratory equipment by the Central Laboratory.

**907-804.02.10--Portland Cement Concrete Mix Design.** At least 30 days prior to production of concrete, the Contractor shall submit to the Engineer proposed concrete mix designs complying with TMD 21-12-00-000M. Materials shall be from approved sources meeting the requirements of the Standard Specifications. Proportions for the mix designs shall be for the class concrete required by the contract plans and shall meet the requirements of the “Master Proportion Table for Structural Concrete Design” listed in Table 3. The concrete producer shall assign a permanent unique mix number to each mix design. Each mix design shall be field verified as required in Subsection 907-804.02.10.3. Acceptable field verification data shall be required for final approval of a mix design. All concrete mix designs will be reviewed by the

Central Laboratory prior to use. Concrete mix designs disapproved will be returned to the Contractor with a statement explaining the disapproval.

**Table 3**  
**MASTER PROPORTION TABLE FOR STRUCTURAL CONCRETE DESIGN**

CLASS	COARSE AGGREGATE SIZE NO. *	MAXIMUM WATER/CEMENTITIOUS ** RATIO	SPECIFIED COMPRESSIVE STRENGTH ( $f'_c$ ) MPa	MAXIMUM SLUMP *** millimeters	TOTAL AIR CONTENT %
AA	57 or 67	0.45	30	75	3.0 to 6.0
A	57 or 67	0.45	30	75	3.0 to 6.0
B	57 or 67	0.50	25	100	3.0 to 6.0
C	57 or 67	0.55	20	100	3.0 to 6.0
D	57 or 67	0.70	15	100	3.0 to 6.0
F	67	0.40	35	75	****
FX	67	(As required by special provisions)		75	****
S	57 or 67	0.45	20	200	3.0 to 6.0
DS	67	0.45	30	*****	****

\* Maximum size aggregate shall conform to the concrete mix design for the specified aggregate.

\*\* Maximum replacement of Portland cement by mass is 25% for fly ash or 50% for ground granulated blast furnace slag. The addition of fly ash as a replacement for cement will not be permitted in Type IP blended hydraulic cement, portland cement combined with ground granulated blast furnace slag or Type III portland cement when specified in the contract.

\*\*\* The slump may be increased up to 150 millimeters with an approved mid-range water reducer or up to 200 millimeters with an approved type F or G high range water reducer. A mid-range water reducer is classified as a water reducer that reduces the mix water a minimum of 8% when compared to a control mix with no admixtures. Minus slump requirements shall meet those set forth in Table 3 of AASHTO M157 specifications.

\*\*\*\* No entrained air except for pilings exposed to seawater.

\*\*\*\*\* Class DS Concrete for drilled shafts shall have a 200±25-mm slump. In the event of free fall method of concrete placement is used, the slump shall be 150±25 millimeters.

Either Type A, D, F, G or mid-range chemical admixture, shall be used in all classes of concrete. Any combination of water reducing admixtures shall be approved by the Engineer before their use.

**907-804.02.10.1--Proportioning of Portland Cement Concrete Mix Design.** Proportioning of Portland cement concrete shall be based on an existing mix of which the producer has field experience and documentation or based on a recently batched laboratory mix tested according to the required specifications.

**907-804.02.10.1.1--Proportioning on the Basis of Previous Field Experience of Trial Mixtures.** Where a concrete production facility has a record, based on at least 10 consecutive strength tests within the past 12 months from a mixture not previously used on Department projects, the standard deviation shall be calculated. The record of tests from which the standard deviation is calculated shall:

- a) Represent similar materials and conditions to those expected. Changes in materials and proportions within the test record shall not have been more closely restricted than those for the proposed work.
- b) Represent concrete produced to meet a specified strength.
- c) Consist of 10 consecutive tests, average of two cylinders per test, tested at 28 days.

The standard deviation,  $s$ , shall be calculated as:

$$s = \left[ \sum (X_i - \bar{X})^2 \div (N - 1) \right]^{1/2}$$

where:

$X_i$  = the strength result of an individual test

$\bar{X}$  = the average of individual tests in the series

$N$  = number of tests in the series

When the concrete production facility does not have a record of tests for calculation of standard deviation, as required in the above formula, the requirements of Subsection 907-804.02.10.1.2 shall govern.

The required average compressive strength ( $f'_{cr}$ ) used as the basis for selection of concrete proportions shall conform to the inequality listed below, while using a standard deviation,  $s$ , calculated as shown above.

$$\bar{X} \geq f'_{cr}$$

where:

$$f'_{cr} = f'_c + 1.43s$$

where:

$f'_c$  = specified compressive strength of concrete, MPa

$f'_{cr}$  = required average compressive strength of concrete, MPa

$s$  = standard deviation, MPa

1.43 represents the Lower Quality Index necessary to assure that 93% of compressive strength tests are above  $f'_c$ .

**907-804.02.10.1.2--Proportioning on the Basis of Laboratory Trial Mixtures.** When an acceptable record of field test results is not available, concrete proportions shall be established based on laboratory trial mixtures meeting the following restrictions:

- a) The combination of materials shall be those intended for use in the proposed work.
- b) Trial mixtures having proportions and consistencies suitable for the proposed work shall be made using the ACI 211.1 as a guide to proportion the mix design.
- c) Trial mixtures shall be designed to produce a slump within  $\pm 20$ mm of the maximum permitted, and for air-entrained concrete,  $6.0 \pm 0.5$  percent total air content. The temperature of freshly mixed concrete in trial mixtures shall be reported.
- 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-cement ratio shall be considered a new mixture. The cylinders shall be tested for strength in accordance with AASHTO Designation: T 22 and shall meet the required 28 day strength.
- e) The required average strength of laboratory trial mixes shall exceed  $f'_c$  by 8.3 MPa for concrete mix designs less than 35 MPa and by 9.7 MPa for concrete mix designs of 35 MPa or more.
- f) The laboratory trial batch mixtures shall have been made within the previous 12 months before being submitted for approval and shall not have been previously used on Department projects.

**907-804.02.10.2--Documentation of Average Strength.** Documentation that the proposed concrete proportions will produce an average strength equal to or greater than the required average shall consist of the strength test records from field tests or results from laboratory trial mixtures.

**907-804.02.10.3--Field Verification of Concrete Mix Design.** Concrete mix designs will only be tentatively approved pending field verification. Mix designs may be transferred to other projects without additional field verification testing, once the mix design has passed the field verification process.

The Contractor's Certified Quality Control Technicians shall test each concrete mix design upon the first placement of the mix. Aggregates and concrete tests during the first placement shall be as follows:



<u>Aggregates</u>	<u>Concrete</u>
Bulk Specific Gravity	Water Content
Moisture	Slump
Gradation	Air Content
	Unit Weight
	Yield

The mix shall be verified to yield within 2.0% of the correct volume when all the mix water is added to the batch, producing a slump within a minus 38-mm tolerance, or minus 62.5 millimeters with Type F or G chemical admixture, of the maximum permitted and total air content within a minus 1½ percent tolerance of the maximum allowable air content listed in Table 3 . The mix shall be adjusted and retested, if necessary, on subsequent placements until the above mentioned properties are met. If the requirements of yield, slump, or air are not met after three attempts, 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. Any mix design adjustments, changes in the mix proportions, are to be made by a Class III Certified Technician representing the Contractor. After the mix design has been verified and adjustments made, verification test results will be reviewed by the Engineer.

**907-804.02.10.4--Adjustments of Mixtures Proportions.** After ten compressive tests have been performed for which a standard deviation is calculated, the mix design may be adjusted provided the average strength ( $\bar{X}$ ) complies with the inequality in Subsection 907-804.02.10.1.1 and the adjusted mix design satisfies the water/cementitious ratio requirement listed in Table 3. Any adjustments of the concrete mix design shall necessitate repeat of field verification procedure as described in Subsection 907-804.02.10.3 and approval by the Engineer.

**907-804.02.11--Concrete Batch Plants.** The concrete batch plant and assigned mixer trucks shall be on the list of approved concrete batch plants and mixer trucks. For large quantity projects the plant shall meet the requirements for an automatic system capable of recording batch weights. It shall also have automatically moisture compensation for the fine aggregate.

For small volume projects, 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.

**907-804.02.12--Contractor's Quality Control.** The Contractor shall provide and maintain a quality control program that will provide reasonable assurance that all materials and products submitted to the Department for acceptance will conform to the contract requirements, whether manufactured or processed by the Contractor or procured from suppliers, subcontractors, or vendors.

The Contractor's Quality Control program shall implement the minimum quality control requirements shown in Table 4, "CONTRACTOR'S MINIMUM REQUIREMENTS FOR QUALITY CONTROL". The quality control activities shown in the table are considered to be

normal activities necessary to control the production and placing of a given product or material at an acceptable quality level. To facilitate the Department's activities, all completed gradation samples shall be retained for a maximum of sixty (60) days by the Contractor until further disposition is designated by the Department.

The Contractor shall perform, or have performed, the inspections and tests required to substantiate product conformance to contract document requirements and shall also perform, or have performed, all inspections and tests otherwise required.

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 seven (7) liters per cubic meter shall be allowed to be added to bring the slump within the required limits. Water shall not be added at a later time.

The Contractor's quality control inspections and tests shall be documented and shall be available for review by the Engineer throughout the life of the contract.

As set out in these specifications, quality control sampling and testing performed by the Contractor will be used by the Department for determination of acceptability of the concrete.

The Contractor shall maintain standard equipment and qualified personnel as required to assure conformance to contract requirements.

**907-804.02.12.1--Quality Control Plan.** The Contractor shall prepare a Quality Control Plan which shall identify the personnel responsible for the Contractor's quality control including the company official who will act as liaison with Department personnel. The Quality Control Plan shall be submitted in writing to the Engineer for approval 30 days prior to the production of concrete.

The class(es) of concrete involved will be listed separately. If an existing mix design(s) is to be used, the mix design number(s) as previously approved shall be listed.

It is intended that sampling and testing be in accordance with standard methods and procedures, and that measuring and testing equipment be standard and properly calibrated. If alternative sampling methods and procedures, and inspection equipment are to be used, they shall be detailed in the Quality Control Plan.

**907-804.02.12.1.1--Elements of Plan.** The Plan shall address all elements that affect the quality of the structural concrete including, but not limited to, the following:

- 1) Stockpile Management
- 2) Procedures for Corrective Actions for Non Compliance of Specifications
- 3) Procedure for Controlling Concrete Temperatures

**907-804.02.12.2--Personnel Requirements.** The Contractor's Designated Certified Technician shall perform and use quality control tests and other quality control practices to assure that delivered materials and proportioning meet the requirements of the mix design including temperature, slump, air content, and strength and shall periodically inspect all equipment used in transporting, proportioning, and mixing.

The Contractor's Designated Technician shall periodically inspect all equipment used placing, consolidating, finishing, and curing to assure it is operating properly and that placement, consolidation, finishing, and curing conform to the mix design and other contract requirements.

**907-804.02.12.3--Documentation.** The Contractor shall maintain adequate records of all inspections and tests. The records shall indicate the nature and number of observations made, the number and type of deficiencies found, date and time of samples taken, the quantities approved and rejected, and the nature of corrective action taken as appropriate. The Contractor's documentation procedures will be subject to approval of the Department prior to the start of the work and to compliance checks during the progress of the work.

All conforming and non-conforming inspections and test results shall be kept complete and shall be available at all times to the Department during the performance of the work. Forms shall be on a computer-acceptable medium. Batch tickets and gradation data shall be documented in accordance with Department requirements. Copies shall be submitted to the Department as the work progresses.

Test data for Portland cement concrete, including gradation, shall be charted in accordance with the applicable requirements.

The Contractor may use additional control charts as deemed appropriate. It is normally expected that testing and charting will be completed within 24 hours after sampling.

All charts and records documenting the Contractor's quality control inspections and tests shall become the property of the Department upon completion of the work.

**907-804.02.12.4--Corrective Action.** The Contractor shall take prompt action to correct conditions that have resulted, or could result, in the submission to the Department of materials and products that do not conform to the requirements of the contract documents. All corrective actions shall be documented.

**907-804.02.12.5--Non-Conforming Materials.** The Contractor shall establish and maintain an effective and positive system for controlling non-conforming material, including procedures for its identification, isolation and disposition. Reclaiming or reworking of non-conforming materials shall be in accordance with procedures acceptable to the Department.

All non-conforming materials and products shall be positively identified to prevent use, shipment, and intermingling with conforming materials and products. Holding areas, mutually agreeable to the Department and the Contractor, shall be provided by the Contractor.

**TABLE 4  
CONTRACTOR'S MINIMUM REQUIREMENTS FOR QUALITY CONTROL**

<b>Portland Cement Concrete</b>		
<b>Control Requirement</b>	<b>Frequency</b>	<b>AASHTO/ASTM Designation</b>
<b>A. PLANT AND TRUCKS</b>		
1. Mixer Blades	Monthly	
2. Scales		
a. Tared	Daily	
b. Calibrate	Every 6 months	
c. Check Calibration	Weekly	
3. Gauges & Meters - Plant & Truck		
a. Calibrate	Every 6 months	
b. Check Calibration	Weekly	
4. Admixture Dispenser		
a. Calibrate	Every 6 months	
b. Check Operation & Calibration	Daily	
<b>B. AGGREGATES</b>		
1. Sampling		T 2
2. Fine Aggregate		
a. Gradation / FM	200 m <sup>3</sup> Concrete	T 27
b. Moisture	Check Meter Against Test Results Weekly	T 255
c. Specific Gravity / Absorption	2000 m <sup>3</sup> Concrete	T 84
3. Coarse Aggregates		
a. Gradation / FM	200 m <sup>3</sup> Concrete	T 27
b. Moisture	Minimum of once daily or more as needed to control production	T 255
c. Specific Gravity / Absorption	2000 m <sup>3</sup> Concrete	T 85
<b>C. PLASTIC CONCRETE</b>		
1. Sampling		T 141
2. Air Content	First load then one per 40 m <sup>3</sup>	T 152 or T 196
3. Slump	First load then one per 40 m <sup>3</sup>	T 119
4. Compressive Strength	One set ( two cylinders ) for 0-75 m <sup>3</sup> inclusive and one set for each additional 75 m <sup>3</sup> or fraction thereof for each class concrete delivered and placed on a calendar day from a single supplier. A test shall be the average of two cylinders.	T 22, T 23, T 231
5. Yield	Each 300 m <sup>3</sup>	T 121
6. Temperature	With each sample	C 1064

**907-804.02.13--Quality Assurance Sampling and Testing.** Quality Assurance (QA) inspection and testing will be provided by the Department to assure that the Contractor's Quality Control (QC) testing meets the requirements of these specifications.

Acceptance of the material is based on the inspection of the construction, monitoring of the Contractor's quality control program, QC test results, and the comparison of the QA test results with the QC test results. The Department may use the results of the Contractor's QC tests as a part of the acceptance procedures instead of the results of QA tests, provided:

- a) The Department's inspection and monitoring activities indicate that the Contractor is following the approved Quality Control program and, respectively,
- b) For aggregates, the results from the Contractor's QC and the Department's QA testing of aggregate gradations compare by both meeting the aggregate type's gradation requirements;
- 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 large volume projects; or, strength comparisons are within 6.8 MPa for small volume projects.

The minimum frequency for QA testing of aggregate and plastic concrete by the Department will follow the frequencies listed in Table 5, "DEPARTMENT'S MINIMUM REQUIREMENTS FOR QUALITY ASSURANCE".

**TABLE 5  
DEPARTMENT'S MINIMUM REQUIREMENTS FOR QUALITY ASSURANCE**

<b>Quality Assurance Tests</b>	<b>Frequency</b>	<b>AASHTO/ASTM Designation</b>
<b>A. AGGREGATES</b>		
1. Sampling	200 m <sup>3</sup> Concrete	T 2
2. Fine Aggregate Gradation and FM		T 27
3. Coarse Aggregates Gradation and FM	200 m <sup>3</sup> Concrete	T 27
<b>B. PLASTIC CONCRETE</b>		
1. Sampling	Every 75 m <sup>3</sup>	T 141
2. Air Content		T 152 or T 196
3. Slump	Every 75 m <sup>3</sup>	T 119
4. Compressive Strength	One set (two cylinders) for every 75 m <sup>3</sup> inclusive. A test shall be the average of two cylinders.	T 22, T 23, T 231
5. Temperature	With each sample	C 1064

Periodic inspection by the Department of the Contractor's QC testing and production will continue through the duration of the project. Weekly reviews will be made of the Contractor's QC records and charts.

For aggregates, comparison of data of the Contractor's QC aggregate gradation test results to those of the Department's QA aggregate gradation test results will be made monthly during concrete production periods according to Department Standard Operating Procedures. When it

is determined that the Contractor's QC test results of aggregate gradations are comparative to that of the Department's QA test results, then the Department will use the Contractor's QC results as a basis for acceptance of the aggregates and the Department's QA testing frequency of aggregates may be reduced to a frequency of no less than three QA tests to every 10 QC tests. If the Contractor's QC aggregate gradation test results fail to compare to those of the Department's QA aggregate gradation test results, Department testing for aggregate gradations will revert to the frequency shown in Table 5 for aggregates until the Contractor's and Department's aggregate gradation test data compare.

For concrete compressive strength, comparison of data of the Contractor's QC compressive strength test results to those of the Department's QA compressive strength test results will be made monthly during concrete production periods according to Department Standard Operating Procedures. When it is determined that the Contractor's QC test results of concrete compressive strengths are comparative to that of the Department's QA test results, then the Department will use the Contractor's QC results as a basis for acceptance of the concrete and the Department's QA testing frequency of concrete compressive strengths may be reduced to a frequency of no less than three QA tests to every 10 QC tests. If the Contractor's QC compressive strength test results fail to compare to those of the Department's QA compressive strength test results, Department testing will revert to the frequency shown in Table 5 for plastic concrete until the Contractor's and Department's compressive strength test data compare.

**907-804.02.13.1--Basis of Acceptance.**

**907-804.02.13.1.1--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.

**907-804.02.13.1.2--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.

**907-804.02.13.1.3--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 ( $\pm 3\%$ ). 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 907-804.02.12.1, the new proportions shall be field verified per Subsection 907-804.02.10.3.

**907-804.02.13.1.4--Temperature.** Cold weather concreting shall follow the requirements of Subsection 907-804.03.16.1. Hot weather concreting shall follow the requirements of Subsection 907-804.03.16.2 with a maximum temperature of 35°C for Class DS concrete containing a slump retention admixture and for concrete mixes containing pozzolanic materials as a replacement of Portland cement. For other classes of concrete without pozzolanic materials, the maximum concrete temperature shall be 32°C. Concrete with a temperature more than the maximum allowable temperature shall be rejected and not used in Department work.

**907-804.02.13.1.5--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:

**Large Volume Projects.** 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, MPa
- $X$  = Individual compressive strength below  $f'_c$ , MPa
- $s$  = standard deviation, MPa\*
- $f_c$  = allowable design stress, MPa

\* 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.

**Small Volume Projects.** 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, MPa

X = Individual compressive strength below  $f'_c$ , MPa

**907-804.02.14--Dispute Resolution.** Disputes over variations between Contractor's QC test results and the Department's QA test results shall be resolved at the lowest possible level. When there are significant discrepancies between the QC test results and the QA test results, the Contractor's Quality Control Manager, the Project Engineer, and/or the District Materials Engineer shall look for differences in the procedures, and correct the inappropriate procedure before requesting a third party resolution.

If the dispute cannot be resolved at the project or District level, the Department's Central Laboratory will serve as a third party to resolve the dispute. The Central Laboratory's decision shall be binding.

The Contractor shall be responsible for the cost associated with the third party resolution if the final decision is such that the Department's QA test results were correct. Likewise, the Department will be responsible for the cost when the final decision is such that the Contractor's QC test results were correct.

**907-804.03--Construction Requirements.**

**907-804.03.1--Measurement of Materials.**

**907-804.03.1.1--General.** The accuracy for measuring materials shall be in accordance with AASHTO Designation: M 157.

**907-804.03.1.2--Measurement by Mass Determination.** Except when otherwise specified or authorized, materials shall be measured by determining their mass. The apparatus provided for determining the mass shall be suitably designed and constructed for this purpose. The mass of cement and aggregates shall be determined separately. The mass of cement in standard bags need not be determined, but the mass of bulk cement shall be determined. The mixing water shall be measured by volume or by determining its mass. All measuring devices shall be subject to approval.

**907-804.03.2--Blank.**

**907-804.03.3--Blank.**

**907-804.03.4--Hand Mixing.** Hand mixing of concrete will not be allowed.

**907-804.03.5--Delivery.** The plant supplying concrete shall have sufficient capacity and transporting apparatus to insure continuous delivery at the rate required. The rate of delivery shall be such as to provide for the proper continuity in handling, placing, and furnishing of the concrete. The rate shall be such that the interval between batches shall not exceed 20 minutes.



The methods of delivering and handling the concrete shall be that which will facilitate placing with minimum rehandling and without damage to the structure or the concrete.

**907-804.03.6--Handling and Placing Concrete.**

**907-804.03.6.1--General.** Prior to placing concrete, all reinforcement shall have been accurately placed in the position shown on the plans and fastened as set out in Section 805. All sawdust, chips, and other construction debris and extraneous matter shall have been removed from the interior of the forms. Temporary struts, braces, and stays holding the forms in correct shape and alignment shall be removed when the concrete placing has reached an elevation rendering their service unnecessary. These temporary members shall be entirely removed from the forms and shall not be buried in the concrete.

No concrete shall be placed until the forms and reinforcement have been inspected.

Except as provided for truck mixers and truck agitators, concrete shall be placed in the forms within 30 minutes after the time that the cement is first added to the mix.

Concrete shall be placed so as to avoid segregation of materials and displacement of reinforcement. The use of troughs, chutes, and pipes over eight meters in length for gravity conveyance of concrete to the forms, will not be permitted except when authorized by the Engineer and subject to the production of quality concrete.

Only approved mechanical conveyors will be permitted.

Open troughs and chutes shall be metal or metal lined. The use of aluminum pipes, chutes, or other devices made of aluminum that come into direct contact with the concrete shall not be used. Where steep slopes are required, the chutes shall be equipped with baffles or be in short sections that change the direction of movement.

All chutes, troughs, and pipes shall be kept clean and free from coatings of hardened concrete by thoroughly flushing with water after each run. Water used for flushing shall be discharged clear of the structure.

When placing operations involve dropping the concrete more than 1.5 meters, it shall be deposited through sheet metal or other approved pipes to prevent segregation and unnecessary splashing. The pipes shall be made in sections to permit discharging and raising as the placement progresses. A non-jointed pipe may be used if sufficient openings of the proper size are provided to allow for the flow of the concrete into the shaft. As far as practicable, the pipes shall be kept full of concrete during placing, and their ends shall be kept buried in the newly placed concrete.

Except as hereinafter provided, concrete shall be placed in horizontal layers not more than 300 millimeter thick. When, with the Engineer's approval, less than the complete length of a layer is placed in one operation, it shall be terminated in a vertical bulkhead. Each layer shall be placed

and compacted before the preceding layer has taken its initial set and shall be compacted so as to avoid the formation of a construction joint with the preceding layer.

**907-804.03.6.2--Consolidation.** Concrete, during and immediately after depositing, shall be thoroughly consolidated by the use of approved mechanical vibrators and suitable spading tools. Hand spading alone will be permitted on small structural members such as railing and small culvert headwalls. Mechanical vibration of concrete shall be subject to the following:

- A. The vibration shall be internal unless special authorization of other methods is given by the Engineer or as provided herein.
- B. In general, vibrators shall be a type and design approved by the Engineer. They shall be capable of vibration frequencies of at least 4500 impulses per minute.
- C. The intensity of vibration shall be such as to visibly affect a mass of concrete of 25-mm slump over a radius of at least 450 millimeters.
- D. The Contractor shall provide sufficient vibrators to properly compact each batch immediately after it is placed in the forms.
- E. Vibrators shall be manipulated so as to thoroughly work the concrete around the reinforcement and embedded fixtures and into the corners and angles of the forms.

Vibration shall be applied at the point of deposit and in the area of freshly deposited concrete. The vibrators shall be inserted into and withdrawn out of the concrete slowly. The vibration shall be of sufficient duration and intensity to thoroughly compact the concrete, but shall not be continued so as to cause segregation. Vibration shall not be continued at any one point to the extent that localized areas of grout are formed. Application of vibrators shall be at points uniformly spaced and not farther apart than twice the radius over which the vibration is visibly effective.

- F. Vibration shall not be applied directly or through the reinforcement to sections or layers of concrete which have taken initial set. It shall not be used to make concrete flow in the forms over distances so great as to cause segregation, and vibrators shall not be used to transport concrete in the forms.
- G. Vibration shall be supplemented by spading as necessary to insure smooth surfaces and dense concrete along form surfaces, in corners, and in locations impossible to reach with vibrators.
- H. These provisions shall apply to the filler concrete for steel grid floors except that the vibrator shall be applied to the steel.
- I. These provisions shall apply to precast piling, concrete cribbing, and other precast members except that, if approved by the Engineer, the manufacturer's methods of vibrations may be used.

When hand spading is used for consolidation, a sufficient number of workmen with spading tools shall be provided. They will be required to flush a thin layer of mortar to all the surfaces and thoroughly and satisfactorily consolidate the concrete.

The entire operation of depositing and consolidating the concrete shall be conducted so that the concrete shall be smooth and dense and free from honeycomb or pockets of segregated aggregate.

**907-804.03.6.3--Discontinuance of Placing.** When placing is temporarily discontinued, the concrete, after becoming firm enough to retain its form, shall be cleaned of laitance and other objectionable material to a sufficient depth to expose sound concrete. To avoid visible joints insofar as possible upon exposed faces, the top surface of the concrete adjacent to the forms shall be smoothed with a trowel. Where a "feather edge" might be produced at a construction joint, such as in the sloped top surface of a wing wall, an inset form work shall be used in the preceding layer to produce a blocked out portion that will provide an edge thickness of at least 150 millimeters in the succeeding layer. Work shall not be discontinued within 450 millimeters of the top of any face unless provision has been made for a coping less than 450 millimeters thick. In this case and if permitted by the Engineer, the construction joint may be made at the under side of the coping.

Immediately following the discontinuance of placing concrete, all accumulations of mortar splashed on the reinforcement and the surface of forms shall be removed. Dried mortar chips and dust shall not be puddled into the unset concrete. If the accumulations are not removed prior to the concrete becoming set, care shall be exercised not to break or injure the concrete-steel bond at and near the surface of the concrete while cleaning the reinforcement. After initial set the forms shall not be jarred, and no strain shall be placed on the ends of projecting reinforcement until the concrete has sufficiently set to insure against any damage by such jarring or strain.

**907-804.03.6.4--Placing Bridge Concrete.** The method and sequence of placing concrete shall conform to the provisions and requirements set forth for the particular type of construction.

**907-804.03.6.4.1--Foundations and Substructures.** Concrete seals shall be placed in accordance with Subsection 907-804.03.9. All other concrete for foundations shall be poured in the dry unless otherwise stipulated or authorization is given in writing by the Engineer to do otherwise. Concrete shall not be placed in foundations until the foundation area has been inspected and approved.

Unless otherwise specified, the placement of concrete in the substructure shall be in accordance with the general requirements of Subsection 907-804.03.6.

Unless otherwise directed, concrete in columns shall be placed in one continuous operation, and shall be allowed to set at least 12 hours before the caps are placed.

**907-804.03.6.4.2--Superstructure.** For simple spans, concrete shall preferably be deposited by beginning at the center of the span and working toward the ends. For continuous spans, concrete shall be deposited as shown on the plans. Concrete in girders shall be uniformly deposited for the full length of the girder and brought up evenly in horizontal layers.

Unless otherwise permitted by the Engineer, concrete shall not be placed in the superstructure until the column forms have been stripped sufficiently to determine the character of the concrete in the columns. Unless otherwise permitted by the Engineer, the load of the superstructure shall not be placed on pile bents until the caps have been in place at least seven days and shall not be placed on other types of bents until the bents have been in place at least 14 days.

In placing concrete around steel shapes, it shall be placed on one side of the shape until it flushes up over the bottom flange of the shape on the opposite side, after which it shall be placed on both sides to completion.

Concrete in girder haunches less than three feet in height shall be placed at the same time as that in the girder stem. Whenever a haunch or fillet has a height of three feet or more at the abutment or columns, the haunch and the girder shall be poured in three successive stages: first, up to the lower side of the haunch; second, to the lower side of the girder; and third, to completion.

Except when intermediate construction joints are specified, concrete in slab, T-beam, or deck-girder spans shall be placed in one continuous operation for each span.

The floors and girders of through-girder superstructures shall be placed in one continuous operation unless otherwise specified, in which case special shear anchorage shall be provided to insure monolithic action between girder and floor.

Concrete in box girders shall be placed as shown on the plans.

Concrete shall not be chuted directly into the forms of the span and shall be placed continuously with sufficient speed to be monolithic and to allow for finishing before initial set.

**907-804.03.7--Pneumatic Placing.** Pneumatic placing of concrete will be permitted only if specified in the contract or if authorized by the Engineer. The equipment shall be so arranged that no vibrations result which might damage freshly placed concrete.

Where concrete is conveyed and placed by pneumatic means the equipment shall be suitable in kind and adequate in capacity for the work. The machine shall be located as close as practicable to the place of deposit. The position of the discharge end of the line shall not be more than 10 feet from the point of deposit. The discharge lines shall be horizontal or inclined upwards from the machine. At the conclusion of placement the entire equipment shall be thoroughly cleaned.

**907-804.03.8--Pumping Concrete.** Placement of concrete by pumping will be permitted only if specified in the contract or if authorized in writing by the Engineer. If used, the equipment shall be arranged so that no vibrations result which might damage freshly placed concrete.

Where concrete is conveyed and placed by mechanically applied pressure, the equipment shall be suitable in kind and adequate in capacity for the work. 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.

The use of aluminum pipe as a conveyance for the concrete will not be permitted.

**907-804.03.9--Depositing Concrete Under Water.** Concrete shall not be deposited in water except with the approval of the Engineer.

Concrete deposited under water shall be Class S.

Concrete deposited under water shall be carefully placed in a compact mass in its final position by means of a tremie, a bottom dump bucket, or other approved method and shall not be disturbed after being deposited. Special care shall be exercised to maintain still water at the point of deposit. No concrete shall be placed in running water and all form work designed to retain concrete under water shall be water-tight. The consistency of the concrete shall be carefully regulated, and special care shall be exercised to prevent segregation of materials.

Concrete seals shall be placed continuously from start to finish, and the surface of the concrete shall be kept as nearly horizontal as practicable at all times. To insure thorough bonding, each succeeding layer of a seal shall be placed before the preceding layer has taken initial set.

When a tremie is used, it shall consist of a tube having a diameter of at least 250 millimeters and constructed in sections having flanged couplings fitted with gaskets. The means of supporting the tremie shall be such as to permit the free movement of the discharge over the entire top surface of the work and to permit it to be lowered rapidly when necessary to choke off or retard the flow of concrete. The discharge end shall be closed at the start of the work so as to prevent water entering the tube and shall be entirely sealed. The tremie tube shall be kept full to the bottom of the hopper. When a batch is dumped into the hopper, the flow of concrete shall be induced by slightly raising the discharge end, always keeping it in the deposited concrete. The flow is then stopped by lowering the tremie. The flow shall be continuous until the work is completed.

Depositing of concrete by the drop bottom bucket method shall conform to the following: The top of the bucket shall be open. The bottom doors shall open freely downward and outward when tripped. The bucket shall be completely filled and slowly lowered to avoid backwash. It shall not be dumped until it rests on the surface upon which the concrete is to be deposited and when discharged shall be withdrawn slowly until well above the concrete.

Dewatering may proceed when the concrete seal is sufficiently hard and strong. As a general rule, this time will be 48 hours for concrete made with high-early-strength cement and three days for concrete made with other types of cement. All laitance and other unsatisfactory material shall be removed from the exposed surface by scraping, chipping, or other means which will not injure the surface of the concrete.

**907-804.03.10--Construction Joints.**

**907-804.03.10.1--General.** Unless otherwise approved by the Engineer, construction joints shall be made only where located on the plans or shown in the pouring schedule. If not detailed on the plans, or in the case of emergency, construction joints shall be placed as directed by the Engineer. Shear keys or inclined reinforcement shall be used where necessary to transmit shear or to bond the two sections together.

For continuous spans, bridge deck concrete shall be deposited as shown on the plans. Deviation from the pouring schedule shown in the plans is not permitted.

**907-804.03.10.2--Bonding.** Before depositing new concrete on or against concrete which has hardened, the forms shall be retightened. The surface of the hardened concrete shall be roughened as required by the Engineer and in a manner that will not leave loosened particles of aggregate or damaged concrete at the surface. It shall be thoroughly cleaned of foreign matter and laitance and saturated with water. When directed by the Engineer, the cleaned and saturated surfaces, including vertical and inclined surfaces, shall first be thoroughly covered with a coating of mortar or neat cement grout against which the new concrete shall be placed before the grout has attained its initial set.

The placing of concrete shall be carried continuously from joint to joint. The face edges of all joints which are exposed to view shall be carefully finished, true to line and elevation.

In order to bond successive courses suitable depressed or raised keys of the designated size shall be constructed. Raised keys shall be monolithic with the concrete of the lower course.

**907-804.03.11--Concrete Exposed to Seawater.** Unless otherwise specifically provided, concrete for structures exposed to seawater shall be Class AA concrete as referenced in Subsection 907-804.02.10. The clear distance from the face of the concrete to the nearest face of reinforcing steel shall be at least 100 millimeters. The mixing time and the water content shall be carefully controlled and regulated so as to produce concrete of maximum impermeability. The concrete shall be thoroughly compacted, and stone pockets shall be avoided. No construction joints shall be formed between the levels of extreme low water and extreme high water as determined by the Engineer. Between these levels, seawater shall not come in direct contact with the new concrete until at least 30 days have elapsed. The surface concrete as left by the forms shall be left undisturbed.

**907-804.03.12--Blank.**

**907-804.03.13--Falsework.** The Contractor shall submit to the Engineer four copies of structural design analysis and detail drawings, which show the method of falsework or centering. These designs and detail plans shall be prepared and bear the seal of a Registered Professional Engineer with experience in falsework design.

Falsework plans shall include falsework elevations together with all other dimensions and details which is considered necessary for the construction.

Other pertinent data needed is size and spacing of all falsework members and minimum bearing requirements for false piles.

Upon completion of falsework erection, the Registered Professional Engineer shall certify that the erected falsework is capable of supporting the load for construction.

Falsework piling shall be spaced and driven so that the bearing value of each pile is sufficient to support the load that will be imposed upon it. The bearing value of the piles should be calculated according to the appropriate formula given in Section 803.

For designing falsework and centering, a mass of 2400 kilograms per cubic meter shall be assumed for green concrete. All falsework shall be designed and constructed to provide the necessary rigidity and to support the loads without appreciable settlement or deformation. The Contractor may be required to employ screw jacks or hardwood wedges to take up slight settlement in the falsework either before or during the placing of concrete. An allowance shall be made for anticipated compressibility of falsework and for the placement of shims, wedges, or jacks to produce the permanent structural camber shown on the plans. If during construction, any weakness develops and the falsework shows any undue settlement or distortion, the work shall be stopped, the part of the structure affected removed, and the falsework strengthened before work is resumed. Falsework which cannot be founded on a satisfactory footing shall be supported on piling, which shall be spaced, driven, and removed, as referenced in Subsection 907-804.03.15, in a manner approved by the Engineer.

All structures built across a public street or highway on which maintenance of traffic is required, shall have falsework so arranged that a vertical clearance of at least 3.8 meters is provided. Unless otherwise specified, a horizontal clearance of at least the width of the traveled way shall be provided at all times. If the vertical clearance is less than 4.1 meters or the horizontal clearance is less than the full crown width of the roadway, the Contractor shall install and maintain appropriate safety devices, clearance signs and warning lights, and shall notify the Engineer sufficiently in advance of restricting the clearance for the Engineer to advise both the Traffic Engineering and the Maintenance Divisions. All traffic control and safety devices shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).

**907-804.03.14--Forms.**

**907-804.03.14.1--General.** Forms shall be wood, metal, or other material approved by the Engineer. All forms shall be built mortar-tight and sufficiently rigid to prevent distortion due to pressure of the concrete and other loads incident to the construction operations. Forms shall be constructed and maintained so as to prevent warping and the opening of joints due to shrinkage. The forms shall be substantial and unyielding and shall be so designed that the finished concrete will conform to the proper dimensions and contours. The design of the forms shall take into account the effect of vibration of concrete as it is placed.

Minimum requirements for slab overhang forms shall be 20-mm plywood supported on 50-mm x 150-mm S4S wood timbers placed flatwise on 400-mm centers.

Adjustable brackets for support of slab overhang forms shall be spaced at a maximum distance of 0.9 meter center to center unless specifically approved otherwise. Grade points for forms shall coincide with the location of the adjustable form brackets.

Forms for surfaces exposed to view shall be of uniform thickness with a smooth inside surface of an approved type. Joints in forms for exposed surfaces shall be closely fitted to eliminate fins, stone pockets, or other variations in the surface of the concrete which would mar a smooth and uniform texture.

Forms shall be filleted at all sharp corners and shall be given a bevel or draft in the case of all projections, such as girders and copings, to insure easy removal.

Metal ties or anchorages within the forms shall be so constructed as to permit their removal, without injury to the concrete, to a depth of at least the reinforcing steel clearance shown on the plans. In case ordinary wire ties are permitted, all wires, upon removal of the forms, shall be cut back at least six millimeters from the face of the concrete with chisels or nippers. Nippers shall be used for green concrete. All fittings for metal ties shall be designed so that upon their removal the cavities which are left will be the smallest practicable size. The cavities shall be filled with cement mortar and the surface left sound, smooth, even, and uniform in color.

Forms shall be set and maintained to the lines designated until the concrete is sufficiently cured for form removal. Forms shall remain in place for periods which shall be determined as hereinafter specified. If forms are deemed to be unsatisfactory in any way, either before or during the placing of concrete, the Engineer will order the work stopped until the defects have been corrected.

The shape, strength, rigidity, water-tightness, and surface smoothness of reused forms shall be maintained at all times. Warped or bulged lumber shall be resized before being reused. Forms which are unsatisfactory in any respect shall not be reused.

Access to the lower portions of forms for narrow walls and columns shall be provided for cleaning out extraneous material immediately before placing the concrete.

All forms shall be treated with an approved oil or saturated with water immediately before placing the concrete. For rail members or other members with exposed faces, the forms shall be treated only with an approved oil to prevent the adherence of concrete. Any material which will adhere to or discolor the concrete shall not be used.

When metal forms are used they shall be kept free from rust, grease, or other foreign matter which will discolor the concrete. They shall be of sufficient thickness and so connected that they will remain true to shape and line, and shall conform in all respects as herein prescribed for mortar tightness, filleted corners, beveled projections, etc. They shall be constructed so as to



insure easy removal without injury to concrete. All inside bolt and rivet heads shall be countersunk.

All chamfer strips shall be dressed, straight, and of uniform width and shall be maintained as such at all times.

**907-804.03.14.2--Stay-In-Place Metal Forms.** The use of stay-in-place metal forms will not be allowed.

**907-804.03.15--Removal of Falsework, Forms, and Housing.** In the determination of the time for the removal of falsework, forms, and housing and the discontinuance of heating, consideration shall be given to the location and character of the structure, the weather and other conditions influencing the setting of the concrete, and the materials used in the mix. No forms or supports shall be removed prior to approval by the Engineer. During cold weather, removal of housing and the discontinuance of heating shall be in accordance with Subsection 907-804.03.16.1.

Concrete in the last pour of a continuous superstructure shall have attained a compressive strength of 16.55 MPa, as determined by cylinder tests, prior to striking any falsework. It is important that falsework be removed as evenly as possible to prevent excessive deflection stresses in the spans.

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 which case the Contractor shall furnish facilities for testing the cylinders. The facilities shall include an approved concrete testing machine of sufficient capacity and calibrated by an acceptable commercial laboratory. Tests shall be conducted in the presence of a Department representative to witness and record strengths obtained on each break or performed by a Department certified technician in an approved testing laboratory.

When form removal or placing of beams is not controlled by cylinder tests, Column A, exclusive of the days when the ambient temperature is below 5°C, herein shall apply as a guide for removal of forms and falsework. When cylinder tests are used, Column B shall be used. The cylinders shall be cured under conditions which are not more favorable than those existing for the portions of the structure which they represent.

If Type IP cement or Type I or II Portland cement plus fly ash is used, only Column B will be applicable.

	<u>Column A</u> <u>Minimum Cure</u>	<u>Column B</u> <u>Minimum MPa</u>
Forms:		
Columns	24 Hours	7
Side of Beams	24 Hours	7
Walls not under pressure	24 Hours	7
Floor Slabs, overhead	7 Days	14

Floor Slabs, between beams	7 Days	14
Slab Spans	14 Days	17
Other Parts	24 Hours	7

Centering:

Under Beams	14 Days	17
Under Bent Caps	7 Days	14

Limitation for Placing Beams on:

Pile Bents, pile under beam	3 Days	14
Frame Bents, two or more columns	7 Days	16
Frame Bents, single column	14 Days	17

Methods of form removal likely to cause overstressing of the concrete shall not be used. Forms and supports shall be removed in a manner that will permit the concrete to uniformly and gradually take the stresses due to its own weight. Centers shall be gradually and uniformly lowered in a manner that will avoid injurious stresses in any part of the structure.

As soon as concrete for railings, ornamental work, parapets and vertical faces which require a rubbed finish has attained a safe strength, the forms shall be carefully removed without marring the surfaces and corners, the required finishing performed, and the required curing continued.

Prior to final inspection of the work, the Contractor shall remove all falsework, forms, excavated material or other material placed in the stream channel during construction. Falsework piles may be cut or broken off at least 300 millimeters below the mudline or ground line unless the plans specifically indicate that they are to be pulled and completely removed from the channel.

**907-804.03.16--Cold or Hot Weather Concreting.**

**907-804.03.16.1--Cold Weather Concreting.** In cold weather, the temperature of the concrete when delivered to the job site shall conform to the temperature limitations of "Temperature Limitations on Concrete when Delivered to Job Site" listed in Table 6 below.

When the Contractor proposes to place concrete during seasons when there is a probability of ambient temperatures lower than 5°C, the Contractor shall have available on the project the approved facilities necessary to enclose uncured concrete and to keep the temperature of the air inside the enclosure within the ranges and for the minimum periods specified herein.

When there are indications of temperatures of less than 5°C during the first four days after placement of the concrete, the concrete shall be protected from cold temperatures by maintaining a temperature between 10°C and 38°C for at least four days after placement and between 5°C and 38°C for at least three additional days. The Contractor shall use such heating equipment such as stoves, salamanders, or steam equipment as deemed necessary to protect the concrete. When dry heat is used, means of maintaining atmospheric moisture shall be provided.

One or more of the aggregates and/or mixing water may be heated. The aggregates may be heated by steam, dry heat, or by placing in the mixing water which has been heated. Frozen aggregates shall not be used. When either aggregates or water are heated above 38°C, the aggregates and water shall be combined first in the mixer before the cement is added to avoid flash set. Cement shall not be mixed with water or with a mixture of water and aggregate having a temperature greater than 38°C.

The use of salt or other chemical admixtures in lieu of heating will not be permitted.

Before placing concrete, all ice or frost shall be removed from the forms and reinforcement.

In the case of concrete placed directly on or in the ground, such as for footings or bottom slabs, protection and curing during cold weather may be provided as set for concrete pavement under Subsection 501.03.20.3.

The Contractor shall assume all risk and added cost connected with the placing and protecting of concrete during cold weather. Permission given by the Engineer to place concrete during such time will in no way relieve the Contractor of responsibility for satisfactory results. Should it be determined at any time that the concrete placed under such conditions is unsatisfactory, it shall be removed and replaced with satisfactory concrete by the Contractor without extra compensation.

**TABLE 6  
COLD WEATHER TEMPERATURE LIMITATIONS ON CONCRETE WHEN  
DELIVERED TO JOB SITE**

Ambient Temperature °C	Minimum Concrete Temperature °C	
	For sections with least dimension less than 300 mm	For sections with least dimensions 300 mm or greater
-1 to 7	16	10
-18 to -1	18	13
Below -18	21	16

**907-804.03.16.2--Hot Weather Concreting.** The manufacture, placement, and protection of concrete during hot weather requires special attention to insure that uniform slump ranges and satisfactory placement qualities are maintained, that surface cracking is held to a minimum, and that design strengths are produced.

**907-804.03.17--Curing Concrete.** Concrete surfaces shall be protected from premature drying by covering as soon as possible with a satisfactory curing material. When wetted burlap is used, it shall be not less than two thicknesses of Class 3 burlap or its equivalent, and the burlap shall be kept continuously and thoroughly wet. Careful attention shall be given to the proper curing and protection of concrete, and curing by the wetting method shall continue for a period of at least

seven days after placing the concrete. If high-early-strength cement is used, this period may be reduced to four days.

Surfaces to have a Class 2 rubbed or sprayed finish and bridge deck surfaces when the atmospheric temperature is 32°C or above shall be cured only by wetting methods. The curing of concrete bridges with membrane curing will be permitted only under the conditions specified herein.

Surfaces on which curing is to be by liquid membrane shall be given the required surface finish prior to the application of curing compound. During the finishing period the concrete shall be protected by the water method of curing. Concrete surfaces cured by the liquid membrane method shall receive two applications of curing compound. The first application shall be applied immediately after the finishing is completed and accepted. Prior to applying the first application, the concrete shall be thoroughly wetted with water and the liquid membrane applied just as the surface film of water disappears. The second application shall be applied immediately after the first application has set. The rate of application of curing compound will be as prescribed by the Engineer with a minimum spreading rate per application of one liter per five square meters of concrete surface. 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. Should the surface coating be subjected repeatedly to injury, the Engineer may require that the water curing method be applied at once.

When using curing compound, the compound should be thoroughly mixed within an hour before use. If the use of curing compound results in a streaked or blotched appearance, the method shall be stopped and water curing applied until the cause of defective appearance is corrected.

Other precautions to insure the development of strength shall be taken as directed.

Adequate tarpaulins of ample size shall be on the project and used as necessary to protect the work in case of rain or other emergencies.

Conditions governing the placement of concrete and the requirements for the placement, protection, and curing of concrete during cold or hot weather shall conform to the limitations, conditions, and requirements stipulated in Subsection 907-804.03.16 as applicable.

**907-804.03.18--Expansion and Fixed Joints, Bearings, Anchor Bolts, Plates, Castings, Pipes, Drains, Conduits, Etc.** All joints shall be constructed according to details shown on the plans. The edges of the concrete at open or filled joints shall be chamfered or edged as indicated on the plans.

**907-804.03.18.1--Open Joints.** Open joints shall be placed in the locations shown on the plans and shall be constructed by the insertion and subsequent removal of a wood strip, metal plate, or other approved material. The insertion and removal of the template shall be accomplished without chipping or breaking the corners of the concrete. Reinforcement shall not extend across an open joint unless so specified on the plans.

**907-804.03.18.2--Filled Joints.** Poured expansion joints and joints to be sealed with premolded materials shall be constructed similar to open joints. When premolded types are specified, the filler shall be placed in correct position as the concrete on one side of the joint is placed. When the form is removed, the concrete on the other side shall be placed. Adequate water stops of metal, rubber, or plastic shall be carefully placed as shown on the plans.

**907-804.03.18.3--Premolded and Preformed Joint Seals.** When preformed elastomeric compressive joint seals are specified, the previously formed and cured open joint shall be thoroughly cleaned of all foreign matter, the required adhesive uniformly applied, and the seal installed in accordance with the recommendations of the manufacturer of the seal.

When premolded filler is used for the joints in the roadway slab, the tops shall be adequately sealed with poured joint filler in accordance with details on the plans. Premolded filler shall be permanently fastened to an adjacent concrete surface by appropriate use of copper wire, copper nails, or galvanized nails.

**907-804.03.18.4--Steel Joints.** The plates, angles, or other structural shapes shall be accurately shaped at the shop to conform to the section of the concrete floor. Fabrication and painting shall conform to the specifications covering those items. When called for on the plans or in the special provisions, the material shall be galvanized in lieu of painting. Care shall be taken to insure that the surface in the finished plane is true and free of warping. Positive methods shall be employed in placing the joints to keep them in correct position during the placing of the concrete. The opening at expansion joints shall be that designated on the plans at normal temperature, and care shall be taken to avoid impairment of the clearance in any manner.

**907-804.03.18.5--Water Stops.** Adequate water stops of metal, rubber, or plastic shall be placed as shown on the plans. Where movement at the joint is provided for, the water stops shall be of a type permitting movement without injury. They shall be spliced, welded, or soldered to form continuous watertight joints.

**907-804.03.18.6--Bearing Devices.** Bearing plates, rockers, and other bearing devices shall be constructed according to details shown on the plans. Unless otherwise specified or set in plastic concrete, they shall be set in grout to insure uniform bearing. Structural steel and painting shall conform to the requirements of Sections 810 and 814. When specified, the material shall be galvanized in lieu of painting. The rockers or other expansion bearing devices shall be set, considering the temperature at the time of erection, so that the required position of the device is provided.

At all points of bearing contact, concrete members shall be separated from underlying members by dimensioned bearing pads or by methods and/or materials specified on the plans.

When not otherwise specifically provided, contact areas between concrete super-structures and substructures shall be separated by three layers of No. 15, Type I, roofing felt.

**907-804.03.18.7--Friction Joints.** Metal friction joints shall consist of plates as indicated on the plans and shall be securely anchored in correct position. All sliding surfaces shall be thoroughly coated with an approved graphite grease. Movement shall not be impeded by the concrete in which the plates are embedded.

**907-804.03.18.8--Placing Anchor Bolts, Plates, Castings, Grillage, Conduits, Etc.** All anchor bolts, plates, castings, grillage, conduits, etc. indicated on the plans to be placed in or on the concrete shall be placed, set, or embedded as indicated or as directed. These items of the construction shall be set in portland cement mortar as referenced in Subsection 714.11.5, except that anchor bolts may, as permitted by the Engineer, be built into the masonry, set in drilled holes, or placed as the concrete is being constructed by inserting encasing pipe or oiled wooden forms of sufficient size to allow for adjustment of the bolts. After removal of the pipe or forms, the space around the bolts shall be filled with portland cement mortar completely filling the holes. The bolt shall be set accurately and perpendicular to the plane of the seat.

Anchor bolts which are to be set in the masonry prior to the erection of the superstructure shall be carefully set to proper location and elevation with a template or by other suitable means.

When bed plates are set in mortar, no superstructure or other load shall be placed thereon until this mortar has been allowed to set for a period of at least 96 hours, subject to the restrictions for cold weather concreting in Subsection 907-804.03.16.1. The mortar shall be kept well moistened during this period.

Weep hole drains shall be installed in abutments and retaining walls, and roadway drains or scuppers shall be installed in the roadway slabs in accordance with the details shown on the plans.

Where backfill is to be made at weep holes or openings in the structure, sand or stone chimneys or French drains shall be constructed as specified and shall extend through the portion of the backfill to be drained. Except as otherwise provided, the sand, stone, or slag used in this construction shall meet the requirements of Subsection 704.04.

**907-804.03.19--Finishing Concrete Surfaces.**

**907-804.03.19.1--Classes of Finishes.** Surface finishes of exposed concrete surfaces shall be classified as follows:

- Class 1 - Ordinary Surface Finish
- Class 2 - Rubbed or spray Finish
- Class 3 - Tooled Finish
- Class 4 - Sand-Blast Finish
- Class 5 - Wirebrush or Scrubbed Finish
- Class 6 - Floated Surface Finish

**907-804.03.19.2--Class 1, Ordinary Surface Finish.** Immediately following the removal of forms, all fins and irregular projections shall be removed from all surfaces except from those

which are not to be exposed or not to be waterproofed. On all surfaces, the cavities produced by form ties and all other holes, honeycomb spots, broken corners or edges, and other defects shall be thoroughly cleaned, and after having been kept saturated with water for at least three hours shall be carefully pointed and trued with a mortar of cement and fine aggregate mixed in the proportions used in the class of the concrete being finished. Mortar used in pointing shall be not more than one hour old. The mortar patches shall be cured as specified under Subsection 907-804.03.17. All construction and expansion joints shall be left carefully tooled and free of mortar and concrete. The joint filler shall be left exposed for its full length with clean and true edges.

The resulting surfaces shall be true and uniform. All surfaces which cannot be repaired to the satisfaction of the Engineer shall be given a Class 2 rubbed finish.

**907-804.03.19.3--Class 2, Rubbed or Spray Finish.**

**907-804.03.19.3.1--Rubbed Finish.** After removal of forms, the Class 1 finish shall be completed and the rubbing of concrete shall be started as soon as its condition will permit. Immediately before starting this work, the concrete shall be kept thoroughly saturated with water for at least three hours. Surfaces shall be rubbed with a medium course Carborundum stone using a small amount of mortar on its face. The mortar shall be composed of cement and sand mixed in the proportions used in the concrete being finished. Rubbing shall be continued until all form marks, projections, and irregularities have been removed, all voids are filled, and a uniform surface has been obtained. The paste produced by this rubbing shall be left in place at this time.

After all concrete above the surface being treated has been cast, the final finish shall be obtained by rubbing with a fine Carborundum stone and water. This rubbing shall continue until the entire surface is of a smooth texture and uniform color.

After the final rubbing is completed and the surface has dried, it shall be rubbed with burlap to remove loose powder and objectionable marks.

**907-804.03.19.3.2--Spray Finish.** Prior to the spray finish, the concrete shall be given a Class 1 finish in accordance with Subsection 907-804.03.19.2, supplemented if necessary with a grout meeting the requirements of Subsection 714.11 with fine aggregate modified to require 100 percent passing the 1.18-mm Sieve.

Grout shall be applied with burlap pads or float sponges, and as soon as the grout has dried the surface shall be brushed to remove all loose grout and the surface left smooth and free of air holes. Surfaces to be sprayed shall be free of efflorescence, flaking coatings, dirt, oil, and other foreign substances. Prior to application of the spray finish, the surfaces shall be free of moisture, as determined by sight and touch, and in a condition consistent with the manufacturer's published recommendations.

The spray finish material shall meet the requirements of Subsection 714.12 and shall be listed on of Approved Sources of Materials. The spray finish shall be applied with heavy duty spray equipment capable of maintaining a constant pressure as necessary for proper application. The

material shall be applied as recommended by the manufacturer except the rate of application shall not be less than one liter per 1.2 square meters of surface area without prior written approval of the Engineer.

The completed finish shall be tightly bonded to the structure and present a uniform appearance and texture equal to or better than a rubbed finish. If necessary, additional coats shall be sprayed to produce the desired surface texture and uniformity. Upon failure to adhere positively to the structure without chipping or cracking or to attain the desired surface appearance, the coatings shall be completely removed and the surface given a rubbed finish in accordance with Subsection 907-804.03.19.3.1, or other approved methods shall be used to obtain the desired surface finish to the satisfaction of the Engineer without additional cost to the State.

**907-804.03.19.4--Classes 3, 4, and 5 Finishes.** If required, specifications for these finishes will be contained in the special provisions.

**907-804.03.19.5--Class 6, Floated Surface Finish.** After the concrete has been deposited in place, it shall be consolidated and the surface shall be struck off by means of a strike board and floated with a wooden or cork float. An edging tool shall be used on edges and expansion joints. The surface shall not vary more than three millimeters under a 3-meter straightedge. The surface shall have a granular or matte texture which will not be slick when wet.

**907-804.03.19.6--Required Finishes for Various Surfaces.**

**907-804.03.19.6.1--General.** Unless otherwise specified, the top surface of sidewalks, the top horizontal surfaces of footings, and top slabs of box bridges, box culverts, or other structures shall be given a Class 6 finish. All formed concrete surfaces shall be given a Class 1 finish, except on surfaces which are completely enclosed, such as the inside surfaces of cells of box girders, the removal of fins and form marks and the rubbing of mortared surfaces to a uniform color will not be required.

In reference to finishing, exposed surfaces are surfaces or faces which may be seen after all backfill has been placed. Exposed surfaces requiring a Class 2 finish shall be finished at least 300 millimeters below the ground line or the low water elevation, whichever is higher.

The Class 2 finish shall be made upon a Class 1 finish. After the removal of forms the Class 1 finish shall be completed and the rubbing of concrete shall be started as soon as the condition of the concrete will permit.

Bridge floors shall be finished in accordance with Subsection 907-804.03.19.7.

**907-804.03.19.6.2--Finishing Formed Concrete Surfaces of Box Bridges, Box Culverts, Pipe Headwalls, and Minor Structures.** The exposed surfaces of wing walls and parapets of box bridges and box culverts to be used as vehicular or pedestrian underpasses shall be given a Class 2 finish. Exposed surfaces of other box culverts or box bridges, pipe culvert headwalls, and other minor structures shall be given a Class 1 finish unless otherwise indicated on the plans.



The exposed surfaces of retaining walls including copings and parapets shall receive a Class 2 finish.

**907-804.03.19.6.3--Finishing Formed Concrete Surface of Bridges.** All formed concrete bridge surfaces which are exposed shall have a Class 1 or 2 finish as set forth herein unless designated otherwise on the plans.

Bridges with designated surfaces for Class 2 finish are classified as follows:

- Group A - Bridges over highways, roads and streets.
- Group B - Bridges over waterways and railroads.
- Group BB - Twin or adjacent bridges of Group B category.

When a Group B or BB bridge also spans a highway, road or street, exposed concrete surfaces shall be finished in accordance with Group A requirements.

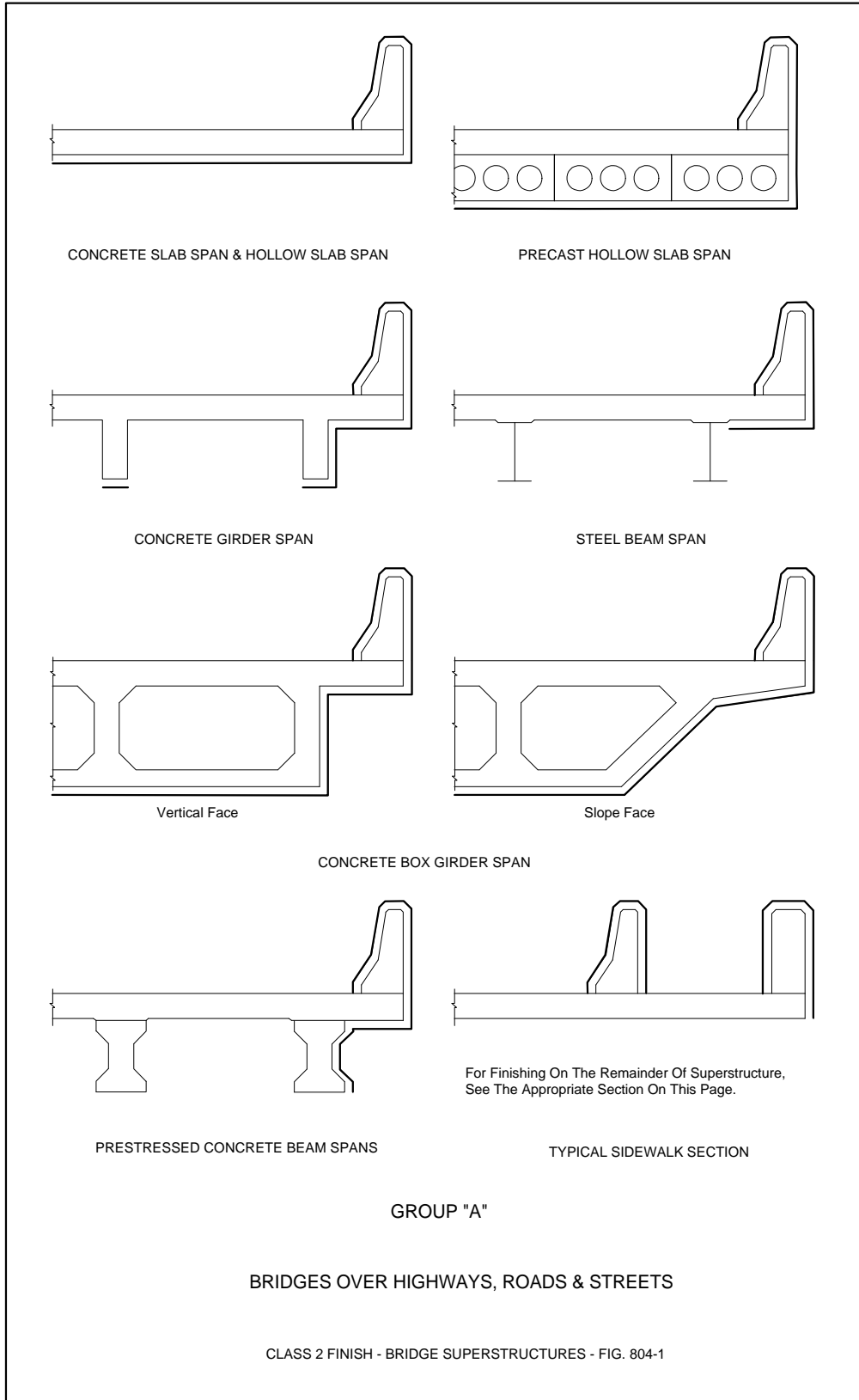
**(A) Superstructures.** Concrete surfaces to be given a Class 2 finish shall be the exposed surfaces of wings and rails and other exposed surfaces indicated by a double line in Figures 804-1, 804-2, and 804-3.

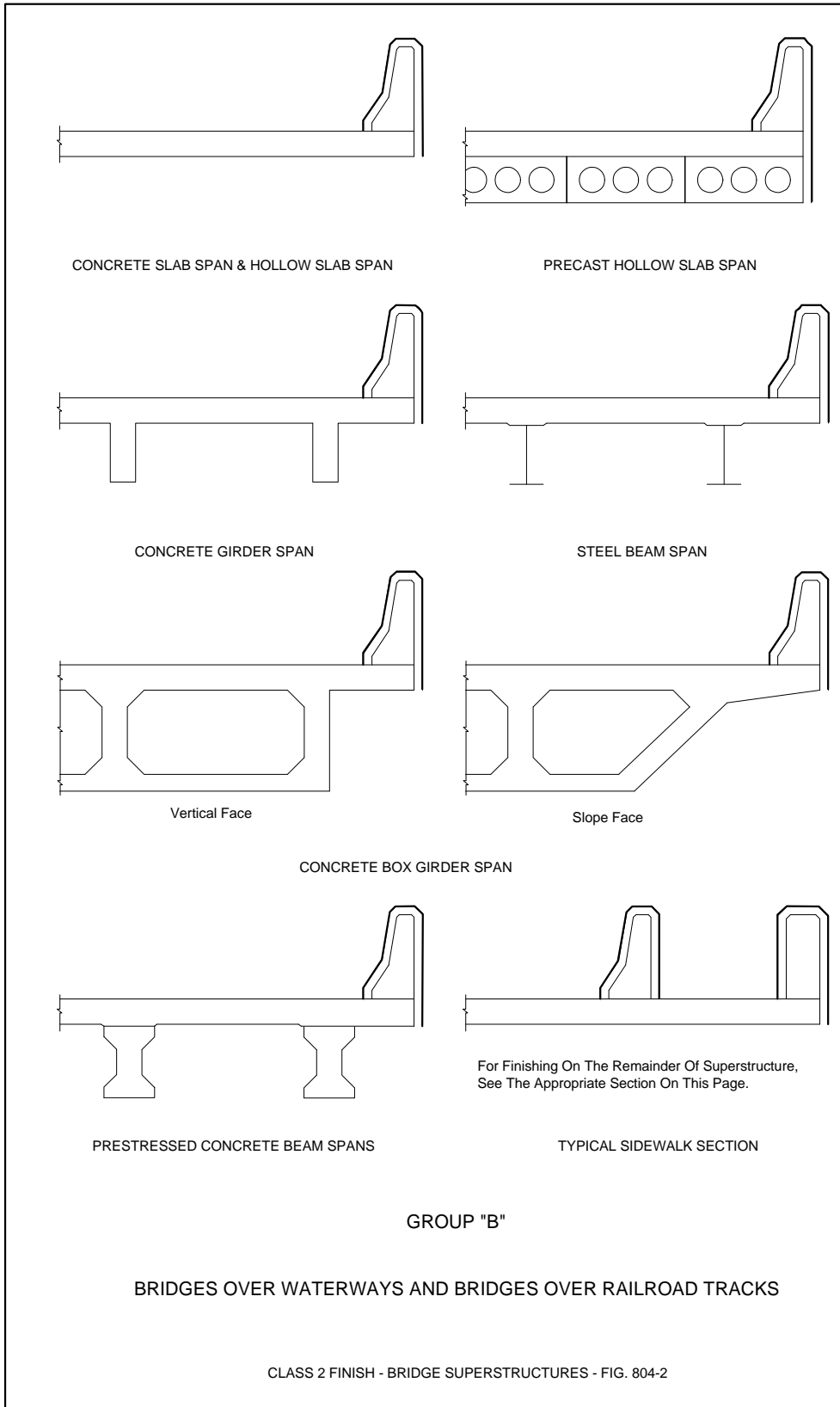
When a Group B or BB also spans a highway, road or street, the superstructure of spans over and extending one span in each direction beyond the lower level highway, road or street shall be given a Class 2 finish as shown for Group A.

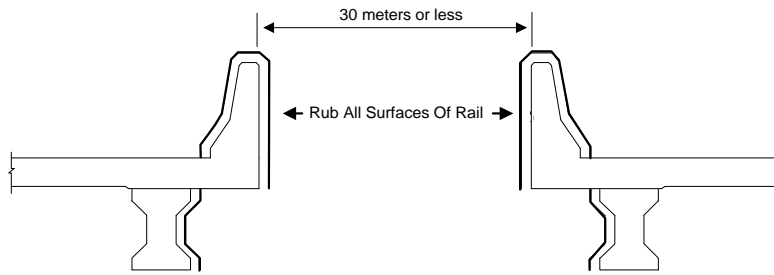
**(B) Substructures.** Concrete surfaces to be given a Class 2 finish are as follows:

**Group A.** Exposed surfaces of abutments, end bents, end bent posts, wing walls, railing, retaining walls, parapets, copings, piers, columns, piles, caps, struts or walls between columns or piles, encasement of steel piles, arch rings and spandrel walls.

**Group B and BB.** Exposed surfaces of abutments, wing walls, end bent posts, railing, retaining walls, parapets and copings.







GROUP "B B" - ADJACENT BRIDGES

TYPICAL FOR OTHER BRIDGE SPAN TYPES

GROUP "B B"

TWIN or DUAL BRIDGES

CLASS 2 FINISH - BRIDGE SUPERSTRUCTURES - FIG. 804-3

**907-804.03.19.7--Finishing Bridge Floors.**

**907-804.03.19.7.1--General.** Concrete bridge decks shall be struck off and finished by the method(s) designated on the plans.

In the event a method is not designated, the Contractor may use either the longitudinal or transverse method subject to the requirements contained in these specifications.

Except when indicated otherwise on the plans, the final surface texture of the bridge floor shall be either a drag, belt, or broom finish. 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.

**907-804.03.19.7.2--Longitudinal Method.** The longitudinal method requires that the strike-off screed be supported on accurately graded and supported bulkheads or templates placed across the full width at the end(s) of the pour. Before the concrete is placed, approved fixed templates or wooden bulkheads of not less than 31-mm lumber shall be placed perpendicular to the centerline of the roadway, or in the case of skew bridges at the angle of skew. The upper surface of the template or bulkheads shall be accurately set to conform to the required grade and crown.

Special attention shall be given to the gutter lines where the strike-off screed cannot reach. The gutters shall be finished by hand and tested with the straight edge. Floor drains shall be set lower than the finished gutter line and finished over. After initial set, the concrete shall be dished out and finished around the drains to form an outlet.

After the concrete has been deposited and rough graded, it shall be struck off by means of a strike-off screed resting on the bulkheads or fixed templates. The strike-off screed shall be of a type satisfactory to the Engineer and shall have sufficient strength to retain its shape under all working conditions. The final surface shall comply with the applicable requirements of Subsections 501.03.17.6 and 501.03.18, and unless otherwise specified in the contract, the final finish under this method shall be the belt finish.

In general, the overall strike-off screed should be trussed, with bracing heavy enough to support the weight of a man without deflecting, and should be adjustable for camber and correction of sag.

The strike-off screed will ride on the bulkheads or fixed templates at the ends of the section being finished. Care shall be taken to see that the bulkhead or fixed template elevations are accurately set since the entire span surface will be controlled by them. The manipulation of the screed shall be such that neither end is raised from the bulkheads or templates during the process.

The concrete shall be struck off by beginning at one curb and proceeding entirely across the span. A slight excess of concrete shall be kept in front of the cutting edge at all times. This operation shall be repeated at least three times. In each case, the strike-off screed shall be picked up and carried back to the point of beginning. No backward strokes will be allowed. The strike-off screed shall be moved along the bulkheads or fixed templates with a combined longitudinal

and transverse motion. This operation may be manual or mechanical. Standing or walking in the fresh concrete ahead of the strike-off screed will not be permitted.

**907-804.03.19.7.3--Transverse Method.** The transverse method requires that the screeding equipment be supported on accurately graded and supported rails placed beyond the gutter lines and parallel with the centerline of the bridge.

The machine shall be so constructed and operated as to produce a bridge floor of uniform density with minimum manipulation of the fresh concrete and achieved in the shortest possible time. Manual transverse methods of screeding will not be permitted.

The finishing machine shall be supported on vertically adjustable rails set a sufficient distance from the gutter line to allow free movement of the screed from gutter line to gutter line. Satisfactory means of load distribution with minimum rail deflection shall be provided. The screed rails for a deck pour shall be completely in place for the full length of the pour and shall be firmly secured prior to placing concrete. The screed rails shall be adjusted as necessary to compensate for settlement and deflection occurring during the screeding operations. Supports for the screed rail shall be located directly over slab overhang support brackets as referenced in Subsection 907-804.03.14.1.

At least one dry run shall be made the length of each pour with a "tell-tail" device attached to the screed carriage to assure the specified clearance to the reinforcing steel.

The screed shall be equipped with a metal cutting edge or other approved mechanical means for accurately fine grading the plastic concrete to the required grade and surface smoothness and shall be supported by a bridging structure sufficiently rigid and heavy to perform operations satisfactorily on concrete of minimum slump without vibration, distortion, and wrecking of forms. 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 floor.

The screed shall complete sufficient passes to strike off all of the excess concrete with ample mortar along the entire leading edge to assure filling of low spots. Care shall be taken to remove all objectionable material from the gutters where final hand finishing will be required.

The selection of the transverse method may require the Contractor to furnish bridge deck concrete which contains an approved water-reducing set retarding admixture in the quantities approved by the Engineer at no additional cost to the State. See Subsection 713.02 for more information.

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.

**907-804.03.19.7.4--Acceptance Procedure for Bridge Deck Smoothness.** After the bridge decks and bridge end slabs are completed and preferably before the construction of the bridge railing, they shall be tested for ride quality using a Contractor furnished profilograph. Profile Index Values shall be determined in accordance with Department SOPs and these specifications.

The profilograph shall meet the requirements of Subsection 401.02.6.5. Profiles will be obtained in the wheel paths of the main thru lanes and, where conditions allow, in the wheel paths of any auxiliary lanes or tapers. Profile Index Values for bridge decks and bridge end slabs shall be obtained for all state roads with four lanes or more, on state roads three lanes or less where the current traffic count is 2,000 ADT or higher, or as designated on the plans. Ride quality tests will begin at a point where the rearmost wheel of the profilograph is as close to the beginning of the bridge end slab as possible and shall proceed forward across the remainder of the bridge end slab, across the bridge deck and continue across the next bridge end slab to a point where the front-most wheel of the profilograph reaches the far-most edge of the bridge end slab. Bridges and bridge end slabs not requiring a ride quality test must meet a 3.0 millimeters in 3-meter straightedge requirement in longitudinal and transverse directions. Bridges in horizontal curves having a radius of less than 300 meters at the centerline and bridges within the superelevation transition of such curves are excluded from a test with the profilograph.

The Profile Index Value for bridge decks including the bridge end slabs shall be averaged for the left and right wheel path for each lane and where applicable, each auxiliary lane and taper, and shall not exceed 1025 millimeters per kilometer for each lane. In addition, individual bumps or depressions exceeding 8.0 millimeters, when measured from a chord length of 7.5 meters, shall be corrected and the surface shall meet a 3.0 millimeters in 3-meter straightedge check made transversely across the deck or slab.

Bridge decks and bridge end slabs not meeting the preceding requirements shall be corrected. Corrective work shall be done at no additional cost to the Department. Corrective work shall consist of grinding the bridge deck in accordance with this specification. All corrective work shall precede final surface texturing. After completion of final surface texturing, all surface areas corrected by grinding shall be sealed with a nonstaining 40% minimum alkylalkoxysilane penetrating sealant applied per the manufacturer's directions.

In case the bridge end slabs are to be constructed on a future project, the bridge deck(s) alone shall be tested for ride quality using the acceptance procedure outlined above, except that the ride quality test will begin at a point where the rearmost wheel of the profilograph is as close to the beginning of the bridge as possible and shall proceed forward across the bridge deck to a point where the front-most wheel of the profilograph reaches the far-most edge of the bridge.

Expansion joint installation shall be delayed and the joint temporarily bridged to facilitate operation of the profilograph and grinding equipment across the joint wherever feasible.

It shall be the Contractor's responsibility to schedule profilograph testing. The Contractor shall notify the Department at least five (5) days in advance of profilograph testing. The Contractor shall ensure that the area to be tested has been cleaned and cleared of all obstructions. Profilograph testing of bridge decks and bridge end slabs shall be performed by the Contractor under supervision of the Engineer. All profilograph testing shall be performed at no additional cost to the Department. The Contractor will be responsible for traffic control associated with this testing operation.

**907-804.03.19.7.4.1--Grinding Bridge Decks.**

**907-804.03.19.7.4.1.1--Equipment.** The grinding equipment shall be a power driven, self-propelled machine that is specifically designed to smooth and texture Portland cement concrete pavement with diamond blades. The effective wheel base of the machine shall not be less than 3.6 meters. It shall have a set of pivoting tandem bogey wheels at the front of the machine and the rear wheels shall be arranged to travel in the track of the fresh cut pavement. The center of the grinding head shall be no further than 0.9 meter forward from the center of the back wheels.

The equipment shall be of a size that will cut or plane at least 0.9 meter wide. It shall also be of a shape and dimension that does not encroach on traffic movement outside of the work area. The equipment shall be capable of grinding the surface without causing spalls at cracks, joints, or other locations.

**907-804.03.19.7.4.1.2--Grinding.** The grinding areas will be determined by the Contractor and approved by the Engineer. The Contractor shall develop and submit to the Engineer for approval a Grinding Plan. The Contractor shall allow up to 45 days for the Department to review the Plan prior to starting any grinding operations. This plan shall include as a minimum:

- 1) Name of the project superintendent in responsible charge of the grinding operation.
- 2) List and description of all equipment to be used.
- 3) Maximum depth of each pass allowed by the grinding equipment.
- 4) Maximum width of each pass allowed by the grinding equipment.
- 5) Details of a sequence of the grinding operation.
- 6) Complete data from Profilograph runs, based on a 8.0-mm bump height, for each wheel path over the entire bridge including bridge end slabs, which shall include profile index, bump locations (in stations), bump heights and proposed final cross-slopes. When a computerized profilograph is used, a complete printout of the profile including the header information for each wheel path will be required.
- 7) Data showing reinforcing steel clearance in all areas to be ground.
- 8) A detailed drawing of the deck showing areas to be ground with station numbers and grinding depths clearly indicated.
- 9) A description of grinding in areas where drains are in conflict with grind areas.
- 10) Details of any changes in deck drainage, anticipated ponding, etc.

The Engineer will evaluate the grinding plan for conformance with the plans and specifications, after which the Engineer will notify the Contractor of any additional information required and/or changes that may be needed. Any part of the plan that is unacceptable will be rejected and the Contractor shall submit changes for reevaluation. All approvals given by the Engineer shall be subject to trial and satisfactory performance in the field, and shall not relieve the Contractor of the responsibility to satisfactorily complete the work.

The construction operation shall be scheduled and proceed in a manner that produces a uniform finished surface. Grinding will be accomplished in a manner that eliminates joint or crack faults while providing positive lateral drainage by maintaining a constant cross-slope between grinding extremities in each lane. Auxiliary or ramp lane grinding shall transition as required from the mainline edge to provide positive drainage and acceptable riding surface.



The operation shall result in a finished surface that conforms as close as possible to the typical cross-section and the requirements specified in Subsection 907-804.03.19.7.4.1.3.

The Contractor shall establish positive means for removal of grinding residue. Residue shall not be permitted to flow across lanes used by public traffic or into gutters or drainage facilities.

**907-804.03.19.7.4.1.3--Final Surface Finish.** The grinding process shall produce a finish surface that is as close as possible to grade and uniform in appearance with a longitudinal line type texture. The line type texture shall contain parallel longitudinal corrugations that present a narrow ridge corduroy type appearance. The peaks of the ridges shall be approximately 2.0 millimeters higher than the bottoms of the grooves with approximately 173 to 187 evenly spaced grooves per meter. Grinding chip thickness shall be a minimum of 2.0 millimeters thick.

The finished bridge decks and bridge end slabs shall be retested for riding quality using a Contractor furnished profilograph meeting the requirements of 401.02.6.5. The finished results shall meet the following conditions:

- (a) Individual bumps or depressions shall not exceed 8.0 millimeters when measured from a chord length of 7.5 meters.
- (b) The final index value for the bridge deck and bridge end slabs shall be an average of both the right and left wheel paths of each lane and shall not exceed 1025 millimeters per meter.

The final profilogram will be furnished to the Engineer for informational purposes.

**907-804.03.19.8--Finishing Horizontal Surfaces of Footings or Top Slabs of Box Bridges, Culverts, or Other Structures.** The finishing of horizontal surfaces of footing or top slabs of box bridges, culverts, or other structures shall be achieved by placing an excess of material in the form and removing or striking off the excess with a template, forcing the coarse aggregate below the mortar surface. After the concrete has been struck off the surface shall be given a Class 6 finish.

**907-804.03.19.9--Finishing Exposed Surfaces of Sidewalks.** After the concrete has been deposited in place it shall be consolidated and the exposed surface shall be given a Class 6 finish. An edging tool of the required radius shall be used on all edges and at all expansion joints. The surface shall have a granular texture which will not be slick when wet.

Sidewalk surfaces shall be laid out in blocks with an approved grooving tool as shown on the plans or as directed.

**907-804.03.20--Opening Bridges.**

**907-804.03.20.1--Public Traffic.** Unless otherwise specified, concrete bridge floors shall be closed to public highway traffic for a period of at least 21 days after placing concrete.

**907-804.03.20.2--Construction Traffic.** Unless otherwise specified, concrete bridge floors shall be closed to construction traffic for a period of seven days after placing concrete and the minimum required compressive strength for the concrete placed is obtained.

**907-804.03.21--Final Cleanup.** Upon completion of the work all equipment, surplus materials, forms, and waste material shall be removed, the bridge cleaned, and the site of the work given a final cleanup.

**907-804.03.22--Precast-Prestressed Concrete Bridge Members.**

**907-804.03.22.1--General.** All installations and plants for the manufacture of precast-prestressed bridge members shall be PCI (Prestressed Concrete Institute) Certified. Bridge members manufactured in plants or installations not so approved will not be accepted for use in the work. The Contractor or other manufacturer shall employ a technician skilled in the adopted system of prestressing to supervise the manufacturing operations. This technician shall be certified according to the guidelines of this specification. The Contractor shall develop and implement a Quality Control Program as per Division I of PCI Quality Control Manual, 4<sup>th</sup> Edition. The Quality Control Program shall be submitted to the District Materials Engineer for approval.

**907-804.03.22.2--Stressing Requirements.** The jacks for stressing shall be equipped with accurate calibrated gauges for registering the jacking pressure. Means shall be provided for measuring elongation of strands to at least the nearest millimeter.

Prior to beginning work, the Contractor or manufacturer shall have all jacks to be used, together with their gauges, calibrated by an approved laboratory. All jacks and gauges shall have an accuracy of reading within two percent. The testing agency shall furnish the Engineer a statement certifying that the jacks and gauges meet this requirement. During the progress of the work, if a gauge appears to be giving erratic results or if the gauge pressure and elongations indicate materially differing stresses, recalibration will be required.

Calibration of jacks and gauges shall be repeated at intervals deemed necessary by the Engineer. These intervals for calibration shall not exceed one year.

Shop drawings of prestressed beams, including an erection plan, shall be submitted in duplicate to the Bridge Engineer for approval prior to manufacture of members.

**907-804.03.22.2.1--Methods.** Plans for the particular bridge members will show prestressing by one of the following methods:

**(A) Pretensioning.** The prestressing strands are stressed initially. After the concrete is placed, cured, and has attained the compressive strength shown on the plans, the stress is transferred to the member. The method used for pretensions shall be in accordance to Division V of PCI Quality Control Manual, 4<sup>th</sup> Edition.

**(B) Posttensioning.** The posttensioning tendons are installed in voids or ducts and are stressed and anchored after development of the compressive strength specified on the plans. The voids or ducts are then pressure grouted.

**(C) Combined Method.** Part of the reinforcing is pretensioned and part posttensioned. Under this method all applicable requirements for the two methods specified shall apply to the respective stressing elements being used.

**907-804.03.22.2.2--Alternate Details for Prestressed Members.** In the event that the Contractor / Manufacturer desires to use materials or methods that differ in any respect from those shown on the plans or described in these specifications, the Contractor shall submit for approval full plan details on acceptable tracings suitable for reproduction and specifications which shall become the property of the Department. In order for alternate materials and/or methods to be considered, they will be required to comply fully with the following:

- A. Provisions equal to those stipulated in these specifications.
- B. Current AASHTO Specifications.
- C. Recommendations of materials manufacturer.
- D. Camber tolerance of beams and spans shown on plans.

Note: Alternate materials and methods will not be authorized on Federal-Aid Projects.

The Engineer shall be the sole judge as to the adequacy and propriety of any variation of materials or methods.

**907-804.03.22.2.3--Stressing Procedure.**

**(A) General.** Stressing shall be performed by suitable jacks working against unyielding anchorages and capable of maintaining the required stress for an indefinite period without movement or yielding. Strands may be stressed singularly or in a group.

The tension to be applied to each strand shall be as shown on the plans. The tension shall be measured by both jacking gauges and elongations in the strands and the result shall check within close limits.

It is anticipated that there will possibly be a difference in indicated tension between jack pressure and elongation of about five (5) percent. In this event, the discrepancy shall be placed on the side of slight overstress rather than understress.

In the event of an apparent discrepancy between gauge pressure and elongation of as much as five (5) percent, the entire operation shall be carefully checked, and the source of error determined before proceeding further.

Elongation is to be measured after the strands have been suitably anchored, and all possible slippage at the anchorages has been eliminated.

In all stressing operations, the stressing force shall be kept as nearly symmetrical about the vertical axis of the member as practicable.

**(B) Pretensioning.** All strands to be prestressed shall be brought to a uniform initial tension prior to being given their full pretensioning. This uniform initial tension of approximately 4450 to 8900 newtons shall be measured by suitable means such as a dynamometer so that its value can be used as a check against elongation computed and measured.

After the initial tensioning, the strand or group shall be stressed until the required elongation and jacking pressure is within the limits specified.

When the strands are stressed in accordance with the plan requirements and these specifications and all other reinforcing is in place, the concrete shall be placed in the prepared forms.

Strand stress shall be maintained until the concrete between anchorages has attained the required compressive strength as determined by cylinder tests, after which the strands shall be cut off flush with the ends of column members, and cut as shown on the plans for beams, girders, etc. Strands shall be cut or released in such a manner that eccentricity of prestress will be kept to a minimum and no damage to the member will result. The strand cutting pattern shall be as shown on the plans or as approved by the Bridge Engineer.

**(C) Posttensioning.** For all posttensioning tendons/bars the anchor plates shall set exactly normal in all directions to the axis of the tendon/bar. Parallel wire anchorage cones shall be recessed within the beams. Tensioning shall not take place until the concrete has reached the compressive strength shown on the plans.

Elongation and jacking pressures shall make appropriate allowance for all possible slippage or relaxation of the anchorage. Posttensioning tendons/bars shall be stressed in the order and manner shown on the plans.

The units shall be tensioned until the required elongations and jacking pressures are attained and reconciled within the limits specified in Subsection 907-804.03.22.2.3(A) with such overstresses as approved by the Engineer for anchorage relaxation.

Independent references shall be established adjacent to each anchorage to indicate any yielding or slippage that may occur between the time of initial stressing and final release of the strands.

Straight tendons/bars may be tensioned from one end. Unless otherwise specified, curved tendons shall be stressed by jacking from both ends of the tendons.

**(D) Combined Method.** In the event that girders are manufactured with part of the reinforcement pretensioned and part posttensioned, the applicable portions of the requirements listed herein shall apply to each type.

**907-804.03.22.3--Manufacture.**

**907-804.03.22.3.1--Forms.** The forms used for precast-prestressed bridge members shall meet the requirements of Division II of the PCI Quality Control Manual, 4<sup>th</sup> Edition.

**907-804.03.22.3.2--Placing and Fastening Steel.** Placing and fastening of all steel used for precast-prestressed bridge members shall meet the requirements of Division V of the PCI Quality Control Manual, 4<sup>th</sup> Edition.

**907-804.03.22.3.3--Holes for Prestressing Tendons/Bars.** Holes provided in girders for prestressing tendons/bars shall be formed by means of inflatable rubber tubing, flexible metal conduit, metal tubing, or other approved means.

**907-804.03.22.4--Placing and Curing Concrete.**

**907-804.03.22.4.1--Placing.** The placing of concrete shall meet the applicable requirements of Division III of PCI Quality Control Manual, 4<sup>th</sup> Edition.

**907-804.03.22.4.2--Curing.** Initial and accelerated curing of all members shall meet the applicable requirements of Division IV of PCI Quality Control Manual, 4<sup>th</sup> Edition except for the following listed requirements.

The source of heat for accelerated cure shall be steam. Calibrated thermocouples shall be implanted into the concrete members to monitor areas expected to have maximum and minimum heat. Curing methods and procedures listed in the prestress producer's PCI Quality System Manual shall be approved by the Department before their implementation.

**907-804.03.22.4.3--Removal of Side Forms.** Side forms may be removed after the concrete has attained sufficient strength to maintain a true section. In order to obtain "sufficient strength", it may be necessary to cure members for 12 hours or more as prescribed in Subsection 907-804.03.22.4.2, or to attain a minimum compressive strength of 7 MPa.

If high-early-strength concrete is obtained by use of low slump (0 to 38 millimeters) concrete, vacuum process, or other approved methods, side forms may be removed earlier; however, approval of the methods and revision from normal schedules will be made only after inspections by the District and Jackson Laboratories have determined that satisfactory results will be attained by the methods and schedules proposed.

**907-804.03.22.4.4--Grouting.** The holes through posttensioned members in which the tendons are installed shall be equipped with approved grouting vents. All prestressing tendons to be bonded shall be free of dirt, loose rust, grease, or other deleterious substances. Before grouting, the ducts shall be free of water, dirt, and other foreign substances. The ducts shall be blown out with compressed air until no water comes through the ducts. For long members with draped tendons an open tap at low points may be necessary. After completion of stressing, the annular space between sides of tendon and sides of hole shall be grouted as set in the following paragraphs.

With the grouting vent open at one end of the core hole, grout shall be applied continuously under moderate pressure at the other end until all entrapped air is forced out through the open grout vent, as evidenced by a steady stream of grout at the vent. Whereupon, the open vent shall be closed under pressure. The grouting pressure shall be gradually increased to a refusal of at least 520kPa and held at this pressure for approximately 10 seconds, and the vent shall then be closed under this pressure.

Portland cement grout shall consist of a mixture of:

- 1 part Type 1 Portland cement
- 1/4 part fly ash
- 3/4 part washed sand \*
- 15 to 22 liters of water per bag of cement.

\* all passing 1.18-mm sieve and not more than 5% retained on the 600- $\mu$ m sieve

A plasticizing admixture, subject to approval by the Engineer, shall be used in accordance with the manufacturer's recommendations.

The grout shall be mixed in a mechanical mixer, shall have the consistency of heavy paint, and shall be kept agitated until placed.

Members shall not be moved before the grout has set, ordinarily at least 24 hours at 26°C or higher.

**907-804.03.22.5--Finishing and Marking.** Units shall be given a Class 1 finish at the plant and shall be given a Class 2 finish after erection when required.

Recesses in girders at end of diaphragm bars, holes left by form ties, and other surface irregularities shall be carefully cleaned and patched with an approved non-shrink commercial grout or a non-shrinkage mortar of the following composition:

- 1 part Type 1 cement
- 1 1/2 to 2 parts fine sand
- 14 to 21 grams of aluminum powder per bag of cement
- Approved admixture per Subsection 713.02.
- Sufficient water to produce a workable but rather stiff mix.

The units shall be clearly marked in accordance with Department SOP.

**907-804.03.22.6--Handling, Storage, and Installation.** Posttensioned members may be handled immediately after completion of stressing and grout has set. Pretensioned members may be handled immediately after release of tensioning. In either case, the members shall have developed a minimum compressive strength of 28 MPa prior to handling. In the event stressing is not done in a continuous operation, members shall not be handled before they are sufficiently stressed, as determined by the Engineer, to sustain all forces and bending moments due to

handling. In the handling, storage, and transporting of beams or girders, they shall be maintained in an upright position (position as cast) at all times and shall be picked up from points within distance from beam ends equal to beam depth or at pick-up points designated on the plans. Disregard of this requirement and dropping of units may be cause for rejection, whether or not injury to the unit is apparent. Piles shall be picked up and loaded for shipment at points shown by the suspension diagram on the plans. Extreme care shall be used in handling and storing piles to prevent damage. The dropping of a pile may be cause for rejection of same, whether or not there is apparent injury to the member.

Care shall be exercised during the storage, hoisting, and handling of precast units to prevent damage. Damaged units shall be replaced by the Contractor at no additional costs to the State.

When members are stacked for storage, each layer shall be supported at or near the pick-up points. Supports shall be carefully placed in a vertical line in order that the weight of any member will not stress an underlying member. To prevent damage in moving members it is suggested that rigid supports be covered with a cushion of wood or other resilient material.

Members shall not be transported until at least one day after the concrete has reached a compressive strength of 35 MPa or greater strength when shown on the plans.

Piles used in salt water shall not be driven until concrete is seven days old, and air-entrained concrete shall be used in such piles.

After prestressed concrete voided slab units are set, doweled and bolted in their final position the keyways and dowel holes shall be filled with an approved non-shrink grout. Traffic shall not be permitted on the spans for 24 hours after grouting, and heavy construction equipment exceeding 13.6 metric tons will not be permitted on the spans for a period of 72 hours after grouting.

Adjacent slab units that mismatch more than six millimeters shall be adjusted prior to grouting of the shear keys. The maximum deviation from cross-section and grade (exclusive of camber) at any point shall not exceed six millimeters; and when the surface is checked with a 3-meter straightedge applied both parallel and perpendicular to the centerline, the variance shall not exceed six millimeters.

In addition to the requirements set out in this section, the applicable requirements of Section 803 shall apply.

**907-804.03.22.7--Tolerances for Accepting Precast Prestressed Concrete.** Member shall meet the dimension tolerances set by Division VII of PCI Quality Control Manual, 4<sup>th</sup> Edition.

**907-804.03.22.8--Testing of Materials.** Concrete and aggregate testing shall meet the requirements of Division VI of PCI Quality Control Manual, 4<sup>th</sup> Edition, except that the concrete mix design shall meet the requirements of Subsection 907-804.02.10 "Portland Cement Concrete Mix Design". Also, in addition to concrete compressive tests samples made for detensioning and 28-day strength, test samples shall be made and tested in order to prove compliance to the requirements of Subsection 907-804.03.22.6 for handling and shipping prestressed members.

Compressive strength test cylinders for detensioning, handling and shipping shall receive the same type curing as the prestressed members for which they represent. Compressive strength samples shall be made each day for each prestress casting bed.

**907-804.03.22.9--Testing Personnel.** Technicians testing Portland cement concrete used in the production of precast-prestressed members shall be PCI Quality Control Technician/Inspector Certified. Each producer of precast-prestressed members shall have at least one PCI Level II certified technician on site during production for Department projects.

**907-804.03.22.10--Documentation.** The Precast-Prestressed Producer for each Precast-Prestressed concrete bridge member shall maintain documentation as set forth in Department SOPs. Testing and inspection record forms shall be approved by the Central Laboratory and as a minimum contain information listed in Division VI of PCI Quality Control Manual, 4<sup>th</sup> Edition.

**907-804.03.22.11--Use in the Work.** Before any Precast-Prestressed member is incorporated into the work, documentation as described in Subsection 907-804.03.22.10 is required along with visual inspection of the member at the bridge construction site. Project Office personnel as per Department SOP will make visual inspection of the prestressed member at the bridge construction site.

**907-804.04--Method of Measurement.** Concrete, complete and accepted, will be measured in cubic meter. The concrete volume will be computed from the neat dimensions shown on the plans, except for such variations as may be ordered in writing by the Engineer. The quantity of concrete involved in fillets, scorings, and chamfers 645 square millimeters or less in cross-sectional area will be neglected. Deductions shall be made for the following:

- (1) The volume of structural steel, including steel piling encased in concrete.
- (2) The volume of timber piles encased in concrete, assuming the volume to be 0.075 cubic meter per meter of pile.
- (3) The volume of concrete piles encased in concrete.

No deduction will be made for the volume of concrete displaced by steel reinforcement, floor drains, or expansion joint material that is 25 millimeters or less in width normal to the centerline of the joint. Where railing is bid as a separate item, that portion of the railing above the top of the curb, above the surface of the sidewalk, or above the bridge roadway, as the case may be, will not be included in the measurement of concrete, but will be measured as railing. Massive pylons or posts which are to be excepted from payment for railing and are intended to be measured for as concrete will be so noted on the plans.

When shown on the plans or directed by the Engineer, concrete placed as a seal for cofferdams will be measured by the cubic meter actually in place, except that no measurement will be made of seal concrete placed outside of an area bounded by vertical planes 450 millimeters outside the neat lines of the footing as shown on the plans or as directed and parallel thereto.

Reinforcing steel will be measured and paid for in kilogram as set out in Section 805.



Unless otherwise specified, structural steel will be measured and paid for as set out in Section 810.

Excavation for bridges will be measured and paid for as in Section 801.

Piling will be measured and paid for as set out in Sections 802 and 803.

Railing will be measured and paid for as set out in Section 813.

Prestressed concrete beams and plank will be measured by the meter.

Prestressed concrete voided slab units, interior and exterior with railing, and precast concrete caps, intermediate and end cap with winged abutment wall, of the size and type specified will be measured by the unit complete in place and accepted. Railing, winged abutment walls, grout, tie rods, nuts, washers, bearing pads and other appurtenances will not be measured for separate payment.

**907-804.05--Basis of Payment.** Concrete will be paid for at the contract unit price per cubic meter for the class or classes specified, complete in place. Prestressed concrete beams and plank will be paid for at the contract unit per meter of specified size and type.

Prestressed concrete voided slab units and precast caps will be paid for at the contract unit price per each for the specified types and sizes, complete in place and accepted; which price shall be full compensation for furnishing, hauling and erecting the members; including all prestressing reinforcement and other reinforcement in the members. Payment at the contract unit prices bid shall be full compensation for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work.

Payment will be made under:

- 907-804-A: Bridge Concrete (Class \_\_\_\_ ) - per cubic meter
- 907-804-B: Box Bridge Concrete (Class \_\_\_\_ ) - per cubic meter
- 907-804-C: Length Prestressed Concrete Beam ( Type \_\_\_\_ ) - per meter
- 907-804-D: Length Prestressed Concrete Plank - per meter
- 907-804-E: Length Prestressed Concrete Voided Slab ( Size Interior) - per each
- 907-804-F: Length Prestressed Concrete Voided Slab ( Size Exterior) - per each
- 907-804-G: Length Precast Concrete Caps (End Unit with Wall) - per each
- 907-804-H: Length Precast Concrete Caps (Intermediate Unit) - per each

### **SPECIAL PROVISION NO. 906-3**

#### **Training Special Provisions**

This Training Special Provision supersedes subparagraph 7b of the Special Provision entitled "Specific Equal Employment Opportunity Responsibilities," (Attachment 1), and is in implementation of 23 U.S.C. 140(a).

As part of the Contractor's equal employment opportunity affirmative action program training shall be provided as follows:

The Contractor shall provide on-the-job training aimed at developing full journeymen in the type of trade or job classification involved.

The number of trainees to be trained under this special provision will be as indicated in the bid schedule of the contract.

In the event that a Contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided, however, that the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The Contractor shall also insure that this training special provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the Contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment. Prior to commencing construction, the Contractor shall submit to the State highway agency for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the Contractor shall specify the starting time for training in each of the classifications. The Contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeymen status is a primary objective of this Training Special Provision. Accordingly, the Contractor shall make every effort to enroll minority trainees and women (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent that such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a

journeyman. The Contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the Contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the Contractor and approved by the State highway agency and the Federal Highway Administration. The State highway agency and the Federal Highway Administration shall approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the Contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the division office. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the Contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the engineer, reimbursement will be made for training persons in excess of the number specified herein. This reimbursement will be made even though the Contractor receives additional training program funds from other sources, provided such other does not specifically prohibit the Contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the Contractor where he does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or pays the trainee's wages during the offsite training period.

No payment shall be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the Contractor and evidences a lack of good faith on the part of the Contractor in meeting the requirements of this Training Special Provision. It is normally expected that a trainee will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program. It is not required that all trainees be on board for the entire length of the contract. A

Contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid at least 60 percent of the appropriate minimum journeyman's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provision.

The Contractor shall furnish the trainee a copy of the program he will follow in providing the training. The Contractor shall provide each trainee with a certification showing the type and length of training satisfactorily completed.

The Contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

## **SPECIAL PROVISION NO. 906-6**

### **MISSISSIPPI DEPARTMENT OF TRANSPORTATION ON-THE-JOB TRAINING PROGRAM**

#### **ALTERNATE TRAINING SPECIAL PROVISION**

##### **PURPOSE**

The purpose of the On-The-Job Training (OJT) Program is to provide training for minority, female and economically disadvantaged individuals in order that they may develop marketable skills and gain journey status in the skilled craft classifications in which they are being trained.

##### **INTRODUCTION**

**This voluntary** OJT Program has been developed through the partnering efforts of the Road Builders of Mississippi, the Federal Highway Administration (FHWA) and the Mississippi Department of Transportation (MDOT).

The OJT Program has been designed for use by participating contractors and subcontractors in meeting their training needs. The objective of the OJT Program is to develop skilled workers in the skilled craft trade areas of highway construction who are sufficiently trained to be productive employees in the highway construction industry work force.

The success of the OJT Program will require that contractors and subcontractors **take part in the program and** follow uniform procedures in training **and in tracking trainee's progress.**

##### **FUNDING**

MDOT will establish an annual OJT Fund **from** which, contractors and subcontractors may **bill the** Department directly for hours worked by trainees. The funding source of this money will be state and federal funds for MDOT's OJT Program.

##### **DISBURSEMENT OF FUNDS**

**MDOT will pay \$3.00 per hour toward the trainee's salary** for each hour of training performed by **each** trainee in an approved training program. Program reimbursements will be made directly to the prime or sub contractor. Requests for payment will be submitted to the Office of Civil Rights for approval.

Contractors must **provide a signed invoice** providing the following information to be reimbursed.

- Contractor's Name
- Mailing Address
- Trainee Name
- **Social Security Number**

- Race
- Sex
- Project Number
- Job Classification
- Total Number of Hours Completed

### **TRAINING PROGRAM APPROVAL**

A. To use the OJT Program on highway construction projects, the contractor will notify the Department Office of Civil Rights using the On-the-Job Trainee [Schedule Form](#). The notification must include the following information:

- Trainee Starting Date
- Project number (s) trainee starting on
- Training program (classification) to be used; and
- [Number of Training Hours Required](#)

B. If a contractor chooses to use a training program different from those listed in the OJT Program [Manual](#), or desires to train in a different classification, the training program must be submitted in its entirety for approval by the Department and FHWA. The training proposal must include the following:

1. The primary objective of the program: To provide training for minority, female and economically disadvantaged individuals for development to full journey status in the work classifications in which they are being trained.
2. The minimum number of hours and type of training the trainee will receive as it relates to each specific task required to achieve journey status.
3. [No less than](#) minimum wage.
4. Trainee certification of completion.
5. Records and reports submitted to the Office of Civil Rights on a [monthly](#) basis.

### **DEPARTMENT RESPONSIBILITY**

1. Department project staff will monitor trainees on the project. They will monitor payrolls for payment of correct wage rates and fringe benefits. The Office of Civil Rights will maintain a master list by contractor name, project number, trainee name and trainee social security number to aid project staff in monitoring trainees who work on multiple projects.
2. The Office of Civil Rights may elect to interview trainees periodically during the training period to assess their performance and training program.

## **CONTRACTOR RESPONSIBILITY**

1. Trainees must be identified on payrolls (i.e. dragline trainee).
2. When any trainee completes a program, or is terminated for a reason or reasons other than successful completion, the contractor must include the date of completion or an explanation for the termination and date of termination on the [OJT Termination Report](#).
3. The contractor will assign each trainee to a particular person--either a supervisor or a journeyman/woman who is proficient in the craft the trainee is being trained in, to ensure that timely instructional experience is received by the trainee. This person, cooperating with the appropriate company personnel, will see that proper records and the total intended training hours are completed during the allocated number of hours set up in the classification criteria.
4. The contractor has the prerogative of terminating the training period of the trainee and advancing the trainee to journey status. Approval requests must be submitted to the Office of Civil Rights with an explanation (*refer to 2 above*).
5. Upon notification from the contractor, the Department will issue a [skill verification card](#) and certificate of [training](#) to the trainee.
6. Trainees may be transferred to state-aid highway construction projects in order to complete the training program. If transfers are made the Office of Civil Rights must be notified on the [Monthly Trainee](#) Form. All of the training hours completed by trainees will count toward overall program completion.
7. Program reimbursements will be made directly to the prime or sub contractor.

## **WAGE RATE**

The wage rate for all trainees is \$5.15, during their OJT training program. Trainees shall be paid full fringe benefit amounts, where applicable. At the completion of the training program, the trainee shall receive the wages of a skilled journey.

## **RECRUITMENT AND SELECTION PROCEDURES**

### A. Prerequisites for Trainees

To be qualified for enrollment in the OJT Program, trainees must possess basic physical fitness for the work to be performed, dependability, willingness to learn and ability to follow instructions.

### B. Licenses

Truck driver trainees must possess appropriate driver permits or licenses for the operation of Class A, B and C trucks. However, when an instructional permit is used in lieu of a license, the trainee must be accompanied by an operator who:

1. Holds a license corresponding to the vehicle being operated;
2. Has had at least one year of driving experience; and
3. Is occupying the seat next to the driver.

#### C. Recruitment

1. Notices and posters setting forth the contractor's Equal Employment Opportunity Policy and availability of training programs will be placed in areas readily accessible to employees, applicants for employment and potential employees.
2. The contractor must target minority, female or economically disadvantaged trainees.
3. The contractor will conduct systematic and direct recruitment through public and private employee referral sources. Contractors must submit the trainee's name and completed application form to the Office of Civil Rights for review and approval. Approval must be obtained before the trainee can begin work under the training program.
4. Present employees will be screened for upgrading.

#### D. Selection

1. The selection and employment of a person by participating contractor shall qualify the person for the OJT Program.
  2. Selection will be made without regard to race, color, religion, sex, age or national origin and shall be completely nondiscriminatory.
  3. Employment of trainees will be in accordance with the work force requirements of the contractor. Each contractor will hire and train the trainees for uses in their own organization.
  4. Written certification of individuals under the category of economically disadvantaged can be provided to the contractor at the time of the interview. This certification must then be provided to the Office of Civil Rights with the other required information as part of the approval process for trainees.
- **NOTE:** The OJT Program is to provide training for minority, female and economically disadvantaged individuals in order that they may develop marketable skills and gain journey status in the skilled craft classifications in which they are being trained. However, this program does not exclude trainees that are not members of the above groups.



# SECTION 905 - PROPOSAL

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 and Supplemental 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 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 907-102.06 prior to or at the time of execution of the contract.
4. Optional and Alternate items designated must be used throughout the project.

I (We) further propose to perform all "force account or extra work" that may be required of me (us) on the basis provided in the Specifications and to give such work my (our) personal attention in order to see that it is economically performed.

**SECTION 905 -- PROPOSAL (CONTINUED)**

I (We) further propose to execute the attached contract agreement (Section 902) as soon as the work is awarded to me (us), and to begin and complete the work within the time limit(s) provided for in the Specifications and Advertisement. I (We) also propose to execute the attached contract bond (Section 903) in an amount not less than one hundred (100) percent of the total of my (our) part, but also to guarantee the excellence of both workmanship and materials until the work is finally accepted.

I (We) enclose a certified check, cashier's check or bid bond for **five percent (5%) of total bid** and hereby agree that in case of my (our) failure to execute the contract and furnish bond within Ten (10) days after notice of award, the amount of this check (bid bond) will be forfeited to the State of Mississippi as liquidated damages arising out of my (our) failure to execute the contract as proposed. It is understood that in case I am (we are) not awarded the work, the check will be returned as provided in the Specifications.

Respectfully Submitted,

DATE \_\_\_\_\_

\_\_\_\_\_  
Contractor

BY \_\_\_\_\_  
Signature

TITLE \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY, STATE, ZIP \_\_\_\_\_

PHONE \_\_\_\_\_

FAX \_\_\_\_\_

E-MAIL \_\_\_\_\_

(To be filled in if a corporation)

Our corporation is chartered under the Laws of the State of \_\_\_\_\_ and the names, titles and business addresses of the executives are as follows:

\_\_\_\_\_  
President Address

\_\_\_\_\_  
Secretary Address

\_\_\_\_\_  
Treasurer Address

The following is my (our) itemized proposal.

Reconstruction of State Route 198 (Hardy Street), from I-59 to US 49 in Hattiesburg, known as Federal Aid Project No. HSIP-6098-00(003) / 102252301, in the County of Forrest, State of Mississippi.

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

**\*\*\* SPECIAL NOTICE TO BIDDERS \*\*\***

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

**\*\*\*BID SCHEDULE\*\*\***

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Item Amount	
						Dollar	Ct	Dollar	Ct
<b>Roadway Items</b>									
0010	201-A001		1	Lump Sum	Clearing and Grubbing	XXXXXXXX	XXX		
0020	202-A001		1	Lump Sum	Removal of Obstructions	XXXXXXXX	XXX		
0030	202-B005		4,000	Square Meter	Removal of Asphalt Pavement (All Depths)				
0040	202-B017		1,162	Meter	Removal of Concrete Combination Curb & Gutter				
0050	202-B024		245	Square Meter	Removal of Concrete Median & Island Pavement (All Depths)				
0060	202-B025		15	Square Meter	Removal of Concrete Paved Ditch				
0070	202-B030		490	Square Meter	Removal of Concrete Pavement (All Depths)				
0080	202-B035		830	Square Meter	Removal of Concrete Sidewalk				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0090	202-B066		137	Meter	Removal of Pipe (200-mm and above)				
0100	202-B076		500	Meter	Removal of Traffic Stripe				
0110	202-B102		1,619	Meter	Removal of Integral Curb				
0120	202-B107		13	Meter	Removal of Pipe (All Sizes)				
0130	202-B156		1	Kilometer	Removal of Traffic Stripe				
0140	202-B218		88	Meter	Removal of Header Curb				
0150	202-B219		460	Square Meter	Removal of Asphalt Median & Island Pavement				
0160	203-G004	(E)	6,800	Cubic Meter	Excess Excavation (LVM) (AH)				
0170	206-A001	(S)	1,696	Cubic Meter	Structure Excavation				
0180	206-B001	(E)	100	Cubic Meter	Select Material for Undercuts (Contractor Furnished) (FM)				
0190	212-B001		2,600	Square Meter	Standard Ground Preparation				
0200	216-A001		2,600	Square Meter	Solid Sodding				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0210	219-A001		1	thousand liter	Watering	6.	00	6.	00
0220	406-A001		32,000	Square Meter	Cold Milling of Bituminous Pavement (All Depths)				
0230	501-D001		77	Meter	Expansion Joints (With Dowels)				
0240	601-B001	(S)	102	Cubic Meter	Class "B" Structural Concrete, Minor Structures				
0250	602-A001	(S)	5,370	Kilogram	Reinforcing Steel				
0260	603-C-A002	(S)	1,168	Meter	450-mm Reinforced Concrete Pipe, Class III				
0270	603-C-A003	(S)	33	Meter	600-mm Reinforced Concrete Pipe, Class III				
0280	603-C-A004	(S)	14	Meter	750-mm Reinforced Concrete Pipe, Class III				
0290	603-C-E001	(S)	72	Meter	560-mm x 345-mm Concrete Arch Pipe, Class A III				
0300	604-A001		3,993	Kilogram	Castings				
0310	604-B001		2,070	Kilogram	Gratings				
0320	608-A001	(S)	2,782	Square Meter	Concrete Sidewalk (Without Reinforcement)				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0330	609-B001	(S)	203	Meter	Concrete Curb, Type Header				
0340	609-B002	(S)	934	Meter	Concrete Curb, Type Doweled				
0350	609-B003	(S)	492	Meter	Concrete Curb, Type Special Design				
0360	609-C002	(S)	1,183	Meter	Concrete Curb (Integral) Type 2				
0370	609-D001	(S)	786	Meter	Combination Concrete Curb and Gutter Type 1				
0380	609-D002	(S)	118	Meter	Combination Concrete Curb and Gutter Type 2				
0390	609-D020	(S)	352	Meter	Combination Concrete Curb and Gutter Type 3B Modified (150-mm)				
0400	609-D021	(S)	1,364	Meter	Combination Concrete Curb and Gutter Type 3B Modified (165-mm)				
0410	613-C001		4	Each	Adjustment of Gratings				
0420	614-B001	(S)	1,398	Square Meter	Concrete Driveway (With Reinforcement)				
0430	616-A001	(S)	3,854	Square Meter	Concrete Median and/or Island Pavement (100-mm)				
0440	616-A003	(S)	188	Square Meter	Concrete Median and/or Island Pavement (250-mm)				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0450	618-A001		1	Lump Sum	Maintenance of Traffic	XXXXXXXX	XXX		
0460	619-D1001		54	Square Meter	Standard Roadside Construction Signs (less than 0.9 square meter)				
0470	619-D2001		20	Square Meter	Standard Roadside Construction Signs (0.9 square meter or more)				
0480	619-E003		7	Each	Flashing Arrow Panel (Type A)				
0490	619-G4001		29	Meter	Barricades (Type III) (Single Faced)				
0500	619-G4005		6	Meter	Barricades (Type III) (Double Faced)				
0510	619-G5001		722	Each	Free Standing Plastic Drums				
0520	620-A001		1	Lump Sum	Mobilization	XXXXXXXX	XXX		
0530	630-A001		23	Square Meter	Standard Roadside Signs (Sheet Aluminum, 2.03-mm Thickness)				
0540	630-A002		21	Square Meter	Standard Roadside Signs (Sheet Aluminum, 3.18-mm Thickness)				
0550	630-C002		239	Meter	Steel U-Section Posts (2.97 to 3.72 kg/m)				
0560	630-K001		44	Meter	Welded & Seamless Steel Pipe Posts (DN 75)				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price	Bid Amount
0570	630-K003		7	Meter	Welded & Seamless Steel Pipe Posts (DN 100)		
0580	907-203-EX012 (E)		1,500	Cubic Meter	Borrow Excavation (AH)(LVM) (Class B9)		
0590	907-234-A002		100	Meter	Temporary Silt Fence		
0600	907-304-I003 (GT)		3,400	Metric Ton	Crushed Stone Base (Size 825)		
0610	907-403-A001 (BA1)		2,100	Metric Ton	Hot Mix Asphalt, ST, 9.5-mm mixture		
0620	907-403-A002 (BA1)		850	Metric Ton	Hot Mix Asphalt, ST, 12.5-mm mixture		
0630	907-403-A003 (BA1)		1,300	Metric Ton	Hot Mix Asphalt, ST, 19-mm mixture		
0640	907-403-D001 (BA1)		1,020	Metric Ton	Hot Mix Asphalt, HT, 9.5-mm mixture, Polymer Modified		
0650	907-413-DD001		77	Meter	Cleaning and Sealing New Longitudinal Construction Joints (No.1) (Per Plans)		
0660	907-413-DD002		3,400	Meter	Cleaning and Sealing Existing Longitudinal Joints (No. 2) (Per Plans)		
0670	907-413-DD007		1,300	Meter	Cleaning and Sealing Existing Expansion Joints (No. 5) (Per Plans)		
0680	907-413-DD008		77	Meter	Cleaning and Sealing New Construction Joints (No. 6) (Per Plans)		



Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0690	907-501-G001		231	Each	Dowels (Drilled and Installed)				
0700	907-501-I001		77	Meter	Joint Filler (Wooden Board)				
0710	907-503-A009	(C)	1,900	Square Meter	225-mm and Variable Reinforced Concrete Pavement (Broom Finish)				
0720	907-503-C003		85	Meter	Saw Cut (150-mm)				
0730	907-503-C005		1,200	Meter	Saw Cut (Full Depth)				
0740	907-503-E002		2,700	Each	Tie Bars (# 16 Deformed)(Drilled & Epoxied or Grouted)				
0750	907-503-E005		231	Each	Tie Bars (# 25 Deformed)(Drilled & Epoxied or Grouted)				
0760	907-503-F006		231	Each	30-mm Smooth Dowel Bars( Drilled & Epoxied or Grouted)				
0770	907-504-B002	(C)	18,280	Square Meter	150-mm Fiber Reinforced Thin Concrete Pavement				
0780	907-505-B001		32,300	Square Meter	Grinding Concrete Pavement				
0790	907-617-A003		153	Each	Right-of-Way Marker				
0800	907-619-A1006		1	Kilometer	Temporary Traffic Stripe (Continuous White) (Type 1 Tape)				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price	Bid Amount
0810	907-619-A2006		1	Kilometer	Temporary Traffic Stripe (Continuous Yellow) (Type 1 Tape)		
0820	907-619-A3002		1	Kilometer	Temporary Traffic Stripe (Skip White) (Type 1 Tape)		
0830	907-619-A5002		1,645	Meter	Temporary Traffic Stripe (Detail) (Type 1 Tape)		
0840	907-619-A6006		38	Square Meter	Temporary Traffic Stripe (Legend) (Type 1 Tape)		
0850	907-619-A6009		1,862	Meter	Temporary Traffic Stripe (Legend)		
0860	907-625-C002		4	Kilometer	Traffic Stripe (Continuous White)		
0870	907-625-D002		3	Kilometer	Traffic Stripe (Continuous Yellow)		
0880	907-626-AA001		1	Kilometer	150-mm Thermoplastic Traffic Stripe (Skip White)(2.25-mm min.)		
0890	907-626-CC006		3	Kilometer	150-mm Thermoplastic Double Drop Edge Stripe (Continuous White) (1.50-mm min)		
0900	907-626-DD001		1	Kilometer	150-mm Thermoplastic Traffic Stripe (Skip Yellow)(2.25-mm min.)		
0910	907-626-EE004		3	Kilometer	150-mm Thermoplastic Traffic Stripe (Continuous Yellow) (2.25-mm min)		
0920	907-626-FF007		1	Kilometer	150-mm Thermoplastic Double Drop Edge Stripe (Continuous Yellow) (150-mm min.)		

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
0930	907-626-GG001		2,507	Meter	Thermoplastic Detail Stripe (150-mm Equivalent Length)(White)(2.25-mm min.)				
0940	907-626-GG002		832	Meter	Thermoplastic Detail Stripe (150-mm Equivalent Length)(Yellow)(2.25-mm min.)				
0950	907-626-HH001		485	Meter	Thermoplastic Legend (White)(3.00-mm min.)				
0960	907-626-HH002		200	Square Meter	Thermoplastic Legend (White)(3.00-mm min.)				
0970	907-627-K001		1,028	Each	Red-Clear Reflective High Performance Raised Markers				
0980	907-627-L001		334	Each	Two-Way Yellow Reflective High Performance Raised Markers				
0990	907-628-II002		5	Kilometer	150-mm High Performance Cold Plastic Traffic Stripe (Skip White)				
1000	907-628-KK002		3	Kilometer	150-mm High Performance Cold Plastic Edge Stripe (Continuous White)				
1010	907-628-MM002		1	Kilometer	150-mm High Performance Cold Plastic Traffic Stripe (Continuous Yellow)				
1020	907-628-NN002		4	Kilometer	150-mm High Performance Cold Plastic Edge Stripe (Continuous Yellow)				
1030	907-628-OO001		6,168	Meter	High Performance Cold Plastic Detail Stripe (150-mm Equivalent Length)((White)				
1040	907-628-OO002		924	Meter	High Performance Cold Plastic Detail Stripe (150-mm Equivalent Length)((Yellow)				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
1050	907-628-PP001		932	Meter	High Performance Cold Plastic Legend (White)				
1060	907-628-PP002		260	Square Meter	High Performance Cold Plastic Legend (White)				
1070	907-636-A001		273	Meter	Shielded Cable, AWG #18, 4 Conductor				
1080	907-639-A002		2	Each	Traffic Signal Equipment Pole (Type IV) (9.1-m Shaft) (12.2-m Arm)				
1090	907-639-A003		2	Each	Traffic Signal Equipment Pole (Type IV) (12.2-m Shaft) (19.8-m Arm)				
1100	907-639-A004		1	Each	Traffic Signal Equipment Pole (Type IV) (12.2-m Shaft) (15.2 & 16.8-m Arms)				
1110	907-639-A005		4	Each	Traffic Signal Equipment Pole (Type VI) (2.4-m Shaft)				
1120	907-639-A006		1	Each	Traffic Signal Equipment Pole (Type II) (5.2-m Shaft) (13.7-m Arm)				
1130	907-639-A007		1	Each	Traffic Signal Equipment Pole (Type IV) (9.1-m Shaft) (13.7-m Arm)				
1140	907-639-A008		1	Each	Traffic Signal Equipment Pole (Type IV) (9.1-m Shaft) (15.2-m Arm)				
1150	907-639-A009		1	Each	Traffic Signal Equipment Pole (Type IV) (9.1-m Shaft) (16.8-m Arm)				
1160	907-639-A010		2	Each	Traffic Signal Equipment Pole (Type IV) (9.1-m Shaft) (18.3-m Arm)				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
1170	907-639-A011		1	Each	Traffic Signal Equipment Pole (Type 1) (9.1-m Shaft)				
1180	907-639-A012		1	Each	Traffic Signal Equipment Pole (Type IV) (9.1-m Shaft) (19.8-m Arm)				
1190	907-639-A013		1	Each	Traffic Signal Equipment Pole (Type II) (5.2-m Shaft) (7.6-m Arm)				
1200	907-639-A014		2	Each	Traffic Signal Equipment Pole (Type II) (5.2-m Shaft) (9.1-m Arm)				
1210	907-639-A015		2	Each	Traffic Signal Equipment Pole (Type II) (5.2-m Shaft) (12.2-m Arm)				
1220	907-639-A016		1	Each	Traffic Signal Equipment Pole (Type II) (5.2-m Shaft) (16.8-m Arm)				
1230	907-639-A017		1	Each	Traffic Signal Equipment Pole (Type IV) (9.1-m Shaft) (7.6-m Arm)				
1240	907-639-A018		2	Each	Traffic Signal Equipment Pole (Type IV) (9.1-m Shaft) (9.1-m Arm)				
1250	907-639-A019		2	Each	Traffic Signal Equipment Pole (Type IV) (9.1-m Shaft) (10.7-m Arm)				
1260	907-639-B001		4	Each	Traffic Signal Equipment Pole Shaft Extension (3-meter) (Video Camera Mount)				
1270	907-640-B001		36	Each	Traffic Signal Heads (Type 1) LED				
1280	907-640-B002		3	Each	Traffic Signal Heads (Type 2) LED				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
1290	907-640-B003		3	Each	Traffic Signal Heads (Type 5) LED				
1300	907-640-B004		4	Each	Traffic Signal Heads (Type 3) LED				
1310	907-640-B006		18	Each	Traffic Signal Heads (Type 7) LED				
1320	907-640-B008		36	Each	Traffic Signal Heads (Type 6) LED (Countdown)				
1330	907-641-A001		3	Each	Radar Detection System				
1340	907-642-A001		7	Each	Solid State Traffic Actuated Controllers (Type 8M)				
1350	907-642-B001		3	Each	Solid State Traffic Actuated Controller Modification				
1360	907-647-A004		7	Each	Pullbox (Type 4)				
1370	907-647-A005		11	Each	Pullbox (Type 5)				
1380	907-649-A003		6	Each	Video Vehicle Detection, New Installation, 4 Cameras				
1390	907-657-A005		7,030	Meter	Fiber Optic Cable (72 SM)				
1400	907-657-B004		530	Meter	Fiber Optic Drop Cable (12 SM)				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
1410	907-668-E002		8,130	Meter	Traffic Signal Conduit (Underground Drilled or Jacked), Rolled Pipe, (50 mm)				
1420	907-668-E003		225	Meter	Traffic Signal Conduit (Underground Drilled or Jacked), Rolled Pipe, (75 mm)				
1430	908-635-A001		32	Meter	Vehicle Loop Assemblies				
1440	908-637-A001		2	Each	Equipment Cabinets				
1450	908-638-A006		1	Each	Loop Detector Amplifier, Card Rack Mounted (4 Channel)				
1460	908-643-A001		1	Each	Closed Loop On-Street Master System				
1470	908-644-A001		24	Each	Optical Detector				
1480	908-644-B001		1,140	Meter	Optical Detector Cable				
1490	908-644-C002		6	Each	Phase Selector (4 Channel)				
1500	908-647-A001		2	Each	Pullbox (Type 1)				
1510	908-647-A002		24	Each	Pullboxes (Type 2)				
1520	908-666-B017		965	Meter	Electric Cable (Underground in Conduit)(IMSA 20-1)(AWG 14), 5 Conductor				

Line No.	Item Code	Adj Code	Quantity	Units	Description	Unit Price		Bid Amount	
1530	908-666-B018		830	Meter	Electric Cable (Underground in Conduit)(IMSA 20-1)(AWG 14), 7 Conductor				
1540	908-666-B027		185	Meter	Electric Cable (Underground in Conduit) (THHN) (AWG #2) (3 Conductor)				
1550	908-666-B031		203	Meter	Electric Cable (Underground in Conduit) (THHN) (AWG #8) (2 Conductor)				
1560	908-666-B032		520	Meter	Electric Cable (Underground in Conduit) (THHN) (AWG #10) (2 Conductor)				
1570	908-666-B033		70	Meter	Electric Cable (Underground in Conduit) (THHN) (AWG #8) (3 Conductor)				
1580	908-666-D012		318	Meter	Electric Cable (Aerial Supported in Conduit)(IMSA 20-1)(AWG 14), 7 Conductor				
1590	908-668-A013		250	Meter	Traffic Signal Conduit (Underground) (Type IV) (DN 25)				
1600	908-668-A016		205	Meter	Traffic Signal Conduit (Underground) (Type IV) (DN 50)				
1610	908-668-A018		61	Meter	Traffic Signal Conduit (Underground) (Type IV) (DN 75)				



\*\*\* BID CERTIFICATION \*\*\*

TOTAL BID.....\$\_\_\_\_\_

\*\*\* DBE/WBE SECTION \*\*\*

Complete item nos. 1, 2, and/or 3 as appropriate. See Notice to Bidders addressing Disadvantaged Business Enterprises in Highway Construction.

1. I/We agree that no less than \_\_\_\_\_ percent shall be expended with small business concerns owned and controlled by socially and economically disadvantaged individuals (DBE and WBE).
2. Classification of Bidder: Small Business (DBE)\_\_\_\_\_ Small Business (WBE)\_\_\_\_\_
3. A joint venture with a Small Business (DBE/WBE): \_\_\_\_\_

\*\*\* SIGNATURE STATEMENT \*\*\*

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

\_\_\_\_\_  
BIDDER'S SIGNATURE

\_\_\_\_\_  
BIDDER'S COMPANY

\_\_\_\_\_  
BIDDER'S ID NUMBER

**CONDITIONS FOR COMBINATION BID**

If a bidder elects to submit a combined bid for two or more of the contracts listed for this month's letting, the bidder must complete and execute these sheets of the proposal in each of the individual proposals to constitute a combination bid. In addition to this requirement, each individual contract shall be completed, executed and submitted in the usual specified manner.

Failure to execute this Combination Bid Proposal in each of the contracts combined will be just cause for each proposal to be received and evaluated as a separate bid.

\*\*\*\*\*

**COMBINATION BID PROPOSAL**

I. This proposal is tendered as one part of a Combination Bid Proposal utilizing option \_\_\_\* of Subsection 102.11 on the following contracts:

\* Option to be shown as either (a), (b), or (c).

<u>Project No.</u>	<u>County</u>	<u>Project No.</u>	<u>County</u>
1. _____	_____	6. _____	_____
2. _____	_____	7. _____	_____
3. _____	_____	8. _____	_____
4. _____	_____	9. _____	_____
5. _____	_____	10. _____	_____

A. If option (a) has been selected, then go to II, and sign Combination Bid Proposal.

B. If option (b) has been selected, then complete the following, go to II, and sign Combination Bid Proposal.

SECTION 905 - COMBINATION BID PROPOSAL (Continued)

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
1. _____	_____ _____	_____ _____	_____ _____	_____ _____	
2. _____	_____ _____	_____ _____	_____ _____	_____ _____	
3. _____	_____ _____	_____ _____	_____ _____	_____ _____	
4. _____	_____ _____	_____ _____	_____ _____	_____ _____	
5. _____	_____ _____	_____ _____	_____ _____	_____ _____	
6. _____	_____ _____	_____ _____	_____ _____	_____ _____	
7. _____	_____ _____	_____ _____	_____ _____	_____ _____	
8. _____	_____ _____	_____ _____	_____ _____	_____ _____	

SECTION 905 - COMBINATION BID PROPOSAL (Continued)

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
9. _____	_____ _____	_____ _____	_____ _____	_____ _____	
10. _____	_____ _____	_____ _____	_____ _____	_____ _____	

C. If option (c) has been selected, then initial and complete one of the following, go to II. and sign Combination Bid Proposal.

\_\_\_\_\_ I (We) desire to be awarded work not to exceed a total monetary value of \$ \_\_\_\_\_.

\_\_\_\_\_ I (We) desire to be awarded work not to exceed \_\_\_\_\_ number of contracts.

II. It is understood that the Mississippi Transportation Commission not only reserves the right to reject any and all proposals, but also the right to award contracts upon the basis of lowest separate bids or combination bids most advantageous to the State.

It is further understood and agreed that the Combination Bid Proposal is for comparison of bids only and that each contract shall operate in every respect as a separate contract in accordance with its proposal and contract documents.

I (We), the undersigned, agree to complete each contract on or before its specified completion date.

SIGNED \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Certification with regard to the Performance of Previous  
Contracts or Subcontracts subject to the Equal Opportunity  
Clause and the filing of Required Reports**

The Bidder \_\_\_\_\_, proposed Subcontractor \_\_\_\_\_, hereby certifies that he has \_\_\_\_\_, has not \_\_\_\_\_, participated in a previous contract or subcontract subject to the Equal Opportunity Clause, as required by Executive Orders 10925, 11114, or 11246, and that he has \_\_\_\_\_, has not \_\_\_\_\_, filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

\_\_\_\_\_  
(COMPANY)

BY \_\_\_\_\_

\_\_\_\_\_  
(TITLE)

DATE: \_\_\_\_\_

NOTE: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7 (b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the Equal Opportunity Clause. Contracts and Subcontracts which are exempt from the Equal Opportunity Clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of \$10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime Contractors and Subcontractors who have participated in a previous contract or subcontract subject to the Executive orders and have not filed the required reports should note that 41 CFR 60-1.7 (b) (1) prevents the award of contracts and subcontracts unless such Contractors submit a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U. S. Department of Labor.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

## CERTIFICATION (Execute in duplicate)

State of Mississippi

County of \_\_\_\_\_

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. HSIP-6098-00(003) / 102252301,

in Forrest 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:

- a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in (b) above; and
- d) Have not within a three-year period preceding this application/ proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

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.

The bidder further certifies that the certification requirements contained in Section XI of Form FHWA 1273, will be or have been included in all subcontracts, material supply agreements, purchase orders, etc. except those procurement contracts for goods or services that are expected to be less than the Federal procurement small purchase threshold fixed at 10 U.S.C. 2304(g) and 41 U.S.C. 253(g) (currently \$25,000) which are excluded from the certification requirements.

The bidder further certifies, to the best of his or her knowledge and belief, that:

- 1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- 2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this contract, Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions will be completed and submitted.

The certification contained in (1) and (2) above is a material representation of fact upon which reliance is placed and a prerequisite imposed by Section 1352, Title 31, U.S. Code prior to entering into this contract. Failure to comply shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000. The bidder shall include the language of the certification in all subcontracts exceeding \$100,000 and all subcontractors shall certify and disclose accordingly.

All of the foregoing and attachments (when indicated) is true and correct.

Executed on \_\_\_\_\_  
Signature \_\_\_\_\_

(11/23/92F)

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

## CERTIFICATION (Execute in duplicate)

State of Mississippi

County of \_\_\_\_\_

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. HSIP-6098-00(003) / 102252301

in Forrest 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:

- a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in (b) above; and
- d) Have not within a three-year period preceding this application/ proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

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.

The bidder further certifies that the certification requirements contained in Section XI of Form FHWA 1273, will be or have been included in all subcontracts, material supply agreements, purchase orders, etc. except those procurement contracts for goods or services that are expected to be less than the Federal procurement small purchase threshold fixed at 10 U.S.C. 2304(g) and 41 U.S.C. 253(g) (currently \$25,000) which are excluded from the certification requirements.

The bidder further certifies, to the best of his or her knowledge and belief, that:

- 1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- 2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this contract, Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions will be completed and submitted.

The certification contained in (1) and (2) above is a material representation of fact upon which reliance is placed and a prerequisite imposed by Section 1352, Title 31, U.S. Code prior to entering into this contract. Failure to comply shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000. The bidder shall include the language of the certification in all subcontracts exceeding \$100,000 and all subcontractors shall certify and disclose accordingly.

All of the foregoing and attachments (when indicated) is true and correct.

Executed on \_\_\_\_\_  
Signature \_\_\_\_\_

(11/23/92F)

**S E C T I O N   9 0 2**

CONTRACT FOR HSIP-6098-00(003) / 102252301

LOCATED IN THE COUNTY(IES) OF Forrest

STATE OF MISSISSIPPI,

COUNTY OF HINDS

This contract entered into by and between the Mississippi Transportation Commission on one hand, and the undersigned contractor, on the other witnesseth;

That, in consideration of the payment by the Mississippi Transportation Commission of the prices set out in the proposal hereto attached, to the undersigned contractor, such payment to be made in the manner and at the time of times specified in the specifications and the special provisions, if any, the undersigned contractor hereby agrees to accept the prices stated in the proposal in full compensation for the furnishing of all materials and equipment and the executing of all the work contemplated in this contract.

It is understood and agreed that the advertising according to law, the Advertisement, the instructions to bidders, the proposal for the contract, the specifications, the revisions of the specifications, the special provisions, and also the plans for the work herein contemplated, said plans showing more particularly the details of the work to be done, shall be held to be, and are hereby made a part of this contract by specific reference thereto and with like effect as if each and all of said instruments had been set out fully herein in words and figures.

It is further agreed that for the same consideration the undersigned contractor shall be responsible for all loss or damage arising out of the nature of the work aforesaid; or from the action of the elements and unforeseen obstructions or difficulties which may be encountered in the prosecution of the same and for all risks of every description connected with the work, exceptions being those specifically set out in the contract; and for faithfully completing the whole work in good and workmanlike manner according to the approved Plans, Specifications, Special Provisions, Notice(s) to Bidders and requirements of the Mississippi Department of Transportation.

It is further agreed that the work shall be done under the direct supervision and to the complete satisfaction of the Executive Director of the Mississippi Department of Transportation, or his authorized representatives, and when Federal Funds are involved subject to inspection at all times and approval by the Federal Highway Administration, or its agents as the case may be, or the agents of any other Agency whose funds are involved in accordance with those Acts of the Legislature of the State of Mississippi approved by the Governor and such rules and regulations issued pursuant thereto by the Mississippi Transportation Commission and the authorized Federal Agencies.

The Contractor agrees that all labor as outlined in the Special Provisions may be secured from list furnished by

It is agreed and understood that each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and this contract shall be read and enforced as though it were included herein, and, if through mere mistake or otherwise any such provision is not inserted, then upon the application of either party hereto, the contract shall forthwith be physically amended to make such insertion.

The Contractor agrees that he has read each and every clause of this Contract, and fully understands the meaning of same and that he will comply with all the terms, covenants and agreements therein set forth.

Witness our signatures this the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
Contractor (s)

By \_\_\_\_\_

MISSISSIPPI TRANSPORTATION COMMISSION

Title \_\_\_\_\_

By \_\_\_\_\_

Signed and sealed in the presence of:  
(names and addresses of witnesses)

Executive Director

\_\_\_\_\_  
Secretary to the Commission

Award authorized by the Mississippi Transportation Commission in session on the \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, Minute Book No. \_\_\_\_\_, Page No. \_\_\_\_\_.

**S E C T I O N   9 0 3**

CONTRACT BOND FOR: HSIP-6098-00(003) / 102252301

LOCATED IN THE COUNTY(IES) OF: Forrest

STATE OF MISSISSIPPI,

COUNTY OF HINDS

Know all men by these presents: that we, \_\_\_\_\_

\_\_\_\_\_ Principal, a \_\_\_\_\_

residing at \_\_\_\_\_ in the State of \_\_\_\_\_

and \_\_\_\_\_

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

**SECTION 903 - CONTINUED**

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
	_____
Title _____	_____
(Contractor's Seal)	(Name and Address of Local (Mississippi) Representative) (Surety Seal)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION  
OFFICE OF CIVIL RIGHTS  
JACKSON, MISSISSIPPI  
**LIST OF FIRMS SUBMITTING QUOTES**

I/we received quotes from the following firms on Project No: **HSIP-6098-00(003) / 102252301**  
County: **Forrest**

Disadvantaged Business Enterprise (DBE) Regulations as stated in 49 CFR 26.11 require the Mississippi Department of Transportation (MDOT) to create and maintain a comprehensive list of all firms quoting/bidding subcontracts on prime contracts and quoting/bidding subcontracts on federally-funded transportation projects. For every firm, we require the following information:

Firm Name: \_\_\_\_\_  
Contact Name/Title: \_\_\_\_\_  
Firm Mailing Address \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
\_\_\_\_\_ DBE Firm \_\_\_\_\_ Non-DBE Firm

Firm Name: \_\_\_\_\_  
Contact Name/Title: \_\_\_\_\_  
Firm Mailing Address \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
\_\_\_\_\_ DBE Firm \_\_\_\_\_ Non-DBE Firm

Firm Name: \_\_\_\_\_  
Contact Name/Title: \_\_\_\_\_  
Firm Mailing Address \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
\_\_\_\_\_ DBE Firm \_\_\_\_\_ Non-DBE Firm

Firm Name: \_\_\_\_\_  
Contact Name/Title: \_\_\_\_\_  
Firm Mailing Address \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
\_\_\_\_\_ DBE Firm \_\_\_\_\_ Non-DBE Firm

Firm Name: \_\_\_\_\_  
Contact Name/Title: \_\_\_\_\_  
Firm Mailing Address \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
\_\_\_\_\_ DBE Firm \_\_\_\_\_ Non-DBE Firm

\_\_\_\_\_  
**SUBMITTED BY (Signature)**

\_\_\_\_\_  
**FIRM NAME**

Submit this form to Contract Administration as a part of your bid package. If this form is not included as part of the bid packet, your bid will be deemed irregular. For further information about this form, call Mississippi DOT's Office of Civil Rights at (601) 359-7466; FAX (601) 576-4504. Please make copies of this form when needed and also add those copies to the bid package.

YEAR **2007** PROGRESS SCHEDULE  
FOR USE WITH COLUMN "C" IN THE TABLE OF TIME UNITS

YEAR **2008** PROJECT NUMBER **HSIP-6098-00(003)/102252301**  
COUNTY **Forrest County**

WORK PHASE		REFERENCE NUMBERS	PHASE VALUE	YEAR 2007												YEAR 2008												NO.	AVTU			
NO.	DESCRIPTION			JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOV	DEC	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOV	DEC					
1	Miscellaneous	10-230, 450-520, 580-590, 650-760 & 780-850																											0		244	
2	Base & Paving	600-640																												5		221
3	Drainage	240-440																												5		221
4	Pavement	770																														165
5	Signal, Signs, Stripe	530-570 & 860-1610																												132		244
		LET: April 24, 2007 NOA: May 08, 2007 NTP & BCT: June 07, 2007 TU: 244 GCG																														
MONTH				JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOV	DEC	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOV	DEC			180		
TIME UNITS PER MONTH				6	8	11	14	19	22	23	23	22	17	11	4	6	8	11	14	19	22	23	23	22	17	11	4			TIME UNITS PER YEAR		
CUMULATIVE TIME UNITS																																

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**HAUL PERMIT FOR BRIDGES**

**WITH**

**POSTED WEIGHT LIMITS**

**DATE:** \_\_\_\_\_

**PROJECT: HSIP-6098-00(003) / 102252301**

**COUNTIES: Forrest**

**LOCATION: SR 198 ( Hardy Street) from I-59 to US Hwy. 49.**

A permit is issued to \_\_\_\_\_ for transporting loads exceeding the posted limit for any such bridge located on State designated routes within the project termini provided that such transport vehicles comply with all other governing statutory weight limits.

This permit is valid on all State designated routes from the point of origin to the point of delivery for materials and equipment utilized in construction of said project and also valid for sub-contractors and vendors upon written permission of the Contractor. The permit is non-transferable and no other haul permit for posted bridges will be issued to other individuals, vendors, or companies for construction of this project.

A copy of this signed permit shall be carried in all vehicles operating under the authority of this permit and also a copy of the Contractor's written permission when the vehicle is other than Contractor owned.

In accordance with State law, the above named Contractor will be liable for damages directly attributable to vehicles operating under this permit.

\_\_\_\_\_  
EXECUTIVE DIRECTOR