MDOT Use Only
Checked _____
Loaded _____
Keyed _____

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SM No. CBR0110010281

PROPOSAL AND CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF

(FULL OVERSIGHT)

1
Rehabilitation of the Bascule Bridge on I-110, known as Federal Aid Project No. BR-0110-01(028) / 105550302 in Harrison County.
Project Completion: June 29, 2014

NOTICE

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

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

SECTION 900

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

BIDDER CHECK LIST
(FOR INFORMATION ONLY)

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

_____ If the bid sheets were prepared using the Electronic Bid System, proposal sheets have been stapled and inserted into the proposal package.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(04/2011)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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SECTION 905 - PROPOSAL,
PROPOSAL BID ITEMS,
COMBINATION BID PROPOSAL,
CERTIFICATION OF PERFORMANCE - PRIOR FEDERAL-AID CONTRACTS,
CERTIFICATION REGARDING NON-COLLUSION, DEBARMENT AND SUSPENSION,
SECTION 902 - CONTRACT FORM, AND SECTION 903 - CONTRACT BOND FORMS,
OCR-485.

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 901 - ADVERTISEMENT

Sealed bids will be received by the Mississippi Transportation Commission in the Office of the Contract Administration Engineer, Room 1013, Mississippi Department of Transportation Administration Building, 401 North West Street, Jackson, Mississippi, until 10:00 o'clock A.M., Tuesday, October 23, 2012, and shortly thereafter publicly opened on the Sixth Floor for:

Rehabilitation of the Bascule Bridge on I-110, known as Federal Aid Project No. BR-0110-01(028) / 105550302 in Harrison County.

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 proposal are available at a cost of Ten Dollars ($10.00) per proposal. Specimen proposals are also available at the MDOT Contract Administration Division at a cost of Ten Dollars ($10.00) per proposal, or can be viewed or downloaded at no cost at www.gomdot.com.

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

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

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

MELINDA L. MCGRATH
EXECUTIVE DIRECTOR

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 05/03/2004

SUBJECT: Governing Specifications

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 04/28/2006

SUBJECT: Payroll Requirements

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 03/15/2007

SUBJECT: ERRATA AND MODIFICATIONS TO THE 2004 STANDARD SPECIFICATIONS

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1808 **CODE: (IS)**

DATE: 09/09/2008

SUBJECT: Safety Apparel

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

You can access this final rule at the following link:

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 04/14/2008

SUBJECT: Federal Bridge Formula

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

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

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

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

or

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 02/12/2009

SUBJECT: Status of Right-of-Way

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

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

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

STATUS OF RIGHT-OF-WAY
BR-0110-01(028)
105550-302000
Harrison County
August 6, 2012

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

NONE.

ASBESTOS CONTAMINATION STATUS OF BUILDINGS
TO BE REMOVED BY THE CONTRACTOR
BR-0110-01(028)
105550-302000
Harrison County
August 7, 2012

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

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

There is no Right of Way required for this project. There are no buildings to be removed by the contractor.

STATUS OF POTENTIALLY CONTAMINATED SITES
BR-0110-01(028)
105550-302000
Harrison County
August 7, 2012

THERE IS NO RIGHT OF WAY REQUIRED FOR THIS PROJECT. NO INITIAL SITE ASSESSMENT WILL BE PERFORMED. IF CONTAMINATION ON EXISTING RIGHT OF WAY IS DISCOVERED, IT WILL BE HANDLED BY THE DEPARTMENT.

ENCROACHMENT CERTIFICATION

BR-0110-01(028) / 105550302

Harrison County(ies)

July 27, 2012

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

UTILITY STATUS REPORT

BR-0110-01(028) / 105550302

Harrison County(ies)

July 27, 2012

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2596 **CODE: (IS)**

DATE: 05/13/2009

SUBJECT: DBE Forms, 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 last day 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.

Bidders are also advised that Form OCR-485 will be completed by **ALL BIDDERS** submitting a bid proposal and **must be signed and 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**.

DBE Forms, including Forms OCR-482, OCR-484 and OCR-485, can be obtained from the Office of Civil Rights Division, MDOT Administration Building, 401 North West Street, Jackson, MS, or at www.gomdot.com under *Business, Disadvantaged Enterprise, Applications and Forms for the DBE Program, MDOT Forms*.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 01/11/2010

SUBJECT: Reduced Speed Limit Signs

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3414 **CODE: (SP)**

DATE: 02/16/2011

SUBJECT: DUNS Requirement for Federal Funded Projects

Bidders are advised that the Prime Contractor must maintain current registrations in the Central Contractor Registration (http://www.ccr.gov) at all times during this project. A Dun and Bradstreet Data Universal Numbering System (DUNS) Number (http://www.dnb.com) is one of the requirements for registration in the Central Contractor Registration.

Bidders are also advised that the following information needs to be completed and included in the bid documents:

DUNS: _____

Company Name: _____

Company e-mail address: _____

By: _____

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 10/04/2011

SUBJECT: Type III Barricade Rails

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 04/10/2012

SUBJECT: Petroleum Products Base Prices

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

Monthly Petroleum Products Base Prices can be viewed at:

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 07/25/2012

SUBJECT: Questions Regarding Bidding

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4047 **CODE: (SP)**

DATE: 09/04/2012

SUBJECT: Contract Time

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

The calendar date for completion of work to be performed by the Contractor for this project shall be **June 29, 2014** which date or extended date as provided in Subsection 907-108.06 shall be the end of contract time. It is anticipated that the Notice of Award will be issued no later than be **November 13, 2012** and the effective date of the Notice to Proceed / Beginning of Contract Time will be **March 14, 2013**.

Should the Contractor request a Notice to Proceed earlier than **March 14, 2013** and it is agreeable with the Department for an early Notice to Proceed, the requested date will become the new Notice to Proceed / Beginning of Contract Time date.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4048

DATE: 08/01/2012

SUBJECT: Specialty Items

PROJECT: - Counties

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: TRAFFIC CONTROL - TEMPORARY

Line No	Pay Item	Description
0020	619-D1001	Standard Roadside Construction Signs, Less than 10 Square Feet
0030	619-D2001	Standard Roadside Construction Signs, 10 Square Feet or More
0040	619-E1001	Flashing Arrow Panel, Type C
0050	619-G4005	Barricades, Type III, Double Faced
0060	619-G5001	Free Standing Plastic Drums
0070	619-G7001	Warning Lights, Type "B"
0090	907-619-E3001	Changeable Message Sign

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4049 **CODE: (SP)**

DATE: 09/19/2012

SUBJECT: Waterway, Roadway and Lane Closures and Bridge Opening Restrictions

PROJECT: BR-0110-01(028)/105550302 -- Harrison County

Bidders are hereby advised that the bridge spans a navigable waterway under jurisdiction of the United States Coast Guard (USCG). MDOT has coordinated with the USCG, and deviations from the normal "on-demand" operating procedures have been agreed to for the duration of the project. The USCG shall be notified forty-five (45) days prior to the deviations from the normal "on-demand" operations

Bridge Openings Schedule:

The movable span shall remain operable for marine traffic with a deviation from the normal "on-demand" operating procedure for the period January 1, 2013 to May 31, 2013 and again for the period November 1, 2013 to June 29, 2014. At all other times, the bridge will open on demand per its normal operating procedure. The deviation will require mariners to provide a 24-hour advance notice of passage before each opening. During Hurricane season, from June 1 to November 30, if a hurricane advisory is issued, the bridge would operate under the normal guidelines. Bidders are advised that the USCG can elect to cancel the deviated operating procedure at any time if conditions or situations warrant.

Waterway Closure:

The waterway channel shall remain open throughout the duration of the project except for the time of installation of new submarine cables. During this work, a 24-hour waterway closure will be allowed. This closure must take place on a Sunday. Request for the 24 hours waterway closure must be made by the contractor at least 30 days in advance. The contractor shall coordinate and cooperate with MDOT and the USCG in this scheduling. If a hurricane advisory is issued, the waterway closure will not be allowed. Bidders are advised that the USCG can elect to cancel the deviated operating procedure at any time if conditions or situations warrant.

Lane Closures:

Single lane roadway closures will be allowed between 9:30 p.m. and 5:00 a.m. Sunday through Thursday. A lane rental fee of **$2,500** per full or partial 10 minutes shall be assessed for lane closures or obstructions that extend beyond the times mentioned above. No exposed signs shall be viewable to the traveling public prior to or after the above mentioned times. No part of a lane closure, drums or cones shall be in the roadway prior to or after the above mentioned times.

Roadway Closures

To perform repairs to Center locks and perform painting of the center jaw area, a total of 15 occasions of complete roadway closure will be allowed between the hours of 9:30 p.m. and 5:00 a.m. Sunday through Thursday. Request for the roadway closure must be made by the contractor

at least 30 days in advance. The contractor shall coordinate and cooperate with MDOT and the USCG in this scheduling. If a hurricane advisory is issued, the roadway closure would not be allowed. A road closure rental fee of **$2,500** per full or partial 10 minutes shall be assessed for bridge closure or obstructions that extend beyond the times mentioned above.

Bridge System Testing and Counterweight Balancing

Bridge control system testing and balance testing that requires movement of the spans shall be performed between the hours of 9:30 p.m. and 5:00 a.m. Sunday through Thursday. Request for the balancing and testing must be made by the contractor at least 30 days in advance. The contractor shall coordinate and cooperate with MDOT and the USCG in this scheduling.

The contractor is required to be on site during all bridge operations and assist by ensuring that all equipment, tools, material, etc. are clear and that temporary traffic control devices are properly functioning.

During rehabilitation the navigation channel will not be closed to marine traffic. The contractor shall not obstruct passage of vessels.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4054 **CODE: (SP)**

DATE: 08/02/2012

SUBJECT: Bridge Operation

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Bidders are hereby advised that electrical and mechanical rehabilitation work will require interfacing with and tying into existing electrical and mechanical systems. It is the contractor's responsibility to plan and coordinate his work based on the restrictions outlined elsewhere for maintenance of navigation and highway traffic and ensure the bridge is properly and safely operational prior to a scheduled span opening.

The electrical and mechanical repairs shall be performed in phases to keep the movable span operational during the work. Following is a brief description of the suggested Phases.

Phase 1: Test Generator and Replace Power transformer.

Phase 2: Remove the auxiliary motors and replace with the new motors and drives. The existing controls and main motors will continue to operate the bridge during this phase until new controls are installed and tested. A new control console will be temporarily located during this phase. Traffic signals, gates, locks and brakes can be gradually phased into the new control system, thus requiring the operator to use both the old and new console.

Phase 3: With the bridge operating from the new control system and replacement auxiliary. Motors, remove the old main drive motors and replace with the new system. Remove all old control and motor control cabinets. Move console to final location.

During Phase 2 and Phase 3, the contractor shall provide updated operating instructions, train operators on changes and have at least one electrician on site during each scheduled opening.

The contractor shall submit for approval, detailed plans and schedules on how they intend to perform the work. The contractor shall notify the engineer at least one week ahead of critical work that may affect bridge operation. The contractor shall conduct regular test lifts of the bridge after any modifications have been made, prior to a scheduled opening for navigation.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. NO. 4055 **CODE: (SP)**

DATE: 08/02/2012

SUBJECT: Existing Bridge Conditions

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Bidders are hereby advised that the existing movable span is more than 40 years old and most of the original operating equipment is still in use and in various conditions. It is the contractor's responsibility to understand the mechanics of the span's drive and braking systems and ascertain their ability to operate suitably under the conditions imposed by the contractor's construction methods. The contractor shall take the steps necessary to assure and maintain safe operating conditions during the work.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. NO. 4056 **CODE:(SP)**

DATE: 08/02/2012

SUBJECT: Satisfactory Performance Period

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Bidders are hereby advised that after all work has been completed, the Contractor shall request a semi-final inspection. After this inspection and when all discrepancies have been corrected, a partial maintenance release will be issued and the bridge shall be placed in operation for a satisfactory performance period. Final inspection will not be made until the bridge has operated satisfactorily for a period of not less than sixty (60) consecutive days. During each sixty (60) day performance period, if any problems occur related to any of the work performed or material installed, the cause of the problem shall be determined, the necessary corrections made (at no cost to the Department) and the bridge operated satisfactorily for an additional period of not less than sixty (60) consecutive days.

Upon completion of the sixty (60) day performance period, the Contractor shall request a final inspection. If this work is considered satisfactory and acceptable, the Contractor will be given a full maintenance release.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO NOTICE TO BIDDERS NO. 4103

DATE: 09/12/2012

The goal is 1 percent for the Disadvantaged Business Enterprise. The low bidder is required to submit Form OCR-481 for all DBEs. Bidders are advised to check the bid tabulation link for this project on the MDOT website at:

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4103 **CODE: (SP)**

DATE: 09/18/2012

SUBJECT: DISADVANTAGED BUSINESS ENTERPRISES IN FEDERAL-AID HIGHWAY CONSTRUCTION

This contract is subject to the " Moving Ahead for Progress in the 21st Century Act (MAP-21)" 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 sub-recipient 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 Office of Civil Rights Form OCR-481, signed by the Prime Contractor and the DBE Subcontractors, no later than the 10th day after opening of the bids.

Form OCR-481 is available on the MDOT website at GoMDOT.com, then Divisions, Civil Rights, Forms, DBE, MDOT Projects, or by calling 601-359-7466.

FORMS ARE AVAILABLE FROM THE OFFICE OF CIVIL RIGHTS

The OCR-481 Form must contain the following information:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The bidder hereby gives assurance 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.

DIRECTORY

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

REPLACEMENT

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

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

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

GOOD FAITH EFFORTS

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

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

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

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

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

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

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

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

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

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

PRE-BID MEETING

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

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

PARTICIPATION / DBE CREDIT

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

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

(2) If the 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 sixty percent (60%) of the expenditures to suppliers that are not manufacturers, provided the supplier performs a commercially useful function in the supply process. Within 30 days after receipt of the materials, the Contractor shall furnish to the DBE Coordinator invoices from the certified supplier to verify the DBE goal.

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

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

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

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

(3) OCR-483: The Project Engineer/Inspector will complete Form OCR-483, the Commercially Useful Function (CUF) Performance Report, in accordance with MDOT S.O.P. No. OCR-03-09-01-483. Evaluations reported on this form are used to determine whether or not the DBE firm is performing a CUF. The Prime Contractor should take corrective action when the report contains any negative evaluations. DBE credit may be

disallowed and/or other sanctions imposed if it is determined the DBE firm is not performing a CUF. This form should also be completed and returned to the DBE Coordinator (Office of Civil Rights).

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

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

(6) OCR-487: Only used by Prime Contractors that are certified DBE firms. This form is used in determining the exact percentage of DBE credit for the specified project. It should be returned to MDOT with the OCR-481 form, or can also be returned with the Permission to Subcontract Forms (CAD-720 or CAD-725).

SANCTIONS

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

(1) Disallow credit towards the DBE goal

(2) Withhold progress estimate payments

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4124 **CODE: (SP)**

DATE: 09/18/2012

SUBJECT: Additional Permit Requirements

PROJECT: BR-0110-01(028) -/ 105550302 -- Harrison County

Bidders are hereby advised that the requirements set forth in the attached Corp of Engineers permit must be followed during the construction of this project.

Nationwide Permit No.23 (Entire Project)
(ID. No. SAM-2012-1125)

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39183-3435

REPLY TO
ATTENTION OF:

September 10, 2012

Operations Division

SUBJECT: Permit Requirement for the Maintenance Activities on the I-110 Bascule Bridge Crossing the Back Bay of Biloxi in Harrison County, Mississippi

Ms. Andrea R. Wodtke
Environmental Division
Mississippi Department
of Transportation
Post Office Box 1850
Jackson, Mississippi 39215-1850

Dear Ms. Wodtke:

Based upon the information furnished for the proposed project **BR-0110-01(028)** (enclosure 1), it appears that Department of the Army permit requirements for the proposed work will be authorized by Nationwide Permit No. 23, as specified in the February 21, 2012, Federal Register, Reissuance of Nationwide Permits; Notice (77 FR 10184-10290), provided the activity complies with the Special Conditions (enclosure 2), the General Conditions (enclosure 3), and the Regional Conditions (enclosure 4). It is your responsibility to read and become familiar with the enclosed conditions in order for you to ensure that the activity authorized herein complies with the Nationwide Permit.

This verification is valid for a period of two years, or until the Nationwide Permit is modified, suspended, or revoked. Activities which are under construction or that are under contract to commence in reliance upon a Nationwide Permit will remain authorized, provided the activity is completed within 12 months of the date of any subsequent modification, expiration, or revocation of the Nationwide Permit. Upon completion of the activity authorized by this Nationwide Permit, please fill out the enclosed certification of compliance (enclosure 5) and return it to our office.

This verification is contingent upon the successful completion of a pre-construction and post-construction hydrographic survey of the Federal Channel. Each survey shall cover the full width of the federal channel (150 foot wide) plus side slopes (1V:3H) and extend at least 150 feet upstream and 150 feet downstream of the project area. The pre-construction survey along with a construction schedule shall be submitted to the Mobile District Navigation Section two weeks prior to initiation of construction activities. The post-construction survey shall be submitted to the Mobile District Navigation Section within two weeks if the completion of construction activities. The address is U.S. Army Corps of Engineer Mobile District, Attention: Mr Donald Greene, Post Office Box 2288, Mobile, Alabama 36628-0001. If there are any questions regarding this condition, you may contact Mr. Donald Greene at (251) 694-3730.

This verification was based upon a preliminary determination that there appear to be jurisdictional areas on the property subject to regulation pursuant to Section 10 of the Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act. For your information, I have enclosed a copy of the appeals form for your review (enclosure 6).

The Vicksburg District Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete the Customer Service Survey found on our web site at http://per2.nwp.usace.army.mil/survey.html. If it is more convenient for you, please complete and return the enclosed postage-paid post card (enclosure 7).

Thank you for advising us of your plans. If you change your plans for the proposed work, or if the proposed work does not comply with the conditions of the Nationwide Permit, please contact Mr. Anthony Lobred, telephone (601) 631-5470, fax (601) 631-5459, or e-mail address: regulatory@usace.army.mil. In any future correspondence concerning this project, please refer to identification no. **SAM-2012-1125.**

Sincerely,

Michael F. McNair, R.F.
Chief, Regulatory Branch

Enclosures

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 – NOTICE TO BIDDERS NO. 4142 **CODE: (SP)**

DATE: 09/25/2012

SUBJECT: Bridge Painting

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Bidders are advised that best operational practices and methods shall be implemented so that refuse and cleaning material from the process of cleaning and that overspray from the painting process will not be allowed to enter into the surrounding waters

Bidders are also advised that this work will be paid for as part of the 907-845-1 Painting pay item.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 – NOTICE TO BIDDERS NO. 4143 **CODE: (SP)**

DATE: 09/25/2012

SUBJECT: Hydrograph Survey Data

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Bidders are advised that a pre-construction hydrograph survey is to be conducted prior to the placement of the submerged underwater bridge controller cable. The area surveyed will cover 200 feet upstream and downstream of the construction site. The pre-construction hydrograph survey is to take place not earlier then 2 weeks prior to the start of the placement of the submerged underwater bridge controller cable.

A post-construction hydrograph survey of the above area is to be conducted after the placement of the submerged underwater bridge controller cable. The post-construction hydrograph survey is to take place not later than 2 weeks after the completion of the placement of the submerged underwater bridge controller cable. Hydrograph Survey Data is to be presented to the Project Engineer with copies to the Environmental Division and USACE.

Mobile District Navigation Section
U.S. Army Corps of Engineer Mobile District
Attention: Mr. Donald Greene
Post Office Box 2288
Mobile, Alabama 39928-0001
(251) 694-3730

Bidders are also advised that this work will be paid for as part of the 618-A001 Maintenance of Traffic pay item.

General Decision Number: MS120172 01/06/2012 MS172

Superseded General Decision Number: MS20100215

State: Mississippi

Construction Type: Highway

County: Harrison County in Mississippi.

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

Modification Number	Publication Date
0	01/06/2012

* ELEC0903-003 06/01/2011

	Rates	Fringes
ELECTRICIAN	$ 23.60	12%+4.40

SUMS2008-133 09/04/2008

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

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

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

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

Union Identifiers

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

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

Non-Union Identifiers

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

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION

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

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, 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.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

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, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) 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 provisions of the Americans with 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 contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its 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, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program 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 minorities and women.

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 minorities and women 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 minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women 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, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such 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 its 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 their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

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. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

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 employees who are minorities and women 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 good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 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 good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith 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 contracting agency 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 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 minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. 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 contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. 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. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor 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 Part 26 in the award and administration of DOT-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 the contracting agency deems appropriate.

11. 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 the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

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

(1) The number and work hours 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; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency 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. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

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

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

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

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), 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 Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The 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.

(3) In the event the contractor, the laborers or mechanics to be employed in the 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. The Wage and Hour 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.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

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

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

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency 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.

3. Payrolls and basic records

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

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

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

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

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

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

(3) 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 3.b.(2) of this section.

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

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

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

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

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

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

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

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the 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.

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

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. 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.

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

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

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

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

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

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

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

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

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime 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 (2.) of this section.

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

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

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 contracting agency. 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 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased 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 or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

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 or propose 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 VI 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 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 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 contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

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 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. 3704).

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.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

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, Form FHWA-1022 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:

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 under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

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

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier 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 first tier 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 first tier 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 contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier 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," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first 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 entering into this transaction.

g. The prospective first tier 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 Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

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 is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective 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.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) 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;

(3) 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 (a)(2) of this certification; and

(4) 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.

b. Where the prospective 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 Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

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," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

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 exceeding the $25,000 threshold.

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 is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

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 Participants:

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 participating in covered transactions 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.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is 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 its bid or proposal that the participant 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 goal for female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work, is 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 60-4.2(d). 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

(06/28/2012)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 11/05/2008

SUBJECT: **Definitions**

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

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

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-102-8

DATE: 07/10/2012

SUBJECT: Bidding Requirements and Conditions

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

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

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

Bid sheets generated by the Department's Electronic Bid System (Trns•port Expedite Bid) along with a completed proposal package (with all forms completed and signed) will constitute the official bid and shall be signed on the last sheet of the Expedite Bid generated bid sheets and delivered to the Department in accordance with the provisions of Subsection 102.09. Bids submitted using any other form, format or means will result in an irregular bid. **Handwritten bids will no longer be an accepted method for submission.**

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 01/20/2011

SUBJECT: Bidding Requirements and Conditions

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 12/15/2009

SUBJECT: Award and Execution of Contract

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

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

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

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

Delete Subsection 103.05 on page 23 and substitute the following:

907-103.05--Contract Bonds.

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-104-1 **CODE: (IS)**

DATE: 05/03/2004

SUBJECT: Partnering Process

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

907-104.01--Intent of Contract. At the end of Subsection 104.01 on Page 24, 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 supplier. 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

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

DATE: 03/01/2011

SUBJECT: Disposal of Materials

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-105-6

DATE: 12/12/2011

SUBJECT: Control of Work

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: **01/20/2011**

SUBJECT: **Control of Work**

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-107-9

DATE: 08/23/2011

SUBJECT: Legal Relations and Responsibility to Public

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 01/20/2011

SUBJECT: Legal Relations and Responsibility to Public

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

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

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

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

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

907-107.14--Damage Claims and Insurance.

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

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

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

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

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

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

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

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

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

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

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

Coverage shall include:

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

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

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

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

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

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 03/15/2011

SUBJECT: Prosecution and Progress

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

907-108.01--Subletting of Contract.

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

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

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

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

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

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

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

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

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

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

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

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

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

Delete the third paragraph of Subsection 108.03.2 on page 76.

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

907-108.06.1--Blank.

907-108.06.2--Based on Calendar Date Completion.

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

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

than is indicated by the money value.

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

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

TABLE OF ANTICIPATED PRODUCTIVE DAYS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-109-5

DATE: 05/15/2012

SUBJECT: Measurement and Payment

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 1/20/2011

SUBJECT: Measurement and Payment

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

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

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

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

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

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

907-109.06--Partial Payment.

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

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-110-2 **CODE: (SP)**

DATE: **04/02/2010**

SUBJECT: Wage Rates

Section 110, Required Contract Provisions, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-110.02--Application. Delete Subsection 110.02.2 on page 100 and substitute the following.

907-110.02.2--Wage Rates. All persons employed or working upon the site of the work will be paid at wage rates not less than those contained in the wage determination decision of the Secretary of Labor in effect 10 days prior to taking bids.

Bidders are advised that regardless of the wage rates listed in the Supplement to FHWA 1273 in the contract, minimum federal wage rates must be paid.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-619-5 **CODE: (SP)**

DATE: 03/09/2009

SUBJECT: Changeable Message Signs

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

907-619.02--Material Requirements. After Subsection 619.02.13 on page 424, add the following.

907-619.02.14--Changeable Message Sign. This work shall consist of furnishing, testing, and maintaining a trailer-mounted electronic Portable Changeable Message Sign (PCMS) assembly. The sign display shall be a LED, full matrix sign. If more than one portable changeable message sign is required for this project, they shall all be of the same model and from the same manufacturer. All parts and materials used to construct the portable changeable message signs shall be interchangeable.

The PCMS shall be a trailer-mounted, solar powered, portable changeable message sign.

Each PCMS shall include the following main components:

a) Sign Housing
b) LED Modules
c) LED Drivers
d) Battery Bank
e) Sign Controller
f) Trailer
g) AC Charger
h) Solar Panel
i) Solar Panel Charger

The LED display shall be full matrix sign with a minimum of 28-pixel rows x 50-pixel columns. The pixel spacing shall be such that three (3) lines of text (5 columns x 7 rows, 8 characters) shall each have a nominal height of 18 inches.

The PCMS shall include a remote communications interface as specified herein. The PCMS shall be provided with a local serial and USB connection within the sign control cabinet so that a laptop computer using the remote software can communicate directly with the sign CPU.

This Special Provision incorporates normative references to other standards as outlined in Section 1 of the NEMA TS-4 standard and as listed below.

NEMA TS4-2004, Hardware Standards for Dynamic Message Signs (DMS) with NTCIP Requirements. All NEMA TS-4 requirements that are applicable to portable signs shall be used.

NTCIP Standards.

If a conflict between the standards referenced and this Special Provision, this Special Provision shall govern.

The definitions of the terms used within this Special Provision are as defined in Section 1 of the NEMA TS-4 standard.

If required in the contract, the PCMS shall include a speed radar unit as specified herein.

907-619.02.14.1--Mechanical Construction. Each PCMS shall meet the following minimum requirements.

Weather-Tight Enclosure. The entire sign and trailer assembly, including each component / equipment exposed to weather, shall be fully protected. It shall withstand the effects of sand, dirt, dust, moisture, hose-directed water, ice, snow and UV radiation (UVA and UVB). It shall withstand the effects of high wind loading and blowing rain as specified herein with all outriggers and/or leveling jacks in place. The sign and all components shall be watertight. Space shall be provided for manuals to be stored in a weatherproof environment.

Wind Loading. Wind loading requirements for the portable sign housing and trailer assembly shall be as specified in Section 3.3.2.1.2 of the NEMA TS-4 standard.

Welding. All welding on all major structural components (aluminum or steel) shall be performed by certified welders and in accordance to SAE/AWS D8.8 American Welding Society.

Protective Coatings. Protective coatings or processes, such as anodizing, e-coating, powder coat painting, plating, etc., shall be incorporated to protect all sign, cabinet, and trailer metal surfaces from corrosion. Any non-protected metallic fasteners shall be made of stainless steel or aluminum. All components shall be similar material, or be isolated to reduce galvanic reactions.

Temperature and Humidity. Each PCMS shall be designed to operate continuously in extreme ambient temperature ranges and at high humidity levels.

Operating ambient temperature range of the portable sign and trailer assembly shall be -29^{o}F to +165^{o}F. Storage temperature range shall be from -40^{o}F to +185^{o}F. The portable sign shall be capable of continued operation within the operating temperature ranges specified without the need for active systems (i.e., fans). Operating relative humidity level of the portable sign shall be up to 95% non-condensing.

Sign Face. Sign face material shall be protected by a non-glaring polycarbonate material of at least ¼-inch thickness. It shall be replaceable and manufactured of material rated for outside use and resistant to UV degradation (exposure to the sun).

All electronics and pixels shall be protected from damage due to moisture.

Sign Housing Construction. The portable sign housing, including its front face panels, shall be designed to conform to the requirements of minimum NEMA Type 3R, as described in the latest edition of NEMA 250.

It shall be comply with latest structural AASHTO requirements.

It shall be constructed of aluminum sheeting which shall not be less than 1/8-inch thick with all seams continuously welded by the inert gas process.

The front of the sign housing shall have a flat black matte finish.

Weep holes shall be provided in the housing to allow moisture from condensation to escape.

The sign housing and cabinets shall be designed to keep insects out.

The sign housing shall be constructed in such a manner as to prohibit stray light from reducing legibility.

All sides of the sign housing shall have a maintenance-free finish.

Alignment of the sign housing shall be capable of being horizontally adjusted to position the sign a full 360 degrees. It shall be capable of rotating and locking at any selected horizontal angle up to 360 degrees. A sight alignment tube/device shall be mounted to horizontally position the sign display. A positive brake assembly with lockable control arm shall be provided to position the sign display in the desired position.

It shall allow easy access to all components contained within the display housing without the removal of any external parts. Door locks shall be rigidly mounted. Gasketing shall be provided on all door openings and shall be dust-tight, permanently bonded to the door metal, and shall not stick to the mating metal surface. A gasket channel shall be provided to support the gasket on the door.

Trailer. Each PCMS trailer shall meet all requirements for trailers as outlined in Section 3.3.3 of the latest NEMA TS-4 standard as well as the following minimum requirements.

All trailers shall meet the requirements of FMVSS, Part 571 and SAE J684 for transport safety including, but not limited to the use of brakes, safety chains, coupling device, and lights. PCMS manufacturer shall provide instructions stating procedures necessary to insure safe transport.

The structural frame shall be capable of supporting the gross vehicle weight (GVW) load of the trailer corresponding to the axle and tire ratings that shall be in accordance with FMVSS, Part 571.

The tires shall be radial ST "Special Trailer" rated. The wheels shall be 15-inch steel wheels with five lug bolts per wheel. Each trailer wheel shall be equipped with one locking lug nut. A minimum of four keys for the locking lug nuts shall be supplied for each trailer.

The trailer shall be provided with a minimum of four outriggers or leveling jacks. One outrigger or leveling jack shall be mounted near each corner of the trailer. The length of the leveling jacks shall be such that when the trailer is level, all four jacks and the tongue jack can be lowered into the vertical position. The jacks shall be screw type jacks with a minimum 25-inch lift. Each jack shall include a swivel mechanism that allows the jacks to be swing up to a horizontal position for towing. The swivel mechanism shall secure the jack in both vertical and horizontal positions through a lock pin.

The trailer shall also be provided with a trailer stand mounted on the tongue of the trailer. The stand shall be corrosion resistant. It shall include a 6-inch wheel that allows horizontal positioning of the trailer. The stand shall be welded, not bolted, to the tongue of the trailer.

The trailer shall be provided with legal tail/brake lights, signals, and license plate mounting bracket. The trailer shall be supplied with an electrical harness assembly for connection to the tow vehicle and shall be terminated in a connector type to be specified by the Engineer.

The trailer shall be provided with a 2-inch "hammer blow coupler" style hitch in accordance with SAE J684 and interchangeable with a 2½-inch Pintle coupler / ring meeting SAE J847.

The trailer spring leafs shall be rated at a minimum of 3500 pounds.

The trailer shall be equipped with a sign display lift and control console. The lift shall be electric, hydraulic lift, or combination of both with manual backup lift. The lift shall be capable of lifting the display a minimum of seven feet (7') above the roadway surface. A mast safety pin shall be provided to prevent the sign display from falling in the event of an electric or hydraulic system failure.

The trailer shall have a minimum of 6,000-pound capacity hydraulic surge brake system along with a breakaway latch.

Illumination shall be provided as an integral part of the sign or trailer assembly to change the sign controller data in darkness.

The trailer shall contain batteries and photovoltaic (solar) panels as specified herein.

Photovoltaic (Solar) Panel System. Each PCMS shall include solar panels. A solar bank shall be assembled using multiple solar panels. All photovoltaic panels shall be listed in accordance with UL 1703, or equivalent. The solar cell bank shall have a minimum capacity of 240 watts. The

solar cell bank shall be mounted on a frame capable of being tilted at a minimum of one direction up to 61 degrees with zero degrees being horizontal. Solar cells shall be laminated between ethylene vinyl acetate and tempered glass. The solar panel shall incorporate an extruded aluminum frame. The solar battery charge controller shall include the following three state charger modes.

- Bulk
- Absorption
- Float

Battery Requirements. Each PCMS shall include batteries for primary energy storage on trailers. The battery bank capacity shall be a minimum of 900 amp/hours at 12VDC at 20-hour rate of discharge. The batteries shall be heavy duty deep cycle type rated for 80% discharge. A battery power disconnect shall be provided.

Battery enclosures shall be vented to prevent the accumulation of explosive gases. The battery cabinets must be lockable with a standard padlock.

AC Charging System. Each PCMS shall have an AC battery charging sub-system. The system shall be UL listed and operate from a standard 120VAC generator meeting all NEC requirements for portable equipment.

The solar battery charger shall include the following three state charger modes.

- Bulk
- Absorption
- Float

The AC battery charger shall have sufficient capacity to charge the battery bank from 80% discharged to fully charge in 24-hours, and operate the sign simultaneously. The AC battery charger shall be equipped with a male plug-in and a 50-foot long extension cord constructed of a minimum 12-guage wire for this purpose.

907-619.02.14.2--Controller to Sign Interface. Each PCMS shall meet all applicable controller to sign interface requirements as outline in Section 4 of the NEMA TS-4 standard.

907-619.02.14.3--Display Properties. Each PCMS shall have a cone of vision (viewing angle) from the center (reference axis) shall be a minimum 15 degrees with the half-power viewing angle defined such that at a given distance from the LED, luminous intensity measured at any point at an angle of 7.5 degrees from the LED's center axis is no less than half the luminous intensity measured directly on the LED's center axis.

The minimum word legibility requirements shall be 1232 feet or greater under daytime light conditions and within the cone of visions as specified. Legibility is defined as the ability to discern the content of a display using a "word message". The minimum word legibility

requirement shall be documented either by a MDOT approved independent testing laboratory or by participation in the NTPEP test program.

The minimum visibility requirements shall be 3000 feet or greater under daytime light conditions and within the cone of vision as specified. Visibility is defined as the ability to recognize that a display exists. The minimum visibility requirement shall be documented either by a MDOT approved independent testing laboratory or by participation in the NTPEP test program.

The PCMS shall be capable of displaying standard fonts and font alphabets as specified in Sections 5.6.1 and 5.6.2.3 of the NEMA TS-4 standard and adhere to NTCIP 1203. The PCMS shall also support moving arrows.

Any NTPEP test results shall be for the PCMS model being used and shall be within the last three completed test cycles.

907-619.02.14.4--Optical Components. The pixels for the PCMS shall be manufactured using Light Emitting Diodes (LED). Changes to displays shall be performed by turning the LEDs in a pixel either on or off. The discrete, LED shall be an untinted, non-diffused, solid-state lamp that uses Aluminum Indium Gallium Phosphide (AlInGap) technology manufactured by Avago Technologies (formerly Agilent Technologies), Toshiba Corporation, Nichia Corporation, or functional equivalent. Horizontal and vertical spacing between modules shall be such that the horizontal and vertical pitch between all pixels is equal. A failure of one pixel shall not effect the operation of any other pixel.

All LEDs used to create a display in a single portable sign shall have a nominally rated LED life of 100,000 hours of operation under field conditions. This shall include a operating temperatures between -29^{o}F to +165^{o}F. LED life shall be defined as the time it takes for the LED light output to degrade to half of the LED's initial light output. Current through an LED shall be limited to the manufacturer's recommendation under any conditions. Each LED character module shall be rated for use over the environmental range specified herein, including heat absorption due to sunlight. The LEDs shall be protected from the outside environmental conditions, including moisture, snow, ice, wind, dust, dirt, and UV rays (UVA and UVB). All LEDs shall be mounted so that they present a uniform and legible display.

Pixels shall be replaceable in modular groupings (modules). All modules within a sign shall be the same size and interchangeable. The replacement of any module shall be possible with no more that simple non-vendor-specific hand tools, such as screw drivers or wrenches, without any physical modification to the module.

907-619.02.14.5--PCMS Controller and Storage Cabinets. All PCMS controller and storage cabinets shall be minimum NEMA 3R rated and be completely encased and lockable with a standard padlock as specified herein. A separate lockable storage cabinet shall be provided to house various accessories. The controller cabinet shall be manufactured to withstand all types of adverse weather conditions and shall be designed and installed to keep insects out. All components inside the controller cabinet shall be accessible without disconnecting any

unassociated wires or components. The controller cabinet shall be illumination. The keyboard terminal and control panel shall be housed. Lighted keys and terminal displays are acceptable.

All controls in the controller cabinet shall be labeled. The cabinet shall have a voltmeter gauge to indicate the current battery charge status. It shall have an amp gauge to indicate the current/charging status. It will be acceptable to have a display via digital readout on a control console or panel.

907-619.02.14.6--Electronics and Electrical. Each PCMS shall meet all applicable electronics and electrical requirements as outline in Section 8 of the NEMA TS-4 standard.

Sign Controller. The PCMS shall include a local sign controller with firmware. The local control interface shall have a keyboard capable of allowing full programming and control of the PCMS locally. It shall have a separate serial RS-232 or USB connection to allow a laptop computer using the remote control software to communicate directly with the sign controller.

Local and remote interfaces shall be password protected to safeguard against unauthorized use.

It shall perform and report the following minimum sign diagnostics both through the local interface and Remote Control Subsystem.

- LED brightness controls
- Sign status
- Communications status
- Battery voltage
- Photocell ambient light level.

It shall automatically report a low battery alarm to a remote user through the Remote Control Subsystem. It shall have an alarm for the controller door open and over temperature.

It shall store and display both textual and graphical symbols. It shall store a minimum of 20 pre-programmed messages and graphics. It shall display preprogrammed (by manufacturer) Manual on Uniform Traffic Control Devices (MUTCD) symbolic messages and standard arrows. It shall schedule predetermined sequences of messages based on a programmed time and date. Each sequence shall display up to four (4) programmed messages (text and/or graphics). It shall display conventional one, two, or three-line messages for display with a choice of a minimum of three font sizes. Character width shall be proportional to the letter type. The one line message font size shall be capable of displaying messages in full size to utilize the maximum area of display.

It shall allow for automatic and manual controls to adjust the brightness of the LEDs. Automatic control shall be capable of varying the LED brightness by sensing the ambient light level using photocells. Manual brightness control shall be password protected to safeguard against unauthorized use.

It shall display a preprogrammed default message or no message at all, after a power recovery from a power failure. The sign shall shut down its LED display if internal cabinet temperatures reach a level that is determined unsafe by the manufacturer.

All communications and power cabling shall be either shielded or routed within conduit to minimize potential EMI/RFI effects.

Remote Control Subsystem. The PCMS shall be supplied with all the hardware and software necessary to control the PCMS from a remote central station.

It shall have a cellular phone and/or modem capable of communication using a MDOT provided cellular service provider. The Contractor shall coordinate with MDOT for cellular service provider. The Contractor shall be responsible for establishing cellular service and providing activated phone number(s) as directed and approved by the MDOT. The Contractor shall pay for cellular service for this project until the Final Maintenance Release as documented by the State Construction Engineer at which time it will be turned over to MDOT.

The cellular service type shall be CDMA/1xRTT or GSM/GPRS, as directed by MDOT.

It shall be capable of supporting connection and remote control, programming and diagnostics via the Internet.

The subsystem shall have all necessary hardware such as external antenna, communications cables, and controller interface and NTCIP Sign controller software. The central station software meeting the following minimum requirements:

- Windows XP compatible
- Capable of running on any desktop or laptop.
- Capable of controlling all PCMS functions through windows and GUIs (Graphical User Interface)
- NTCIP compatible as specified herein.

Communications. In addition to any protocols that may be available from the PCMS Manufacturer, each sign controller shall support NTCIP as follows.

- NTCIP Protocol and Command Sets**.** This specification references several standards through their NTCIP designated names and numbers. Each NTCIP Component covered by these project specifications shall implement the most recent version of the standard that is available as of project advertisement date, including any and all prepared Amendments to these standards as of the same date.

  Profile Implementation Conformance Specifications (PICS) for each NTCIP standard required shall be submitted for review and approval to the Department.

- RS-232 Interface. Communication interfaces using RS-232 shall conform, with the following minimum requirements.

1101 – NTCIP Simple Transportation Management Framework (STMF)
1203 - NTCIP Object Definition for Portable Dynamic Message Signs
2301 - NTCIP AP-STMF
2201 - NTCIP TP-Transportation Transport Profile
2103 – NTCIP SPPPP/RS232
2104 - NTCIP SP-PMPP/RS232

- Subnet Level**.** For each communication interface, the NTCIP Components may support additional Subnet Profiles at the manufacturer's option. At any time, only one Subnet Profile shall be active on a given communication interface. The NTCIP Component shall be configurable to allow the field technician to activate the desired Subnet Profile.

- Transport Level. For each communication interface, the communication interface may support additional Transport Profiles at the manufacturer's option. Response data-grams shall use the same Transport Profile used in the request. Each communication interface shall support the receipt of data-grams conforming to any of the identified Transport Profiles at any time.

- Application Level. For each communication interface, all interfaces shall comply with NTCIP 1101 and shall meet the requirements for Conformance Level 1 (NOTE -See Amendment to standard). Optionally, the NTCIP Component may support SNMP traps. A communication interface may support additional Application Profiles at the manufacturer's option. Responses shall use the same Application Profile used by the request. Each communication interface shall support the receipt of Application data packets at any time allowed by the subject standards.

  Information Level. For all communication interfaces, the information level protocol shall provide Full, Standardized Object Range Support of all objects required by these procurement specifications unless otherwise indicated below. The maximum Response Time for any object or group of objects shall be 200 milliseconds. All communication interfaces shall implement all mandatory objects of all mandatory Conformance Groups as defined in NTCIP 1203 and their respective Amendments. Table 1 indicates the modified object requirements for these mandatory objects. Table 2 shows the required minimum support of messages that are to be stored in permanent memory. The sign shall blank if a command to display a message contains an invalid Message CRC value for the desired message. Table 3 specifies the support of the required MULTI tags and their ranges.

  It shall also implement all mandatory objects of the following optional conformance groups of NTCIP 1201.

  - Time Management Conformal Group
  - Report Conformal Group. Table 4 indicates the modified object requirements.
  - Implement all objects of the Font Configuration Conformance Group, as defined in NTCIP 1203. Table 5 indicates the modified object requirements for this conformance group.

- Implement all objects of the PCMS Configuration Conformance Group, as defined in NTCIP 1203.
- Implement all objects of the Multi Configuration Conformance Group, as defined in NTCIP 1203. Table 6 indicates the modified object requirements for this conformance group.
- Implement all objects of the Multi Error Configuration, as defined in NTCIP 1203.
- Implement all objects of the Illumination/Brightness.
- Sign Status, as defined in NTCIP 1203.
- Status Error, as defined in NTCIP 1203.
- Pixel Error Status, as defined in NTCIP 1203.
- The sign display shall be capable of displaying preprogrammed Manual on Uniform Traffic Control Devices (MUTCD) symbolic messages and standard arrows Since the display of graphics is currently not defined within the NTCIP Standards or their amendments, the vendor shall propose, and provide detailed documentation (i.e., interface protocol description level), how the specified graphical shapes can be displayed.
- Implement the optional objects listed in Table 7.

Table 1
Modified Object Ranges for Mandatory Objects

Object	Reference	Project Requirement
ModuleTableEntry	NTCIP 1201 Clause 2.2.3	Shall contain at least one row with moduleType equal to 3 (software). The moduleMake shall specify the name of the manufacturer, the moduleModel shall specify the manufacturer's name of the component and the modelVersion shall indicate the model version number of the component.
MaxGroupAddresses	NTCIP 1201 Clause 2.7.1	Shall be at least 1
CommunityNamesMax	NTCIP 1201 Clause 2.8.2	Shall be at least 3
PCMSNumPermanentMsg	NTCIP 1203 Clause 2.6.1.1.1.1	Shall be at least 20*
PCMSMaxChangeableMsg	NTCIP 1203 Clause 2.6.1.1.1.3	Shall be at least 50. Each message shall support at least 4 pages per message.
PCMSFreeChangeableMemory	NTCIP 1203 Clause 2.6.1.1.1.4	Shall be at least 70 when no messages are stored.
PCMSMessageMultiString	NTCIP 1203 Clause 2.6.1.1.1.8.3	The PCMS shall support any valid MULTI string containing any subset of those MULTI tags listed in Table 4.
PCMSControlMode	NTCIP 1203 Clause 2.7.1.1.1.1	Shall support at least the following modes: ▪ local ▪ external ▪ central ▪ centralOverride

Table 2
Content of Permanent Messages

Perm. Msg. Num.	Section 12 Description
1	Permanent Message #1 shall blank the display (i.e., command the sign to use PCMSMessageType 7). It shall have a run-time priority of 50.

Table 3
Required MULTI Tags

Code	Feature
f1	Field 1 - time (12hr)
f2	Field 2 - time (24hr)
f8	Field 8 - day of month
f9	Field 9 – month
f10	Field 10 - 2 digit year
f11	Field 11 - 4 digit year
Fl (and /fl)	flashing text on a line by line basis with flash rates controllable in 0.5 second increments.
Fo	Font
J12	justification - line – left
J13	justification - line – center
J14	justification - line – right
J15	justification - line – full
Jp2	justification - page – top
Jp3	justification - page - middle
Jp4	justification - page - bottom
Nl	New line
Np	New page, up to 2 instances in a message (i.e., up to 4 pages/frames in a message counting first page)
Pt	page times controllable in 0.5 second increments.

Table 4
Modified Object Ranges for the Report Conformance Group

Object	Reference	Project Requirement
maxEventLogConfigs	NTCIP 1201 Clause 2.5.1	Shall be at least 50
eventConfigurationMode	NTCIP 1201 Clause 2.4.3.1	The NTCIP Component shall support the following Event Configuration Modes: ▪ onChange ▪ greaterThanValue ▪ smallerThanValue
maxEventLogSize	NTCIP 1201 Clause 2.5.3	Shall be at least 200
maxEventClasses	NTCIP 1201 Clause 2.5.5	Shall be at least 16

Table 5
Modified Object Ranges for the Font Configuration Conformance Group

Object	Reference	Project Requirement
numfont	NTCIP 1203 Clause 2.4.1.1.1.1	Shall be at least 3*
maxFontCharacters	NTCIP 1203 Clause 2.4.1.1.1.3	Shall be at least 127**

* Upon delivery, the first font shall be a standard 18-inch font. The second font shall be a double-stroke 18-inch font. The third font shall be a 28-inch font.

** Upon delivery, the first three font sets shall be configured in accordance with the ASCII character set for the following characters:

"A" thru "Z" - All upper case letters.
"a" thru "z" - All lower case letters.
"0" thru "9" - All decimal digits.
Space (i.e., ASCII code 0x20).
Punctuation marks shown in brackets [. , ! ? - ‘ ’ “ ” / ( )]
Special characters shown in brackets [# & * + < >]

Table 6
Modified Object Ranges for the MULTI Configuration Conformance Group

Object	Reference	Project Requirement
defaultBackgroundColor	NTCIP 1203 Clause 2.5.1.1.1.1	The PCMS shall support the following background colors: ▪ black
defaultForegroundColor	NTCIP 1203 Clause 2.5.1.1.1.2	The PCMS shall support the following foreground colors: ▪ amber ▪ orange
defaultJustificationLine	NTCIP 1203 Clause 2.5.1.1.1.6	The PCMS shall support the following line justification: ▪ Left ▪ Center ▪ Right ▪ Full
defaultJustificationPage	NTCIP 1203 Clause 2.5.1.1.1.7	The PCMS shall support the following forms of page justification: ▪ Top ▪ Middle ▪ Bottom
defaultPageOnTime	NTCIP 1203 Clause 2.5.1.1.1.8	The PCMS shall support the full range of these objects with step sizes no larger than 0.5 seconds
defaultPageOffTime	NTCIP 1203 Clause 2.5.1.1.1.9	The PCMS shall support the full range of these objects with step sizes no larger than 0.5 seconds
defaultCharacterSet	NTCIP 1203 Clause 2.5.1.1.1.10	The PCMS shall support the following character sets: ▪ eightBit

Table 7
Optional Object Requirements

Object	Reference	Project Requirement
globalSetIDParameter	NTCIP 1201 Clause 2.2.1	
eventConfigLogOID	NTCIP 1201 Clause 2.5.2.7	
eventConfigAction	NTCIP 1201 Clause 2.5.2.8	
eventClassDescription	NTCIP 1201 Clause 2.5.6.4	
defaultFlashOn	NTCIP 1203 Clause 2.5.1.1.1.3	The PCMS shall support the full range of these objects with step sizes no larger than 0.5 seconds
defaultFlashOff	NTCIP 1203 Clause 2.5.1.1.1.4	The PCMS shall support the full range of these objects with step sizes no larger than 0.5 seconds
PCMSSWReset	NTCIP 1203 Clause 2.7.1.1.1.2	
PCMSMessageTimeRemaining	NTCIP 1203 Clause 2.7.1.1.1.4	
PCMSShortPowerRecoveryMessage	NTCIP 1203 Clause 2.7.1.1.1.8	
PCMSLongPowerRecoveryMessage	NTCIP 1203 Clause 2.7.1.1.1.9	
PCMSShortPowerLossTime	NTCIP 1203 Clause 2.7.1.1.1.10	
PCMSResetMessage	NTCIP 1203 Clause 2.7.1.1.1.11	
PCMSCommunicationsLossMessage	NTCIP 1203 Clause 2.7.1.1.1.12	
PCMSTimeCommLoss	NTCIP 1203 Clause 2.7.1.1.1.13	
PCMSEndDurationMessage	NTCIP 1203 Clause 2.7.1.1.1.15	
PCMSMemoryMgmt	NTCIP 1203 Clause 2.7.1.1.1.16	The PCMS shall support the following Memory

		management Modes: ▪ normal ▪ clearChangeableMessage ▪ clearVolatileMessages
PCMSMultiOtherErrorDescription	NTCIP 1203 Clause 2.7.1.1.1.20	If the vendor implements any vendor-specific MULTI tags, the PCMS shall be provided with documentation that includes meaningful error messages within this object whenever one of these tags generates an error.
PCMSIllumLightOutputStatus	NTCIP 1203 Clause 2.8.1.1.1.9	
watchdogFailureCount	NTCIP 1203 Clause 2.11.1.1.1.5	
PCMSStatDoorOpen	NTCIP 1203 Clause 2.11.1.1.1.6	
fanFailure	NTCIP 1203 Clause 2.11.2.1.1.8	
fanTestActivation	NTCIP 1203 Clause 2.11.2.1.1.9	
tempMinCtrlCabinet	NTCIP 1203 Clause 2.11.4.1.1.1	
tempMaxCtrlCabinet	NTCIP 1203 Clause 2.11.4.1.1.2	
tempMinSignHousing	NTCIP 1203 Clause 2.11.4.1.1.5	
tempMaxSignHousing	NTCIP 1203 Clause 2.11.4.1.1.6	

NTCIP Compliance Documentation. Software shall be supplied with full documentation, including a CD-ROM containing ASCII versions of the following Management Information Base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format.

The relevant version of each official standard MIB Module referenced by the device functionality shall be included. If the device does not support the full range of any given object within a Standard MIB Module, a manufacturer specific version of the official Standard MIB Module with the supported range indicated in ASN.1 format in the SYNTAX and/or DESCRIPTION fields of the associated OBJECT TYPE macro shall be provided. The filename of this file shall be identical to the standard MIB Module, except that it will have the extension ".man".

A MIB Module in ASN.l format containing any and all manufacturer-specific objects supported by the device with accurate and meaningful DESCRIPTION fields and supported ranges indicated in the SYNTAX field of the OBJECT-TYPE macros shall be provided. This includes a MIB containing any other objects supported by the device.

Additionally, the manufacturer shall provide a test procedure that demonstrates how the NTCIP compliance of both, the data dictionaries (NTCIP 1201, 1203, and their amendments) and the communications protocols have been tested. The manufacturer shall allow the use of any and all of this documentation by any party authorized by the Procuring Agency for systems integration purposes at any time initially or in the future, regardless of what parties are involved in the systems integration effort.

907-619.02.14.7–Additional Equipment Requirements. When the contract requires the PCMS to include a speed radar unit, the radar shall operate in the "K" band, in an "approach only" mode. In conjunction with the radar, the sign shall be capable of displaying the vehicle speeds. The unit shall be programmable to allow the interruption of user-defined messages by the vehicle speed display and/or alternate messages whenever a settable speed threshold is exceeded. The radar unit shall be encased in an aluminum enclosure with a polycarbonate lens, and the metal portion shall receive the same protective coating, priming, and painting as the rest of the sign

907-619.02.14.8–System Documentation. For each PCMS, the Contractor shall provide two (2) user manuals. The user manual shall include description and samples for all operational functions, software required to operate the sign on site and remotely, all wiring diagrams, a parts lists, the sign specifications, warranty information, maintenance information and schedule, and a trouble shooting table

Each copy shall be bound and shall contain laminated sheets.

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

907-619.03.10--Changeable Message Sign. Each changeable message sign shall be installed and continuously operated at the location selected by the Engineer on State right-of-way. The Contractor is advised that selected locations may be outside the planned indicated limits of the project. The Contractor shall perform all work necessary for preparation of the site selected and approved by the Engineer, to insure maximum safety for and sign visibility of the traveling public; and may be required to remove any temporary work at a later date as directed by the Engineer. The Contractor will also place a minimum of two plastic drums in advance of the sign and one beside the sign as long as it is in use. The Contractor shall be required to move the sign to a new location if directed by the Engineer.

The Contractor may be permitted to bring electric power from outside the normal right-of-way for operation of the equipment if the Department determines that the installation operation will not be hazardous to the traveling public. The Contractor will be required to secure a permit from the Department prior to any work by the power company on the right-of-way. The entire cost of

providing electrical service, power to operate the equipment, and removal of the power source from the right-of-way shall be borne by the Contractor.

The changeable message sign(s) will remain the property of the Contractor after the Engineer determines that there is no further need for the sign(s) on the project.

907-619.04--Method of Measurement. After the last paragraph of Subsection 619.04 on page 428, add the following.

Changeable message signs, as described above, will be measured by the unit. When directed, separate measurements will be made for items included in the contract and required for temporary site preparation for the sign as referenced in Subsection 907-619.03.10. Materials for which no pay items are included in the contract will not be measured for separate payment. Separate measurements will not be made for moving the changeable message sign to a new location, but materials used for which pay items are included in the contract and are necessary for repositioning the sign as directed by the Engineer will be measured for separate payment. Removal of materials used for site preparation for changeable message signs will not be measured for separate payment.

907-619.05--Basis of Payment. After the second paragraph of Subsection 619.05 on page 428, add the following.

Payment for items required by the Engineer for temporary location of the changeable message sign, and for which pay items are included in the contract, will be made by the individual pay item. No additional payment will be made for having to work outside the planned indicated project limits.

Payment for removal of materials used for site preparation at changeable message sign locations shall be included in the contract bid price for Maintenance of Traffic.

Between pay item nos. 619-E2 and 619-F1 on page 429, insert the following:

907-619-E3: Changeable Message Sign * - per each

* Indicate when options are required

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-836-2 **CODE: (SP)**

DATE: 7/11/2012

SUBJECT: Span Balancing

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-836, Span Balancing, is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-836 – SPAN BALANCING

907-836.01--Description. This work shall consist of furnishing labor and equipment necessary to maintain balance of each of the bascule leaves during construction and bridge painting through calculations and moving of balance adjustment plates. For the purposes of this section, the structure is considered to be a double leaf bridge with each leaf having 4 bascule girders, 2 counterweights, 2 machinery rooms, 2 sets of machinery, etc. Initial strain gage balance testing will be performed by the Engineer at the beginning of the project for use in balance calculations used to determine the balance condition of the leaves at all stages during construction. Maintain balance through calculation to verify that the balance condition at no point exceeds the imbalance allowed for operation, as noted below. Final strain gage balance testing will again be performed by the Engineer after all project work has been completed. Balancing the span shall consist of modifying the existing counterweights by the addition or removal of steel balance plates in the adjustment pockets of the counterweight. All movement of the balance plates or addition/removal of balance plates to the counterweight is included in this pay item. The final desired seated balance condition shall be WX= 220 kip-ft ± 35 kip-ft with an alpha of -10 to +25 degrees from horizontal for each set of machinery. The maximum permissible imbalance at any time during construction for each set of machinery is WX= 0 to +650 kip-ft in the seated position and WX = -250 to 650 kip-ft at any angle of operation. The leaves shall not be counterweight heavy in the seated position at any time during construction without the use of restraints to prevent uplift of the leaves.

After all balancing has been performed install covers over the lower counterweight pockets as detailed in the plans.

907-836.02--Materials. Provide the materials as specified in the plans.

907-836.03--Construction Requirements.

907-836.03.1--Balance Of The Span. The Engineer will determine the imbalance of each bascule leaf using the dynamic strain gauge procedure. This data will be provided to the contractor for use in maintaining span balance throughout the project through calculations

prepared by the contractor's professional engineer (licensed in the U.S.) having had prior hands-on experience with imbalance measurements by this method on at least 3 other bascule bridges.

The leaf imbalance moment (M) will be plotted versus angle of opening (θ) for opening and closing. An average curve $M = WL\cos(\theta+\alpha)$ will be fitted to the data and plotted giving the probable leaf imbalance moment at any angle of opening. In the foregoing equation:

M = imbalance moment
W = total weight of the leaf, including counterweight
Θ = angle of opening (preferably in degrees)
L = distance from center of mass to center of pinion shaft
α = angle between horizontal line and line passing through center of pinion shaft and center of mass

The contractor will receive a stand-alone imbalance measurement report including values of WL, α and friction for each leaf, plots with fitted cosine curves and at least one annotated chart for each leaf.

The contractor shall submit reports giving the inventory of balance plates and blocks in each counterweight pocket at each stage of construction and bridge painting where span weight is affected and provide balance calculations as required to show that interim balance conditions meet the requirements herein.

907-836.03.2--Span Balance Condition. The arrangement and quantity of existing counterweight system elements shown in the design plans is approximate based on cursory field observations. The Contractor shall perform a survey of the number and type of balance plates and blocks in the counterweight pockets before proceeding with preparing a scheme for maintaining the balance. All balance calculations shall be performed by qualified personnel. All balance adjustments of each span shall be approved by the Engineer.

Until achieving acceptably balanced bascule leaves, take all precautions to assure that stability of each leaf is maintained during all interim construction states. Submit to the engineer procedures to be used for temporarily shoring unbalanced leaves if required. Submit to the engineer procedures to be used for any proposed moving of the bascule leaves during construction before they are final-balanced.

Existing balance conditions of leaves from the previous rehabilitation were reported as follows:

South Span	North Span
WL=250 kip-ft	WL=375 kip-ft
Alpha=12 degrees	Alpha=52 degrees

907-836.03.3--Maintaining Span Balance. Based on the strain gauge tests performed by the Engineer, the Contractor shall remove, reposition or install additional balance plates in the pockets as necessary so that the span is maintained within the balance condition, specified herein.

Note that balance plate adjustments may be required between the initial balance testing and the beginning of other field work.

Calculations shall account for the placement of new plates, and repositioning of existing balance plates or blocks throughout construction. Calculations shall be based on the initial test findings. Balance plates and blocks may be used or dead loads of known weight may be positioned on the unused portion of the span as required, to offset the weight of removed or added components on the span, subject to the approval of the Engineer. Calculations prepared by the licensed Engineer shall be submitted verifying the adequacy of the structural members supporting the additional dead loads, if applicable.

Report the weight and C.G. of each component in Department terminology as follows:

1. Weight, W in kips (to the nearest 0.01kip).
2. Distances from center of trunnions to C.G., X (horizontal) and Y (vertical) in feet (to the nearest 0.01 ft).
3. The component contribution to unbalance torque in kip-ft shown as the products W•X and W•Y (to the nearest 0.1 kip-ft.)
4. The component weights and unbalanced torques shall be summed to produce totals for each Bascule Leaf.

Report the weight and C.G. of the sum total of all components for each Bascule Leaf in Department terminology as follows:

1. Weight, W in kips (to the nearest 1.0 kip).
2. Distances from center of trunnions to C.G., X (horizontal), Y (vertical) and L (radial) in feet (to the nearest 0.01 ft).
3. Angle, α, between a horizontal line through the trunnion axis and a line from the trunnion axis through the C.G. of the Bascule Leaf in degrees (accuracy to 0.01 degrees). The angle is measured positive (+) upwards from a horizontal line extending forward (toward the channel) of the trunnion axis.

In computing the vertical distances to the C.G.'s of the components, account for the vertical geometry of the Bascule Leaf (i.e., the roadway vertical curve profile and cross slope.) Compute dimensions with the bridge in the lowered (closed) position.

Final balance may be first achieved through calculation, but shall be verified by strain gauge balance test performed by the Engineer.

907-836.04--Method of Measurement. Span Balancing will be measured as a lump sum quantity, complete in place and accepted.

907-836.05--Basis of Payment. Span Balancing, measured as prescribed above, will be paid for at the contract lump sum price, which shall be full compensation for completing the work. The lump sum price for Span Balancing will include the cost of all labor, materials and equipment

necessary to complete the work. The costs for all professional services of the licensed Professional Engineer will be included in the lump sum price. The costs for installation or removal of adjustment plates and blocks will be included in the lump sum price.

The material for new balance plates will be paid for under the separate pay item "Balance Plates". Sufficient balance adjustment plates are included in the contract work to achieve the final required balance condition. Any additional temporary balance material that may be required during interim stages because of the contractor's construction methodology will not be paid for separately but considered included in the lump sum cost of the item "Span Balancing".

Payment will be made under:

907-836-A: Span Balancing - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-837-2 **CODE: (SP)**

DATE: 7/9/2012

SUBJECT: Balance Plates

PROJECT: BR-0110-01(028) / 105550302-- Harrison County

Section 907-837, Balance Plates, is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-837 – BALANCE PLATES

907-837.01--Description. This special provision describes providing new counterweight plates, of the size and configuration shown on the plans.

907-837.02--Materials. New steel plates conforming to ASTM A6 shall be constructed to the size and quantity shown in the plans. Removed or unused balance plates not required on the span shall be stored in the piers as directed. If additional plates are required they shall be provided at the same cost per each as the plan quantity of plates provided.

907-837.03--Construction Requirements. Construct plates according to the dimensions shown on the plans. Cut plates so they are of uniform size and grind cut edges smooth such that there are no raised burrs or sharp edges.

907-837.04--Method of Measurement. Balance Plates will be measured per each unit and shall consist of one plate. The quantity of new plates shown on the plans is approximate. The actual number of plates to be produced, measured and paid for shall be coordinated with the Engineer as part of the contractor prepared bridge balancing calculations.

907-837.05--Basis of Payment. Balance Plates, measured as prescribed above will be paid for at the contract unit price per each, which price shall be full compensation for furnishing the counterweight plates; and for furnishing all labor, tools, equipment, materials, transportation, and incidentals necessary to complete the contract work. Balance Plates will be on an "if and where directed" basis.

Payment will be made under:

907-837-A: Balance Plates - per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-840-1 **CODE: (SP)**

DATE: 7/11/12

SUBJECT: Machinery Room Enclosures

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-840, Machinery Room Enclosures, is added to the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-840 – MACHINERY ROOM ENCLOSURES

907-840.01--Description. This item consists of furnishing all labor, material, and equipment required for the complete fabrication and installation of new enclosure sheeting walls at the four machinery rooms. Also included is the installation of all related items as shown on the Plans and specified in this section as well as the removal and disposal of the existing enclosures.

907-840.02--Materials.

907-840.02.1--Polycarbonate Structural Sheeting. Provide shatter resistant, extruded polycarbonate cellular sheet with minimum thickness of 5/8 inch. Provide sheet with UV-stabilized co-extruded outer layer and triple wall configuration with x-brace inner structure. Provide base material mass approximately 0.737 lb. per square foot. Provide sheeting with a clear color. Provide PolyCarb 16RDC as manufactured by Gallina, USA, Polygal Titan as manufactured by Polygal Plastics Industries, Lexan Thermoclear as manufactured by General Electric Co., or an approved equal.

Provide sheeting classified as CC-1 for extent of burning per ASTM D-635 and having a smoke density rating no greater than 450 when tested according to ASTM E-84.

Provide sheeting having a light transmission rating of approximately 80 percent.

Provide extruded profiles and trim as recommended by the manufacturer to seal and neatly finish all edges.

Provide neoprene sealing washers having the following properties:

- Min. tensile strength of 2500 psi
- Elongation at rupture min. 350%
- Max. compression 35%
- Tear resistance min. 214 N/cm

907-840.02.2--Stainless Steel Flashing. Furnish Type 316 stainless steel for the flashing.

907-840.02.3--Sealant. Furnish and install caulking at all locations as shown on the Plans and as

directed by the Engineer.

Furnish and install exterior caulk that is one part polyurethane sealant meeting the requirements of ASTM C920, (Type M, Grade NS, Class 25 Type 2 Class A). Provide exterior caulking of color approved by the Engineer to match or complement colors of materials on either side of the joint.

Provide non staining sealant backer rods and/or bond breakers, as recommended by the sealant manufacturer, which are compatible with joint substrates, sealant, primers, and other joint fillers.

907-840.03--Construction Requirements.

907-840.03.1--Polycarbonate Structural Sheeting. Furnish and install polycarbonate sheeting in front of all machinery rooms along Point 1 as shown on the Plans and as recommended by the manufacturer.

Attach the polycarbonate sheeting to the enclosure framing with ¼-inch stainless steel bolts using the existing holes in the framing. Include locking nuts, double washers and a sealing washer on each bolt. Install bolts with the heads at the outside face of the enclosure. Splice panels as per manufacturer's requirements. Fasten splices at 1 foot maximum centers. Cap exposed points of fasteners with plastic protectors.

907-840.03.2--Stainless Steel Flashing. Install the flashing as required at the top and bottom of the removable panels. Attach the stainless steel flashing as shown on the Plans with ¼-inch stainless steel bolts and nuts with double washers placed at 1 foot maximum centers.

907-840.03.3--Submittals. Submit to the Engineer for review and approval complete construction drawings, shop details, installation drawings, catalog data, manufacturer's literature, etc. Complete submittals required include, but are not limited to, polycarbonate sheeting, flashing, hardware, and other pertinent items.

907-840.03.4 Workmanship and Finish. Neatly finish installation of polycarbonate sheeting and metal work. Correct any defective work to the satisfaction of the Engineer at no additional expense to the state.

907-840.04--Method of Measurement. Machinery Room Enclosures will be measured as a lump sum quantity. The costs for removal and disposal of the existing enclosures will be included in the lump sum price.

907-840.05--Basis of Payment. Machinery Room Enclosures, measured as prescribed above, will be paid for at the contract lump sum price, which shall be full compensation for all materials, labor, tools, and equipment necessary and all incidentals necessary to complete the work.

Payment will be made under:

907-840-A: Machinery Room Enclosures - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-841-1 **CODE: (SP)**

DATE: 7/11/2012

SUBJECT: Replace Windows and Doors

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-841, Replace Windows and Doors, is added to the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-841 -- REPLACE WINDOWS AND DOORS

907-841.01--Description. This item of work consists of furnishing all labor, material, and equipment required for the complete fabrication and installation of new doors and door frames at the north and south bascule piers and new windows at the Operator Level at the south bascule pier. Also included is the installation of all related items as shown on the Plans and specified in this section as well as the removal of the existing windows, doors and door frames.

907-841.02--Materials.

907-841.02.1--Windows.

907-841.02.1.1--Features. Top-hung in-swinging drop-head type windows shall be provided for the upper ventilators. Tilt-in hopper type windows shall be provided for the lower ventilators.

The Contractor shall provide all ventilators with 4 bar friction hinges made of stainless steel with a nylon friction block in sliding brass shoes opening to approximately 45 degrees and cam locks made of white bronze. The Contractor shall provide all upper ventilators with an integral support arm hold open device for washing and tamper resistant custodial key locks with concealed pawl. The locks shall be constructed of a high pressure zinc housing, zinc-plated steel pawl, and stainless steel spiral pin and keepers. The locks shall be held securely up to 300 lbs. of force per lock for negative air pressure and forced entry resistance. The Contractor shall provide all lower ventilators with cam handle locks with concealed pawl. The locks shall be constructed of high pressure zinc alloy die castings and a nickel plated steel pawl. The locks shall hold securely up to 150 lbs. of force per lock for negative air pressure and forced entry resistance. The Contractor shall provide all fixed frame, operating vent, and receiver sections extruded from 6063-T5 aluminum alloy or equivalent, provided with a barrier chamber and bridges as one piece. A two-part chemically curing, high strength, polyurethane resin shall be poured into the barrier chamber and the aluminum bridge shall be removed, affording a continuous thermal break. The Contractor shall provide all frames and sashes of depths equal to or greater than on the existing windows. The Contractor shall provide all frames and sashes with a nominal wall thickness of 0.125 inches. All window sashes shall tilt inward for ease of cleaning and close flush with the interior and exterior of

frame sections. Provide all sashes with two rows of dual durometercompression type EPDM alloy weather-stripping.

All windows shall be furnished with hurricane resistant laminated insulated glass composed of two panes of clear float glass, separated by a ½-inch thick dehydrated, captive air space which is hermetically sealed with a metal-to-glass band and of the sizes required to fit the windows. The Contractor shall provide factory glazed insulating glass, as manufactured by Old Castle Glass Company, Pilkington, PPG Industries, or approved equal. Windows and glazing shall meet the requirements of the Florida Building Code's Wind-Born Debris Region, considering wind speeds of 150 mph. The system shall also meet the requirements of the "Large Missle Test". The glass shall be stored, installed, cleaned, and etc. in accordance with the requirements of the Flat Glass Jobbers Association and with the recommendations of the window manufacturer.

The Contractor shall provide screens at all lower ventilators. The Contractor shall provide inside removable screen frames of extruded aluminum sections with corners mitered and mechanically attached. The Contractor shall provide 18 x 16 fiberglass mesh screening fabric, colored black, and retained in screen frames with vinyl splines which permit easy replacement. Screen frames shall be secured to window frames with aluminum lift off clips. Screen frame color shall match the windows.

Four copies of the window manufacturer's maintenance manual describing proper job site storage, handling, post-installation cleaning, and care of aluminum windows and hardware shall be submitted to the Engineer.

907-841.02.1.2--Design Criteria. The Contractor shall comply with design criteria for heavy commercial windows as recommended by current ANSI, AAMA, AA, and ASTM publications for all window units and components. The Contractor shall substantiate actual compliance by tests on a window of similar type, size, and construction, and certify the testing results by an independent testing laboratory. The Contractor shall submit to the Engineer certified test reports for air infiltration, water penetration, deflection, and structural failure as described below:

907-841.02.1.2.1--Air Infiltration. When tested in accordance with ASTM E283, the allowable air infiltration shall not exceed 0.10 cubic feet per minute of fixed lite when subjected to a static pressure of 6.24 psf, (25 mph). When tested in accordance with ASTM E283, the allowable air infiltration of operating vents shall not exceed 0.10 cubic feet per minute per foot of crack length when subjected to a static pressure of 6.24 psf, (50 mph).

907-841.02.1.2.2--Water Penetration. When tested in accordance with ASTM E331, there shall be no uncontrolled water penetration at a static pressure of 10 psf, with a water spray of five (5) gallons per square foot of exterior surface per hour.

907-841.02.1.2.3--Deflection.

907-841.02.1.2.3.1--Wind Load. The Contractor shall furnish structural calculations for window member deflection, and provide test reports in accordance with ASTM E330 guidelines. The Contractor shall determine deflections for members when subjected to a wind load of 30 psf.

Deflection normal to wall plane of intermediate vertical and horizontal members shall be limited to 1/175 of unsupported span, 0.75 inches maximum. The Contractor shall limit the deflection of operating ventilator glass carrying members to manufacturer's limits, 0.062 inches maximum. The Contractor shall limit deflection at sealant joints occurring between window frame members and building elements to ½ of joint width. The Contractor shall limit deflection of anchors to 0.062 inches. The Contractor shall provide sufficient aluminum or steel reinforcing where required to meet the criteria. Reinforcement shall not obstruct the function of the operating ventilator units.

907-841.02.1.2.3.2--Glass Load. The Contractor shall limit fixed frame glass carrying members to a deflection parallel to wall plane of 1/300 of unsupported span without reducing glass bite more than 25 percent, 0.125 inches maximum. The Contractor shall limit operating vent glass carrying members to manufacturer's limits, 0.062 inches maximum, which do not obstruct the function of the operating unit. The Contractor shall provide aluminum or steel reinforcing when required.

907-841.02.1.2.4--Structural Failure. The Contractor shall limit furnish structural calculations for window member stress, and provide test reports in accordance with ASTM E330 guidelines. Stress limits for aluminum and steel components shall be as set forth by the current AAMA and AISC guidelines, respectively. All window members shall be of proper aluminum alloy and temper to provide a minimum ultimate tensile strength of 28,000 psi; mitered corners of ventilators shall withstand a 2.5 kip load without permanent deformation. There shall be no overstress of any window member, anchor, or other component when unit is subjected to a Structural Test Pressure equal to 1.5 times the design pressure.

907-841.02.1.3--Finish. The Contractor shall provide a finish by caustic etch and anodic treatment in accordance with Aluminum Association Standard Architectural Class 1 coating of 0.7 mils minimum thickness for all exposed aluminum surfaces. A clear finish shall be provided.

907-841.02.1.4--Anchorage. Window units shall be secured to the existing building structure with allowances made for installation sequence, building movement, thermal movement of aluminum, and standard window opening construction tolerances. All material employed shall be aluminum or non-corrosive materials compatible with aluminum; fasteners shall be stainless steel or cadmium plated steel, all steel clips and/or steel anchors, if used, shall be zinc plated. All fasteners, expansion channels, clips and anchors, utilized as the project requires, shall be of adequate alloy, size and spacing to assure the structural integrity of window units.

907-841.02.1.5--Submittals. Shop drawings, including elevation views showing window unit types, sizes, and locations, shall be submitted for approval. Typical details shall be drawn at full scale depicting window member cross-sections, trim, anchorage, and glazing.

907-841.02.2--Window Shade Pockets. The Contractor shall provide window shade pockets consisting of an extruded aluminum section as shown on the plans. The Contractor shall match the finish on the aluminum window shade pocket to the color sample as selected and approved by the Engineer for the window units.

907-841.02.3--Window Shades. The windows in the operator's room shall be equipped with dual

window shades. The outer shade (mounted nearest the glass) shall be a light filtering shade and the inner shade shall be a room darkening shade. The Contractor shall furnish seamless shades of a high quality commercial grade acceptable to the Engineer.

The Contractor shall furnish bottom weights of aluminum, 1-inch x 1/8-inch x width of shade, enclosed in a fabric hem pocket. The Contractor shall furnish 1 3/8-inch OD steel roller tubes, lock-seamed and coated with a protective enamel finish.

The Contractor shall provide a clutch of high strength fiberglass reinforced polyester with high carbon steel springs to transmit motion from driving to driven members of the clutch mechanism. The Contractor shall provide a crash proof clutch mechanism that prevents slippage and raises and lowers smoothly to any desired height. The Contractor shall provide a clutch that operates bi-directionally with the use of an endless beaded chain and that never needs adjustment. The Contractor shall provide an idler made of high strength fiberglass reinforced polyester consisting of an outside sleeve and center shaft. The sleeve shall provide a bearing surface for the roller tube and must rotate freely on the center shaft, providing smooth, quiet, and long wearing operation. The control loop shall be an endless plated steel ball chain or plastic bead chain with a plastic connector.

The Contractor shall provide installation brackets of at least 1/16-inch thick steel with black baked enamel finish. Brackets must accommodate overhead, side, or face mounting with the clutch at either end of roller tube.

907-841.02.3.1--Light Filtering Shades. Furnish light filtering shades made of 3.5 mil minimum Mylar fabric with a sputtered metalized surface. The sputtered metalized surface shall be charcoal/silver-CS69 with the following characteristics:

- Percent solar energy transmission: 15 ±
- Percent solar energy absorption: 35 ±
- Percent solar energy reflectance: 50 ±
- Percent UV transmission: 2 ±
- Percent visible light transmission: 12 ±

907-841.02.3.2--Room Darkening Shades. Furnish room darkening shades made of fabric woven from extruded vinyl over a fiberglass or polyester core. Fabric must hang straight and flat, without buckling or distortion, and when trimmed, the fabric edge must remain straight and free of raveling. Fabric shall be closed weave to provide a room darkening capability. Fabric shall be flame retardant and shall be fade resistant to commercially accepted standards. Variations in fiber density and striations inherent in woven fabrics shall be within commercially accepted standards. Provide beige shades.

907-841.02.4--Doors and Door Frames.

907-841.02.4.1--Metal Door Frames. Provide door frames fabricated from 16 gauge steel with a 2" face, 1/2" integral stops, and having depths as shown on the Plans. Provide frames that are set-up, with corners mitered and internally welded. Coat frames with an electrolytic zinc coating

after corners are mitered and welded. Mortise hinge jambs for hinges and prepare lock jambs for lock strike as required for hardware specified below. Provide all door frames with adjustable floor anchors. Adjustments shall be in increments of 1/16" with a permanent locking feature. Furnish three rubber door silencers for strike jambs except where weather stripping eliminates this need. Provide adjustable anchors at each jamb suitable for the construction of abutting walls. Provide a 14 gauge bent reinforcing plate in head of all metal frames occurring in masonry walls. The exterior and interior of the frame for the door shall be provided with a metal trim at the head and jambs. The trim shall be securely fastened to the frame. Trim shall be flush with both sides of door.

907-841.02.4.2--Exterior Doors. The exterior doors include: entry doors from the sidewalk (EL. 68.50) into the north and south pier towers, entry doors from the bascule rack and track areas (EL. 49.00 and 58.75) into the north and south pier towers.

Provide doors of flush panel design, 1-3/4" thick, as shown on the plans. Fabricate doors from electrolytic zinc coated 16 gauge steel face panels with a core of foamed-in-place polyurethane (2.0 to 2.5 pcf density). Provide doors with smooth hemmed edges, seamless face sheets, 16 gauge steel top and bottom channels positioned flush with face sheets, 14 gauge lock reinforcing, 12 gauge closer reinforcing, and 7 gauge steel hinge reinforcing. Reinforce the access doors at EL. 10.00 to provide adequate support for. Drill any holes necessary at the time of door fabrication.

907-841.02.4.3--Interior Doors. The interior doors include: door adjacent to the stairway in the north pier tower (EL. 49.00), doors adjacent to the stairways in the south pier tower (EL. 49.00, 58.75 and 68.50), doors into the Storage Room and Transformer Room (EL. 49.00) in the south pier tower, and doors into the Control Room and Auxiliary Power Room (EL. 58.75) in the south pier tower.

Provide doors of full flush design, 1-3/4" thick with 18 gauge steel face panels with an electrolytic zinc coating. Furnish door with a one piece full honeycomb core securely bonded to both face sheets, mechanically interlocked door edges, and seamless face sheets. Provide doors with 16 gauge steel top and bottom channels positioned flush with face sheets and 10 gauge steel hinge reinforcing. Provide interior doors glazed with 1/4" polished wire glass.

907-841.02.4.4--Paint. Bonderize frames and doors if necessary to insure the proper adhesion of the shop prime coat to the substrate. Touch-up areas where the zinc coating has been damaged by the fabrication process with a zinc-rich paint before priming. Use a gray alkyd resin-iron oxide paint having high chromate content for the shop prime coat. It shall be oven dried and tested to ASTM Specifications D-714 and B-117 for humidity cabinet and salt spray tests. The paint should have good adhesion, high flexibility, the ability to resist scuffing and scratching during transit and installation. Ensure that the shop paint is compatible with the field applied intermediate and finish coats. Shop coat includes all surfaces, including those inaccessible after installation.

Door and frame shall be pre-finished at the factory with an electrostatic, baked on finish. Provide color chart for selection of color by the Engineer.

907-841.02.4.5--Locks. Provide all door locks for the North Pier and South Pier keyed to the

requirements of the Department.

907-841.02.4.6--Hardware. Provide hardware sets for doors as described below. Provide all hardware brushed stainless steel unless noted otherwise.

Furnish the door and frame manufacturer with all templates and necessary information relative to cutting out and reinforcing for the installation of locksets, butts, etc. Determine need and location of door stops, etc., subject to the approval of the Engineer.

Provide all hinges of five knuckle, flush ball bearing design, with wide spaced bearings. Bearing assemblies are to be thoroughly lubricated. Ball bearings are to be of chrome alloy material, through hardened. All full mortise hinges are to have a hole in the bottom tip for easy pin removal except for non-removable pin.

Furnish and install mechanical mortise locks for the exterior doors. Provide locks with cases constructed of zinc dichromate plated wrought steel, ¾ inch throw latch bolts with stainless steel, two-piece anti-friction camming action, and solid steel, heat treated hubs. Locksets must have heavy cold forged, reinforced knobs and cold forged, reinforced roses. Locksets must be reversible for both right hand or left hand doors and be easily installed without the use of any special tools. Locksets must conform to ANSI A115.1, ANSI A115.11, and ANSI A156.13, Series 1000, Operational Grade 1. Provide a bronze knob and trim with Physical Vapor Deposition (PVD) finish for the exterior doors.

Furnish and install a cylindrical lockset for the interior doors. The lockset mechanism must be constructed of heavy-gauge, zinc dichromate plated, cold-rolled steel. Provide the lock and trim made entirely of stainless steel. The lockset must be reversible for both right hand or left hand doors and be easily installed with out the use of any special tools. The knob and roses must be heavy cold forged reinforced.

Furnish and install door closers of a full rack-and-pinion type with cast aluminum alloy shell. Provide surface mounted closers projecting no more than 2 7/8 inches from the surface of the door. Provide non-handed closers to permit installation of doors of either hand. Closer fluid must contain lubricity and anti-oxidation agents and maintain stable viscosity to allow the door closer to perform in temperatures ranging from extremely high to low temperatures. Size closers for each door. Provide closers with two non-critical valves, hex key adjusted, to independently regulate sweep and latch speed. Provide closers with adjustable backcheck cushioning controlled by a hex key adjusted valve.

Furnish and install door closers with a built-in door stop and holder effective at a single point selected at installation, from 85° – 115° in five degree increments. The door stop must be cushioned by a shock-absorbing heavy-duty spring action effective at the soffit plate pivot. Provide closers for parallel arm installation using rigid steel main arm and secondary arm lengths proportional to the door width to reduce racking at the hinge/pivot. Provide non-handed arms having a ball and detent hold-open mechanism incorporating an on /off hold-open selector and a hold-open tension adjustment.

Provide all weatherstripping fabricated from durable, UV-resistant polyethylene cladding permanently bonded to a thermoset urethane open-cell foam core. Provide weatherproofing conforming to ISDSI-101 and ISDSI-104 for air and water infiltration. Provide a mortise type automatic door bottom seal. Provide weather-proof thresholds manufactured of bronze with an integral water-drainage system.

Provide all kick plates fabricated of 0.050 inch thick architectural stainless steel. Furnish kick plates meeting ANSI A156.6 requirements for 0.050 inch thickness. Provide #6 x 5/8" oval head, undercut sheet metal screws plated to match.

Provide heavy duty cast dome door stops constructed of brass. Provide door stops meeting ANSI/BHMA 156.6, L12141. Furnish matching risers where required for use with thresholds. Furnish fasteners sufficient for mounting in all types of floor construction, including ceramic tile and concrete.

Hardware Set No. 1.
2 Pair 5" x 5", Full Mortise, S.S. butt hinges with non-removable pin
1 Mortise Lockset with bronze knob and trim
1 Closer w/optional positive stop
1 Kick Plate 12" x 35"
1 Threshold
1 Weatherstripping
1 Door Sweep

Hardware Set No. 2.
2 Pair 5" x 5", Full Mortise, S.S. butt hinges with non-removable pin
1 Mortise Lockset with bronze knob and trim
1 Closer w/optional positive stop
1 Kick Plate 12" x 31"
1 Threshold
1 Weatherstripping
1 Door Sweep
1 Door Stop

Hardware Set No. 3.
1 1-1/2 Pair 5" x 5", Full Mortise, S.S. butt hinges with non-removable pin
1 Mortise Lockset with bronze knob and trim
1 Closer w/optional positive stop
1 Kick Plate 12" x 29"
1 Threshold
1 Weatherstripping
1 Door Sweep

907-841.02.4.7--Sealant. Furnish and install caulking at all joints between dissimilar materials on the exterior and interior faces of openings between the concrete masonry and the door and window frames, and all other locations as shown on the plans and as directed by the Engineer.

Furnish and install exterior caulk that is one part polyurethane sealant meeting the requirements of ASTM C920, (Type M, Grade NS, Class 25 Type 2 Class A) and interior caulk that is acrylic latex sealant meeting the requirements of ASTM C834. Provide interior and exterior caulking of colors approved by the Engineer to match or complement colors of materials on either side of the joint.

Provide non staining sealant backer rods and/or bond breakers, as recommended by the sealant manufacturer, which are compatible with joint substrates, sealant, primers, and other joint fillers.

907-841.03--Construction Requirements.

907-841.03.1--Submittals. Submit to the Engineer for review and approval complete construction drawings, shop details, installation drawings, catalog data, manufacturer's literature, etc. Complete submittals required include, but are not limited to, all aluminum windows, mullions, architectural metals, hollow metal doors, door frames, door hardware, and other pertinent items.

907-841.03.2--Workmanship and Finish. Neatly finish installation of metal work. Correct any defective work to the satisfaction of the Engineer at no additional expense to the state.

907-841.03.3--Warranty. The Contractor shall warrant to the Department that all items of work performed under this article shall be free from defective material and workmanship for a period equal to the standard warranty period of the manufacturer or the industry, whichever is longer. Commencement of the warranty period shall begin after final acceptance of the work. In the event of a legitimate claim, the Contractor shall replace or repair the defective product, in whole or in part, as necessary, to restore the product to its original intended state.

907-841.03.4--Windows. Fabricate and install all windows and related items as shown on the Plans, as directed by the Engineer, and as specified herein. The nominal window sizes shall be as shown on the plans. Field measure all rough openings to determine the exact sizes of windows to be furnished. Take all necessary measurements and verify all conditions at the building site wherever window work engages other work already in place.

Submit to the Engineer for approval complete construction drawings, shop details, erection drawings, catalog data, etc. for the Operator's House windows. Coordinate all window drawings with adjacent construction prior to submitting details to the Engineer for approval. Drawings must include elevations showing window unit types, sizes, and locations and shall include typical details drawn at full scale depicting window member cross-sections, trim, anchorage, and glazing.

Submit to the Engineer two sets of the window manufacturer's paint color samples. The Engineer will make a color selection from among all of the samples. Acceptance of color samples will be at the discretion of the Engineer.

Secure window units to the building structure with allowances made for installation sequence, building movement, thermal movement of aluminum, and standard window opening construction

tolerances. All material employed for securing the window units to the building structure must be aluminum or non-corrosive materials compatible with aluminum. Furnish and install all fasteners, expansion channels, clips, and anchors of adequate alloy, size, and spacing to assure the structural integrity of window units.

An experienced erector must erect, anchor, and seal windows and related trim in accordance with the approved construction drawings and install the windows in a neat, workmanlike manner to provide a weather tight closure.

907-841.03.5--Window Shade Pockets. Furnish and install window shade pockets at all windows at the Operator's Room. Coordinate the window shade pocket work with the windows and window shades. Install and finish all items in accordance with good practice.

907-841.03.6--Window Shades. Furnish and install dual window shades at all windows at the Operator's Room. Coordinate the window shade work with the windows and window shade pockets. Install and finish all items in accordance with good practice.

907-841.03.7--Doors and Door Frames. Take all necessary measurements and verify all conditions at the building site wherever door and door frame work engages other work already in place. Paint all doors and frames to match the windows.

907-841.03.7.1--Painting Doors and Door Frames. All doors and frames must be shop primed as specified in subsection "Doors and Door Frames" above. Repair damaged shop prime coat in accordance with the manufacturer's recommendations. Obtain approval of repair of the shop prime coat from the Engineer before proceeding with field painting. Paint all exterior surfaces of exterior doors and door frames with one intermediate coat and two finish coats in the field. Paint all interior surfaces of doors and frames with one intermediate coat and one finish coat in the field. Use field paint as recommended by the door manufacturer so that it is compatible with the shop prime coat. Use satin enamel for the finish coats. Submit to the Engineer two sets of the door manufacturer's paint color samples. The Engineer will make a color selection from among all of the samples.

Perform all field painting in accordance with the applicable portions of Section 814 of the Standard Specifications unless noted otherwise herein or on the Plans.

907-841.03.8--Sealant. Joints shall be caulked with a pressure caulking gun. Surfaces shall be thoroughly cleaned and bone dry. No caulking shall be done when the temperature is 40 °F and falling. Prior to caulking operation, Contractor shall submit for approval, literature showing product specifications and application methods that will be used.

907-841.04--Method of Measurement. Replace Windows and Doors will be measured as a lump sum quantity. The costs for removal and disposal of the existing windows and doors will be included in the lump sum price.

907-841.05--Basis of Payment. Replace Windows and Doors, measured as prescribed above, will be paid for at the contract lump sum price, which shall be full compensation for all

materials, labor, tools and equipment necessary for completing the work as described herein.

Payment will be made under:

907-841-A: Replace Windows and Doors - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-842-1 **CODE: (SP)**

DATE: 7/11/2012

SUBJECT: Plumbing Work

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-842, Plumbing Work, is added to the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-842 – PLUMBING WORK

907-842.01--Description. This special provision describes installing plumbing items as shown on the plans and as hereinafter described for the operator house such as: toilet facilities, fresh water system with holding tank and a sanitary sewer system with holding tank. All lines, toilet, hot water heater, sink and appurtenant items are included in the contractor's work.

Steel support framing, grating, and railing at the holding tanks are not included in the bid item PLUMBING WORK but are paid for under the bid item STRUCTURAL STEEL.

907-842.02--Materials. Unless specifically noted otherwise, all products and workmanship shall be of the highest commercial or industrial quality and shall conform to Mississippi Department of Transportation requirements. Lesser quality products, such as "economy" grade, will not be accepted. The engineer has the right to reject any product or work that is inferior in his/her judgment. Specific reference in these specifications to any article, device, product, material, fixture, form or type of construction, etc., by name, make or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. The contractor, in any case, may use any article, device, product, material, fixtures, form or type of construction, which, in the judgment of the engineer, is equal to that named in the special provisions or shown on the plans.

907-842.02.1--Submittal. Submit to the engineer for review and approval catalog cuts and manufacturer's literature, construction drawings, shop details and installation drawings for the plumbing fixtures, pipe, brackets, cleanouts, concrete inserts, and associated appurtenances, and hardware. Shop drawings are required for the holding tanks, support structures and sewer pipe installation. Catalog data sheets shall be complete and sufficiently detailed so that the engineer can judge the adequacy of the products.

Submit color samples for all items requiring color selection to the engineer for approval.

907-842.02.2--Pipe & Hardware. The pipes for the water supply line and sanitary sewer line shall be hot dip galvanized welded or seamless corrosion resistant nickel copper steel alloy pipe of

the sizes shown on the plans manufactured in accordance with ASTM A53 with a minimum ultimate tensile strength of 55 ksi and minimum yield strength of 36 ksi. All fittings shall be hot dip galvanized screwed cast iron or pressed steel fittings of the same or equivalent material as the pipe. Pipes shall extend through the north side of the operator house sidewalk area. Lockable caps shall be furnished and installed.

The vent pipe for both the fresh water tank and the sanitary sewer line may be Schedule 40 PVC.

Cleanout plugs shall be brass, shall have raised square heads, and shall conform to ASTM A74.

Hangers and supports shall be clevis or trapeze type on not more than 6 foot centers and capable of screw adjustments after erection of the pipe. Provide stainless steel for all pipe brackets, hangers and mounting hardware located within the operator's tower. Support vertical pipes at least once in each story height and securely support the base of risers to the building structure. Core holes through concrete where pipes pass through walls and floors.

907-842.02.3--Fresh Water Supply

907-842.02.3.1--Water Tank. Furnish and install a fresh water Polyethylene tank with associated plumbing as shown on the plans, as described herein, and as directed by the engineer. The fresh water holding tank shall have a capacity of 1500 gallons and shall be ordered at a size to allow installation within the designated pier area. The tank shall be a product of a reputable manufacturer specializing in polyethylene storage tanks for the intended purpose.

907-842.02.3.2--Water Pressure Tank. Furnish and install a water pressure tank as shown on the plans, as described herein, and as directed by the engineer. The pressure tank shall have a capacity of 20 gallon with 5 year warranty. The water pressure tank shall be a product of a reputable manufacturer specializing in this work.

907-842.02.3.3--Water Pump. Furnish and install a water pump as shown on the plans, as described herein, and as directed by the engineer. The water pump shall pump 20 GPM, 115/230 Volt and with 5 year warranty. The water pump shall be a product of a reputable manufacturer specializing in this work.

907-842.02.3.4--Water Heater. Provide one electric water heater in the lavatory as shown on the plans. This unit shall meet ANSI (American National Standards Institute) requirements and have been tested according to D.O.E. test procedures and meet the energy efficiency requirements of NAECA, ASHRAE standard 90, ICC Code and all state energy efficiency performance criteria for energy consuming appliances. The water heater shall have the following features:

- Capacity of at least 10 gallons
- Electrical input of 1.5 kW at 120 V, single phase
- Self-cleaning and maintenance free
- Fused glass or ceramic lined tank with internal anode
- R-15 (minimum) rated insulation
- Surface mounted adjustable temperature

- Pressure relief valve
- Minimum warranty of six(6) years of tank and parts from date of acceptance
- UL approved

907-842.02.3.5--Utility Sink. The lavatory shall be a floor mounted utility single tub type, 23-3/8" L x 22-7/8" W x 15-1/2" D in overall size, made of sturdy veritek with no surface coating, in a white color.

Furnish sink complete with the following features:

- 1-1/2" cast brass "P" trap
- pop-up drain with 1-1/2" tailpiece
- faucet
- white color

Furnish faucet with the following features:

- 5 ¼" high gooseneck spout
- wrist blade lever handles
- aerator
- rigid connections
- pop-up drain control
- 6-inch slab to spout outlet
- polished chrome finish

Supply both hot and cold water to the faucet.

907-842.02.3.6--Spigots. Provide a tamper-proof, freezeless faucet with vacuum breaker on the wall of the operator's house. Provide spigots below or near the lavatory sink to supply both hot and cold water for the purpose of filling a bucket

907-842.02.4--Sanitary Sewer. Furnish and install a toilet and a sewage holding tank with associated plumbing as shown on the plans, as described herein, and as directed by the engineer. All plumbing and venting shall be in accordance with local and state requirements.

Furnish a 1.6 gallon, elongated bowl type toilet with a siphon jet flush and a closed-coupled design. The toilet shall be manufactured from vitreous china and be furnished complete with tank, tank cover, float valve with vacuum breaker, flush valve, chrome plated trip lever, bolt caps, and a solid plastic, easy to clean open front seat with cover. The toilet shall be white.

The sewage holding tank shall be polyethylene and have a capacity of 1500 gallons and shall be sized to allow installation within the designated pier area. The tank shall be fabricated by a reputable manufacturer specializing in sewage holding tanks and approved for use by state and local agencies.

For the sanitary vent pipe and sanitary lines within the operator's house provide acrylonitrile butadiene styrene (ABS) thermoplastic pipe of the sizes shown on the plans manufactured in accordance with ASTM D1527, ASTM D2282, ASTM D2661 and ASTM F628.

Provide stainless steel for all pipe brackets, hangers and mounting hardware within the operator's house.

907-842.02.5--Holding Tank Level Sensor. Furnish a Level sensor with a NEMA 4 housing and a radio frequency level switch designed for use with electrically conductive and non-conductive liquids and solids. The switch shall have adjustable time delay and tolerate reasonable amounts of sticky build-up. At least one normally open and one normally closed electrical contact are required. Consult with the switch manufacturer to seek advice with regard to an optional Teflon coated probe and furnish the latter if required.

Furnish a monitoring station in a wall mounted NEMA 12 enclosure and install it in the Operator's house entrance hall. Include a nameplate "Septic Tank Monitoring", an indicating light with nameplate "High Level", an audible alarm and an illuminated pushbutton (flashing red light) with nameplate "Alarm Silence".

At 90% of tank capacity the high level signal shall trigger an audible alarm and turn on the "High Level" pushbutton light. Pressing the "Alarm Silence" button shall silence the alarm, but the light shall remain flashing until the high level condition is removed (tank emptied). Use a latch relay as a memory when required. Submit an electrical schematic diagram for review and approval.

Connect the components to a terminal strip in the enclosure with the wires numbered in accordance with the shop drawings. Cover unused holes with the factory made plugs of matching color. Propose and submit a level switch for review and approval. An example of such a level switch is the LV750 series manufactured by "Omega" Corporation.

907-842.02.6--Metal Powder Coated (Baked Enamel) Toilet Compartments. Provide partitions which are the products of one manufacturer. Submit manufacturer's product data, hardware and accessories. Provide shop drawings for field measurements. Panels, Toilet Screens and Doors: Shall be 1" thick, constructed from two sheets of (20 gauge - panels, 22 gauge - doors) bonderized, galvanized steel. Sheets to be formed and cemented under pressure to a structural vermin-proof honeycomb core. Formed sheets shall be welded together at intervals around entire perimeter to ensure a rigid one-piece integral unit. All edges shall be bound with a 20 gauge interlocking molding. Panel corners to have corrosion resisting corner clips.

907-842.03--Construction Requirements. All ancillary work that may be required to perform the plumbing installations such as coring holes, removal of portions of partition walls, tiling and other appurtenances is included in the work. Repair and replace in kind any such items requiring temporary removal. Penetrate through concrete walls and floors using core drilling methods. Grout areas between pipes and cored openings.

Remove the existing electric toilet and exhaust system.

907-842.03.1--Codes and Permits. The complete installation of all equipment shall be in compliance with applicable laws and the latest rules or regulations of all municipal and other public agencies having jurisdiction over this work. If any items or requirements in this special provision conflict with any of the above mentioned rules and regulations, then the minimum requirements shall be as shown on the plans and described in these special provisions and shall be altered, as approved in advance by the engineer, to meet any additional requirements. The engineer's interpretation shall govern.

907-842.03.2--Workmanship and Finish. Coordinate the installation of the plumbing work with adjacent construction and take all necessary measurements and verify all conditions at the site wherever the work engages other work already in place. Neatly finish the installation of metal work. Correct all defective work to the satisfaction of the engineer at no additional cost to the department.

Coat exposed threads of galvanized pipe in accordance with ASTM A780, using either the zinc-based solders or the zinc-rich paints type of materials. Follow the requirements of Annexes A1, REPAIR USING ZINC-BASED ALLOYS, and/or A2, REPAIR USING ZINC-RICH PAINTS.

907-842.03.3--Guarantee. For all items of work to be performed under this special provision, guarantee each item against defects in material and workmanship.

907-842.03.4--Water Supply. The piping shall conform to the general location shown on the plans with all necessary fittings, reducers, vents, and other appurtenances for a complete system. Adjustments may be required to conform to actual field conditions.

907-842.03.5--Sanitary Sewer. The piping shall conform to the general location shown on the plans with all necessary fittings, reducers, cleanouts, vents, and other appurtenances for a complete system serving the sink and toilet. Adjustments may be required to conform to actual field conditions.

907-842.04--Method of Measurement. Plumbing Work will be measured as a lump sum quantity.

907-842.05--Basis of Payment. Plumbing Work, measured as prescribed above, will be paid for at the contract lump sum price which shall be full compensation for all materials, labor, tools and equipment necessary for completing the work as described herein.

Payment will be made under:

907-842-A: Plumbing Work - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-844-1 **CODE: (SP)**

DATE: 7/09/2012

SUBJECT: Building Amenities

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-844, Building Amenities, is added to the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-844 – BUILDING AMENITIES

907-844.01--Description
This special provision describes furnishing and installation of the miscellaneous items of work within the operator's house and machinery access house and final cleanup of the whole structure as hereinafter described and/or shown on the plans. This work shall include:

- Replacing ceramic tile in operator house
- Supplying new furniture as listed below
- Furnishing and installing new storage cabinets
- Furnishing and installing a new Fuel Fill Pipe from the sidewalk to generator

907-844.02--Materials. Provide all products and workmanship of the highest commercial or industrial quality available. Lesser quality products, such as "economy" grade, will not be acceptable. The engineer will reject any product or work that is inferior in his judgment.

Interpret specific reference in these specifications to any article, device, product, material, fixture, form or type of construction, etc., by name, make or catalog number as establishing a standard of quality. Do not construe specific references as limiting competition. Use any article, device, product or material, fixtures, form, or type of construction, which in the judgment of the engineer is equal to that named in the special provisions or shown on the plans.

907-844.02.1 Glazed Ceramic Tiles. Provide samples of ceramic tiles for color and finish selection. Provide color chart for grout color selection. Submit samples of sufficient quantity for a realistic representation of color range and pattern.

Provide materials conforming to the following specifications:

- Portland cement – ASTM C150, Type 1
- Lime – ASTM C206, Type S or ASTM C207, Type S
- Sand – ASTM C144
- Water – potable

- Dry-set portland cement mortar bond coat – ANSI A118.1
- Organic adhesives – ANSI A136.1
- Walls – MTM 4400 Type II Adhesive Ceramic Wall Tile Mastic
- Ceramic tile – ANSI A137.1
- Ceramic tile grouts – ANSI A118.6

Provide units that conform to the specifications of the Facing Tile Institutes and are of the highest structural and mechanical quality. Provide tile that is uniform in shape, size, color and texture, and free from warped finish surfaces, spalls, cracks, and other imperfections. Verify that the shading of the tile used is consistent with the approved samples and the manufacturing process.

Provide nominal tile size of 8" x 8" x 3/8" on walls and 12" x 12" x 1/4" on floors. Furnish shapes shown in the Tile Council of America, Inc. Handbook for Ceramic Tile Installation as required for various conditions including all necessary cove and bead trim pieces. Furnish spare ceramic tiles of each type used to cover 5'x5' area.

907-844.02.2--Furniture. Provide furniture of highest quality with substantial commercial construction. Replace, at no additional cost to the state, any item not meeting the approval of the engineer with an item of higher quality that does meet the approval of the engineer.

907-844.02.2.1--Desk. Provide one double pedestal style desk constructed of heavy duty steel with a total weight of approximately 250 pounds. Provide the desk with a 30" x 60" top made of plastic laminate and steel core, with stainless steel binding and enamel rim, and rounded corners. Provide the desk with height adjustable from 28-1/2"± to 30-1/2"± and leveling floor glides. Provide the desk with a back panel mounted between the two pedestals. All pedestal drawers shall be locked by the keyed center drawer. One pedestal shall contain 3-box drawers, the other pedestal one box drawer and one file drawer (file drawer to be approximately 12-1/4" wide x 11" high x 26-1/2" deep and have a compressor), both pedestals to contain a slide-out reference shelf. Provide the desk with stainless steel or chrome for all hardware and trim; and brushed chrome for drawer pulls.

907-844.02.2.2--Utility Table. Provide one metal base utility table 36" deep x 72" wide x 29" high. Table must have adjustable, non-marring, leveling floor glides. Table must have a smooth top, chrome legs, and painted apron.

907-844.02.2.3--File Cabinets. Provide one two-drawer file cabinet, 15" wide x 28" deep x 29" high. Provide a cabinet constructed of 20-gage steel for the body and 18-gage steel for the top and bottom. Each drawer shall be supported by full ball bearing plated cradle suspension with 3 cross straps, and equipped with a drawer catch, handle and opening latch. The cabinet shall have a baked enamel finish.

907-844.02.2.4--Chairs. Provide one high-back executive chair with arms and one low-back operator chair without arms, both of heavy duty commercial quality. Provide easy-to-reach pneumatic seat height

control and dual action posture control for adjusting both the seat tilt and the back tilt (control

levers shall be behind the mid-point of the seat). Both seats and backs must be ergonomically shaped for comfort. Provide upholstering with a long wearing nylon over a dense foam padding (both upholstery and padding must conform to CA117 for flammability retardancy). Provide both chairs with five-pedestal bases with heavy duty casters suitable for use on ceramic flooring.

907-844.02.2.5--Coat Rack. Furnish one 24" wide, free-standing metal coat rack made of heavy gage steel with a baked enamel finish with eight wooden hangers.

907-844.02.2.6--Waste Receptacle. Provide one free standing waste paper receptacle having a capacity of 5 gallons and constructed of heavy-gage steel with a baked enamel finish.

907-844.02.2.7--Clock. Provide one wall mounted office type analog clock in the operator's room. Provide a battery powered clock. The clock must be minimum 12 inches in diameter and have black arabic numbers on a white background. The clock must have a second hand.

907-844.02.3--Storage Equipment.

907-844.02.3.1--Locker. Provide two, two compartment wide, double tier storage lockers, manufactured from 24-gage (minimum) steel and resting on 6-inch high legs. Compartments must be 12" wide x 18" (minimum) deep x 72" high and equipped with a shelf approximately 9" from the top, three double coat hooks or a coat rod, and three wooden hangers. Provide doors with rubber cushions and lockable tamper-proof chrome handles. A baked enamel finish is required on all surfaces.

907-844.02.3.2--Cabinet. Provide three industrial quality steel storage cabinets manufactured from extra heavy duty, 16-gage steel frame with welded construction. Two cabinets must be 48" wide x 24" deep x 78" high. The third cabinet must be 36" wide x 24" deep x 72" high. All cabinets must have four 20-gage shelves, adjustable on 2" centers. The shelves must be double reinforced at the front and rear edges. Provide reinforced doors with three-point locking mechanisms
and stainless steel or chrome plated door handles with a built-in key lock. Provide cabinets with leveling glides. A baked enamel finish is required on all surfaces, inside and out.

907-844.02.4--Lavatory Accessories. Furnish and install the following items as shown on the plans and/or specified herein:

- One liquid soap dispenser
- Supply of two gallons of liquid soap

One surface mounted, C-fold/multifold paper towel dispenser (200 towel capacity)

- Supply of 5000 towels
- One free standing, stainless steel waste paper receptacle (10 gallon capacity)
- One wall mounted 16" x 24" mirror and 5" wide shelf combination
- One surface mounted, double roll toilet paper dispenser
- Supply of 48 rolls toilet paper

- One double coat hook mounted on inside of restroom door

Provide long lasting commercial quality items made of Type 304 stainless steel with a bright polish or satin finish. Provide related items from the same manufacturer. Place supplies in the smallest of the three storage cabinets on the entry level.

907-844.02.4.1--Lavatory Ventilator. Furnish and install one ceiling mounted ventilator in the lavatory. Provide a heavy duty unit with the following features:

- Exhaust performance 110 cfm minimum
- Built in backdraft damper
- Galvanized steel body
- Fan motor rated for continuous run with long life bearings greased for life
- Standard overload protection fitted in the winding
- Dynamically balanced rotor and impeller to provide quiet operation
- UL listed

907-844.02.5--Fire Extinguishers. Furnish and install six fire extinguishers in positions designated by the engineer.

Provide extinguishers with an all epoxy coated steel cylinder with an easy to operate, rugged metal trigger valve assembly, a highly visible recessed pressure indicating gauge, a siphon hose, and an appropriate mounting bracket. The extinguishers must be charged with Halon and have an Underwriters Laboratories (UL) rating of 4A-80 B:C. Provide extinguishers having a nominal capacity of 20 pounds of free flowing dry chemical, and a discharge time of approximately 20 seconds. The container of the extinguisher shall be manufactured in accordance with I.C.C. specification 48A250. The instruction plate must clearly show the UL and FM approval and have a 60 B C minimum rating.

907-844.02.6--Fuel Line. Furnish and install a new 3" steel pipe for delivery of diesel fuel to generator. Pipe shall be rigid steel pipe with a flexible line for connecting to existing generator tank. Shutoff valve shall be installed prior to flexible line. A lockable steel cap shall be furnished at sidewalk connection. All piping shall be bonded to steel building and structures. Installation must meet all applicable codes and be approved for use for fuel delivery.

907-844.02.7--Delivery, Storage, and Handling. Pre-blend tiles before palleting.

Deliver products to project site in manufacturer's unopened pallets, labeled with data indicating compliance with specified requirements.

Store products of this section in manufacturer's unopened packaging until installation.
Maintain dry storage area for products of this section until installation of products.

907-844.02.8--Warranty. The contractor warrants products of this section, as installed, to be in accord with the contract documents and free from faults and defects in materials and workmanship for a period of 3 years after completion.

907-844.02.9--Extra Materials. Furnish extra materials packaged with protective covering for storage and identified with labels clearly describing contents.

907-844.03—Construction Requirementso

907-844.03.1--Construction-Codes and Permits. Install all equipment in strict compliance with applicable laws and the latest rules and regulations of all municipal and other public agencies having jurisdiction over this work.

If any items or requirements in this special provision conflict with any of the above-mentioned rules and regulations, then the minimum requirements shall be as shown on the plans and described in these special provisions and shall be altered, as approved in advance by the engineer, to meet any additional requirements. The engineer's interpretation will govern.
Prepare and submit drawings and/or applications for approval of the state and agencies having jurisdiction to obtain any required permits and certificates and deliver a copy of the same to the engineer. The cost of any required permits is included in this bid item.

907-844.03.2--Workmanship and Finish. Correct any defective work to the satisfaction of the engineer at no additional expense to the state.

907-844.03.3--Color Selection. Before making the color selections, the engineer must have color samples for all items requiring a color selection. Submit samples of each manufacturer's entire color line to the engineer. For each item, the engineer will make a color selection from all the color samples submitted.

907-844.03.4--Guarantee. For all items of work to be performed under this article, guarantee each item against defects in material and workmanship for a period equal to the standard warranty period of the manufacturer or the industry, whichever is longer. Commencement of the warranty period begins after final acceptance of the work.

907-844.03.5--Glazed Ceramic Tiles. Perform work in accordance with the following specifications:

- Portland cement mortar bond coat – ANSI A108.5
- Organic adhesive – ANSI A108.4
- Grout – ANSI A118.10

Perform all tile cutting required on the job with a power driven saw in such a manner as to provide true and even edges.

Finish all external corners, sills, jambs, and lintels with bull nosed tile. Finish all internal corners square. Lay all units and shapes true to line with courses finished square. Tool all joints slightly concave. Use dovetail type anchors 24 inches o.c. vertically. Lay units in mortar with horizontal and vertical joints approximately ¼ inch thick. Make proper allowance for shrinkage so that dimensions will correspond to those shown on the plans.

As work progresses, clean dirt and excess grout from all surfaces. When work is completed, scrub all surfaces with a stiff brush and clear water. Do not use acid or metal scrapers. Upon completion of initial cleaning and after the tiles have been inspected and approved, cover the floors and stairs with heavy-duty non-staining construction paper, taped in place for protection until all work in the operator's house has been completed.

907-844.03.6--Joints and Setting. Install the tile in accordance with manufacturer's written recommendations and the Tile Council of America (TCA) Installation Methods specified below.

907-844.03.7 Walls. Walls to receive wall tile shall be inspected. Remedy all defects prior to installing tile. Use TCA installation method W242, using an organic adhesive Type 1, and ACR1-F1L grout.

907-844.03.8--Floors. After concrete floors are thoroughly dry and clean and all major construction completed to the satisfaction of the engineer, provide a floor stone underlayment, subject to the approval of the engineer, to bring the concrete floor to an even, level surface as required. The finished underlayment must meet the approval of the engineer prior to the installation of the finished flooring. Use TCA installation method F113, using dry-set portland cement mortar bond coat and ACR1-F1L grout.

907-844.03.9--Final Cleaning Up. Before acceptance and final payment will be made, all areas of the bascule bridge, machinery room equipment and floor, the entire inside operators house walls, windows, floors and stairs and entire face of operators house façade shall be cleaned and power washed of all rubbish and dirt, and excess materials.
Salvaged or excess materials expressly reserved by the Engineer for use by the State shall be neatly stockpiled at locations designated. All property occupied or affected by the Contractor and all parts of the work shall be left in a neat and manner acceptable to the Engineer with all waterways unobstructed.

907-844.04--Method of Measurement. Building Amenities will be measured as a single lump sum unit, complete in place and accepted.

907-844.05--Basis of Payment. The work under this item will be paid for at the contract lump sum price which shall be full compensation for completing the work. The lump sum price for Building Amenities will be payment in full for all materials, labor, tools and equipment necessary for completing the work as described herein.

Payment will be made under:

907-844-A: Building Amenities - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-845-1 **CODE: (SP)**

DATE: 8/9/12

SUBJECT: Coating Existing Structural Steel

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-845, Coating Existing Structural Steel, is added to the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-845 – COATING EXISTING STRUCTURAL STEEL

907-845.01--Description. This item consists of furnishing all labor, material, and equipment required for coating existing structural steel in accordance with the requirements of this Section, by removing and replacing the existing coating where shown in the plans or described herein, or overcoating the existing coating where shown in the plans or described herein

907-845.02--Materials.

907-845.02.1—Coating Systems. For removal and replacement of paint, use one of the following organic zinc/epoxy/urethane three coat systems or an approved equal.

	1st	2nd	3rd
Carboline	Carbozinc 859 dft = 3-5 mils	Carbogaurd 888 dft = 3-5 mils	Carbothane 133LH dft = 3-5 mils
Ameron	Amercoat 68HS dft = 3-5 mils	Amercoat 399 dft = 4-8 mils	Amercoat 450H dft = 3-5 mils
Sherwin Williams	Zinc Clad III HS dft = 3-5 mils	Macropoxy 646 dft = 5-10 mils	Acrolon 218HS dft = 3-6 mils

For overcoat painting of the Zinga-coated east fascia girder of the north anchor span, use the third coat of one of the above three coat systems or an approved equal. Ensure no traces of galvanizing passivation treatment (quench) are present. Degrease and abrade surface using Sweep abrasive blasting methods. Use a prime coat as recommended by the paint manufacturer. Refer to the specific primer's Product Data Sheet for substrate preparation requirements.

907-845.02.2—Thinners, Solvents and Cleaners. Use thinners, solvents and cleaners listed on the coating manufacturer's product data sheet. In addition, for overcoating systems, use thinners, solvents, and cleaners that do not damage the existing coating system.

907-845.02.3—Caulking. Use caulks that are paintable, compatible with the coating system and recommended by the coating manufacturer as part of the coating system.

907-845.02.4—Soluble Salts Test Kit.
Use a soluble salts test kit in accordance with SSPC-Guide 15 utilizing a Class A retrieval method. Ensure the test sleeve or cell creates a sealed, encapsulated environment during ion extraction and is suitable for testing all structural steel surfaces.

907-845.02.5—Abrasives. Use properly sized abrasives to achieve the required cleanliness and anchor profile. Use abrasives meeting the requirements of SSPC-AB 1, Mineral and Slag Abrasives, SSPC-AB 2, Cleanliness of Recycled Ferrous Metallic Abrasives, or SSPC-AB 3, Newly Manufactured or Re-Manufactured Steel Abrasive and do not introduce any contamination that interferes with the coating application and performance.

Provide certification to the Engineer that the abrasives used meet the requirements of this Section and do not contain any chlorides and other salts.

For recycled abrasives, verify compliance with the conductivity and cleanliness requirements of SSPC-AB 2 after each recycling or more frequently if required by the Engineer. Select a sample from each recycling machine in use and conduct the water-soluble contaminant and oil content tests outlined in SSPC-AB 2 at least one time each week or more frequently if directed by the Engineer. Conduct the non-abrasive residue and lead content tests as directed by the Engineer. If test results do not meet requirements, notify the Engineer immediately, remove and replace the abrasive, clean the recycling equipment, and conduct tests each day to confirm the equipment is functioning properly. Return to the weekly testing interval as directed by the Engineer.

907-845.02.6—Rust Preventative Compound. Use a Class 3 rust preventative compound meeting the requirements of Military Specification MIL-C-11796C, Corrosion Preventative Compound, Petrolatum, Hot Applied.

907-845.02.7—Storage. Store materials in conformance with the manufacturer's recommendations.

907-845.03—Construction Requirements.

907-845.03.1—Compressed Air. Use a compressed air system capable of delivering clean, dry, continuous nozzle pressure to achieve the required surface cleanliness and profile or spray pattern. The system must comply with the instructions and recommendations of the manufacturer of the abrasive blasting system or coating application system.

907-845.03.2—Abrasive Blasting System. Design the blasting system to produce the specified cleanliness and profile.

907-845.03.3—Coating Application System. Use the coating application equipment approved by and in accordance with the Coating Manufacturer's technical data requirements.

907-845.03.4—Quality Control. Provide a current Corporate Quality Control Plan approved by SSPC under the SSPC QP1 and SSPC QP2 certifications as appropriate and a site specific Coating Quality Control Plan to the Engineer at least 14 calendar days prior to beginning coatings work. Do not begin coatings work until the site specific Coating Quality Control Plan has been approved by the Engineer.

Submit a specific traffic control plan for each phase of the work that conforms with the project plans and specifications. Do not begin work until the traffic control plan is approved by the Department. Submit a work plan to the United States Coast Guard that conforms to the restrictions outlined in the Notice To Bidders. Obtain Coast Guard approval at least thirty days in advance of any restrictions.

907-845.03.5—Inspection. Ensure that all inspection equipment is maintained in accordance with the manufacturer's instructions, calibrated, and in good working condition. Ensure that all activities are observed and approved by a quality control coatings inspector meeting the requirements of this Section. Maintain daily inspection reports at the job site for review by the Engineer. Provide all daily inspection reports upon completion of the project to the Engineer or more frequently as requested by the Engineer.

907-845.03.6—Qualifications.

907-845.03.6.1—Field Contractor. Provide documentation to the Engineer at least 14 days prior to beginning work that the field contractor performing any work in accordance with this Section is certified by SSPC to the requirements of SSPC-QP1 and/or SSPC-QP2 as appropriate.

907-845.03.6.2—Quality Control Inspectors in the Shop and Field. Provide documentation to the Engineer that all personnel performing quality control inspections are certified at a minimum as a National Association of Corrosion Engineers (NACE) Coating Inspector Level I or a SSPC Level 1 Bridge Coating Inspector and that they report directly to a Quality Control Supervisor who is certified either as a NACE Coating Inspector Level 3 or a SSPC Level 2 Bridge Coating Inspector.

907-845.03.6.2—Certifications. Maintain certifications for the duration of the Contract. If the certifications expire, do not perform any work until certifications are reissued.
Notify the Engineer of any change in certification status.

907-845.03.7—Surface Preparation.

907-845.03.7.1 General. For portions of the existing coating designated to be removed and replaced, clean, wash, test and remove soluble salts, and abrasive blast or hand and power

tool clean to remove all existing coating and corrosion in the intended locations. Feather back the edges of all existing coating to remain a minimum of three inches around the area of existing coating removed to provide a smooth transition. Verify the edges of the existing coating are intact by probing with a dull putty knife in accordance with SSPC SP 2. Roughen the existing coating in the feathered area to ensure proper adhesion of the new coating. Notify the Engineer immediately when any structural steel appears to be defective.

When the existing coating is to remain, clean, wash, and test and remove soluble salts. Ensure all surfaces to be coated are clean, dry, and free from oil, grease, dirt, dust, soluble salts, corrosion, peeling, caulking, weld spatter, mill scale and any other surface contaminants. Sequence the surface preparations and coating operations so that freshly applied coatings will not be contaminated by dust or foreign matter. Protect all equipment and adjacent surfaces not to be coated from surface preparation operations. Protect working mechanisms against intrusion of abrasives. In the event that any rusting or contamination occurs after the completion of the surface preparation, prepare the surfaces again to the initial requirements. Perform surface preparation work only when the temperature of the steel surface is at least 5 degrees F above the dew point temperature.

907-845.03.7.2 Mechanical Removal of Surface Defects. Break all corners resulting from sawing, burning, or shearing. In areas where burning has been used, remove the flame hardened surface of the steel to the extent necessary to achieve the required surface profile after abrasive blast cleaning. Remove all weld slag and weld spatter. In addition, remove all pack rust prior to solvent cleaning. Conduct all of this work in accordance with AASHTO/NSBA Steel Bridge Collaboration S 8.1.

907-845.03.7.3 Cleaning. Clean all steel surfaces in accordance with the requirements of SSPC-SP 1.

907-845.03.7.4 Washing. Wash all steel surfaces in accordance with the requirements of SSPC-SP 12.

907-845.03.7.5 Soluble Salts Detection and Removal. Determine the chloride, sulfate and nitrate concentrations on all steel surfaces using soluble salts test kits meeting the requirements of SSPC Guide 15 utilizing a Class A retrieval method. Ensure the test sleeve or cell creates a sealed encapsulated environment during ion extraction and is suitable for testing all structural steel surfaces. Measure the concentration levels using the method described in SSPC-TU 4. Perform the tests after washing and after each applied coat of the coating system. Test five random locations in the first 1000 square feet and one random location for each subsequent 1000 square feet. Ensure the non-visible surface contaminant concentrations on blast-cleaned surfaces do not exceed the levels in SSPC-SP 12 Table A1 NV2 for chloride, soluble ferrous iron and sulfate and 10 $\mu g/cm^2$ for nitrate. When any concentration exceeds these levels rewash the entire surface area and retest. If additional washing does not reduce the concentration to the acceptable level, a surface treatment or water additive may be used. Use a surface treatment or water additive that is approved by the coating system supplier and the Engineer.

907-845.03.7.5 Abrasive Blast Cleaning. Prepare steel by abrasive blast cleaning to "Near-White" metal condition as defined in SSPC-SP 10. Use SSPC VIS 1 as an aid in establishing cleanliness. After abrasive blast cleaning, ensure the surface profile meets the requirements of the coating manufacturer's product data sheet. Determine the surface profile using replica tape in accordance with ASTM D 4417, Method C.

Perform all abrasive blast cleaning within a containment system to ensure confinement of all particulates. Design the containment system to comply with all applicable Federal, State, and Local regulations. Ensure the abrasive blast cleaning does not produce holes, cause distortion, remove metal, or cause thinning of the substrate.

907-845.03.7.5 Hand and Power Tool Cleaning. Prepare steel by power and hand tool cleaning as defined in SSPC-SP 11, SSPC-SP 3, and SSPC-SP 2 for touch up and repair when approved by the Engineer. Use SSPC-VIS 3 as an aid in establishing cleanliness.

907-845.03.8—Application.

907-845.03.8.1 General. Remove coating and re-coat all exposed steel surfaces, unless otherwise noted or otherwise directed by the Engineer. Overcoat Zinga-coated stringers in the east fascia of the North Anchor Span. Apply a coating of rust preventative compound to all machine finished or similar surfaces not to be coated as directed by the Engineer.

Prior to the application of any coating, inspect the substrate for contamination and defects, and prepare the surface before application of the next coat.

Apply each coat including a stripe coat in a color that contrasts with the substrate or preceding coat.

907-845.03.8.2 Weather and Temperature Limitations. Do not spray coating when the measured wind speed in the immediate coating area is above 15 miles per hour. Do not apply coatings when contamination from rainfall is imminent or when the ambient air temperature, relative humidity, dew point temperature, or temperature of the steel is outside limits of the coating manufacturer's product data sheet.

907-845.03.8.3 Sealing Using Caulk. Completely seal the perimeter of all faying surfaces, cracks and crevices, joints open less than 1/2 inch, and skip-welded joints using caulk. Apply the caulk to the joint following the caulk manufacturer's recommendations. Ensure the caulk bead has a smooth and uniform finish and is cured according to the caulk manufacturer's recommendation prior to the application of the coating system.

907-845.03.8.4 Protection of Adjacent Surfaces. Protect all surfaces and working mechanisms not intended to be coated during the application of coatings. Clean surfaces that have been contaminated with coatings until all traces of the coating have been removed. Do not allow material from cleaning and coating operations to be dispersed outside the work site.

907-845.03.8.5 Mixing and Thinning. Mix all coatings in accordance with the manufacturer's product data sheet. Only mix complete kits. Use thinners and solvents in accordance with the requirements of the coating manufacturer's product data sheet and confirm that the amount of thinner added does not result in the coating exceeding VOC regulations stated in Section 975.
Perform all mixing operations over an impervious surface with provisions to prevent runoff to grade of any spilled material.

907-845.03.8.6 Application Methods. Use coating application equipment and apply coatings per the coating manufacturer's product data sheet. Application with brushes may be permitted for minor touchup of spray applications, stripe coats, or when otherwise approved by the Engineer. Adjust spray equipment to produce an even, wet coat with minimum overspray. Apply coatings in even, parallel passes, overlapping 50 percent. Agitate coatings during application as required by the coating manufacturer's product data sheet.

907-845.03.8.7 Stripe Coating. Apply stripe coats to achieve complete coverage and proper thickness on welds, corners, crevices, sharp edges, bolts, nuts, rivets, and rough or pitted surfaces.

907-845.03.8.8 Thickness of Coats. Apply coatings to the thickness as identified in the manufacturer's product data sheet. After application of each coat, thoroughly inspect the surfaces and measure the dry film thickness (DFT) in accordance with SSPC-PA 2. When the DFT is deficient or excessive, correct in accordance with the coating manufacturer's recommendations and retest the area.

907-845.03.8.9 Coating Drying, and Curing. Apply coatings within the time specified by the coating manufacturer's product data sheet for drying and recoating. Before handling, test for cure in accordance with the manufacturer's recommended method. Meet the requirements of ASTM D 5402 for organic zinc primers when the manufacturer's technical data sheet does not state a specified cure test. Obtain the acceptance criteria from the coating manufacturer and report the results to the Engineer.

907-845.03.8.10 Coating Finish. Apply each coat free of runs, sags, blisters, bubbles, and mud cracking; variations in color, gloss, or texture; holidays; excessive film buildup; foreign contaminants; orange peeling; and overspray.

907-845.03.9 Touchup and Repair. Clean and coat all welds, rivets, bolts, and all damaged or defective coating and rusted areas. Upon approval by the Engineer, aluminum mastic may be used in accordance with the manufacturer's recommendations. Aluminum mastic must contain aluminum pigment and minimum 80% volume solids.

907-845.03.10 Protection of the Environment, Public, and Workers.

907-845.03.10.1 General. Establish plans and programs to protect the environment, public, contractor employees, and other workers from exposure to toxic heavy metals as well as

releases and emissions of hazardous materials and nuisance dusts. Conduct all coating application and removal operations in compliance with EPA, OSHA, and other applicable Federal, State and local regulations. Provide a contingency plan for the remediation of water and land in the event of contamination by solid or liquid paint and contaminated water.

907-845.03.10.2 Environmental Protection. Prepare and submit to the Engineer, plans and programs for the protection of the environment and public based on the applicable EPA requirements, the requirements of this Section, and the Contract Documents. Include plans and programs for the protection of the air, soil/ground, and water.

907-845.03.10.2.1 Pollution Control: Submit a written pollution control and monitoring plan at the preconstruction meeting or as directed by the Engineer which clearly describes the means for complying with all Local, State and Federal regulations including pollution control provisions specified herein. The written plan must be in accordance with SSPC Project Design: Industrial Lead Paint Removal Handbook, Volume II, Phase 6, Environmental Monitoring, and specifically include, but not be limited to, providing a scaled map of the work site layout showing the proposed number and location of soil sampling, Total Suspended Particulate (TSP) monitoring sites, waste storage areas, staging areas, temporary waste storage areas, and ambient air and personnel sampling frequency.

Comply with all applicable Federal, State, and Local rules and regulations. Immediately cease all operations in the event a violation of any environmental regulation or a failure to properly execute any pollution control provisions occurs. Resume operations after written proposed corrective procedures have been submitted to and approved by the Engineer and implemented.

907-845.03.10.2.2 Permits: Submit all required permits from all applicable regulatory agencies to the Engineer prior to the commencement of any work. Seek permit determination from these regulatory agencies to avoid any potential permit non-compliance issues during work activities. The Contractor is responsible for all liability resulting from non-compliance with pertinent rules and regulations including permit requirements.

907-845.03.10.2.3 Ambient Air Quality Compliance and Protection of the Air.

907-845.03.10.2.3.1 Visible Emissions: Assess the visible emissions using EPA Method 22, Timing of Emissions as defined by 40 CFR 60, Appendix A, Standards of Performance for New Stationary Sources. During abrasive blasting, do not allow visible emissions from a containment to exceed a random cumulative duration of more than one percent of the workday (SSPC Guide 6, Level 1 Emissions). During pressurized water cleaning, do not allow visible emissions from a containment to exceed a random cumulative duration of more than ten percent of the workday (SSPC Guide 6, Level 3 Emissions).

907-865.03.10.2.3.2 Total Suspended Particulate (TSP) Matter: Control emissions from the containment area to prevent exceeding the TSP Lead of 1.5 µg/m3 over a 90 day period, or the daily and adjusted daily allowances of SSPC-TU 7. Conduct TSP Lead

monitoring in accordance with 40 CFR 50, Appendix B, Reference Method for Determination of TSP Matter in the Atmosphere (high volume sampler required), and 40 CFR 50, Appendix G, Reference Method for Determination of TSP Matter Collected from Ambient Air. Position the TSP Lead monitoring equipment in general accordance with 40 CFR 58, Ambient Air Quality Surveillance.

When lead is present in the coating, perform TSP Lead background monitoring for a period of three days prior to the beginning of abrasive blast cleaning operations. Submit the results from background monitoring and the first week of monitoring during abrasive blast cleaning to the Engineer for review within five calendar days after the first week of work. Continue monitoring unless otherwise directed by the Engineer.

907-865.03.10.2.3.3 Regulated Area: Establish a regulated area around the work site to prohibit unauthorized persons from areas where exposure to hazardous airborne metals may exceed the following action levels:

Airborne Metals	Action Level
Lead	30 µg/m3
Cadmium	2.5 µg/m3
Arsenic	5 µg/m3
Hexavalent Chromium (Cr6+)	2.5 µg/m3

Conduct monitoring in accordance with the National Institute for Occupational Safety and Health (NIOSH) procedures upon initiation of dust producing operations and submit the test results to the Engineer within 72 hours of sampling. Report sample results as eight-hour Time Weighted Averages (TWA). Reestablish the regulated area and perform additional sampling when the results exceed the action levels or when directed by the Engineer. Document all pertinent data in a field logbook. Position air-sampling pumps around the project perimeter where the public or personnel can approach the work area. Place sampler inlets at breathing height. Clearly mark the regulated area by the use of warning signs, rope, barrier tape, or temporary construction fencing.

907-845.03.10.2.4 Soil/Ground Quality. Inspect the ground beneath and in proximity to the structure in the presence of the Engineer for visible paint chips to establish an initial job site cleanliness standard. When heavy metals are in the existing coatings, test soil samples prior to the beginning of operations and after project completion for heavy metals. Document the number and specific locations where the initial samples are taken as outlined in the SSPC Project Design-Industrial Lead Paint Removal Handbook, Volume 2 to ensure the post samples are collected from the same locations. Submit all samples to the Engineer for review. If the project activities increase the heavy metal content in soil to more than 20% above the pre-job geometric mean or 100% at any one location, return the site to the pre-job levels. Conduct additional soil testing as necessary to determine the extent of contamination.

For structures less than 14 feet minimum height, take one sample north, south, east , and west (where soil is present) of the structure. If the structure is longer than 14 feet, take one additional sample for every 14 feet in length.

For structures greater than 14 feet minimum height, take two samples north, south, east , and west (where soil is present) of the structure. Locate the inner row of samples within 14 feet of the structure. Locate the outer row of samples at a distance equal to the height of the structure. If the structure is longer than 14 feet, take one additional sample for every 14 feet in length.

In addition, submit a pre- and post- soil sampling plan for storage areas identifying the sample location, depth, analyses list, lab certification, and turnaround time. Once approved by the Engineer, submit sampling results along with a scaled drawing indicating designated sample locations.

907-845.03.10.2.5 Water Quality. Do not release, discharge or otherwise cause hazardous materials, debris, waste, or paint chips to enter the water. Protect against releases due to rain and methods of surface preparation from reaching rivers, streams, lakes, storm drains, or other bodies of water.

907-845.03.10.3 Containment System. Submit a written containment system design plan in accordance with this section and the contract documents at the pre-construction conference or as directed by the Engineer which clearly describes the proposed containment system applicable to the intended removal method and in accordance with the requirements outlined herein and SSPC Guide 6, Guide for Containing Debris Generated During Paint Removal Activities. Ensure the plan includes, but is not limited to, removal method; methods for collecting debris; and containment enclosure components. Use fire retardant materials. Provide containment drawings, calculations, and assumptions, including ventilation criteria if applicable, signed and sealed by a Contractor's Engineer of Record experienced with containment systems on active movable bridges. Provide a complete structural impact analysis prepared by a Specialty Engineer to verify the existing structure can withstand the dead, live and wind loads imposed upon the structure due to the containment system. Provide a contingency plan addressing natural weather events such as tropical storms and hurricanes. Ensure the lighting inside the containment is in accordance with SSPC Guide 12, Guide for Illumination of Industrial Painting Projects. Provide lighting to a minimum intensity of 10 ft-cd for general, 20 ft-cd for work, and 50 ft-cd for inspection. All drawings and calculations must be submitted and accepted before any work begins. Include a clear description of the ventilation system components and information including the fan curve and design point on the proposed dust collector. Design to provide ventilation according to the notes provided in SSPC Guide 6: 100 feet per minute for cross draft and 50-60 feet per minute for downdraft.

Isolate the immediate area of the structure to ensure compliance with current and permit requirements for air, water, soil, and pollution prevention. Protect the containment system from vehicular and pedestrian traffic. Ensure paint, paint chips, or other debris will not fall outside of the containment area under any circumstances. Repair any damage created by fastening, bracing, or handling the scaffolding and staging. If a suspended platform is constructed, use rigid or flexible materials as needed to create an air and dust impenetrable enclosure. Verify that the platform and its components are designed and constructed to

support at least four times its maximum intended load without failure, with wire cables capable of supporting at least six times their maximum intended load without failure. Strictly comply with all applicable OSHA regulations regarding scaffolding. The category and class of containment shall be as required in the Contract Documents.

907-845.03.10.4 Protection of Adjacent Areas. Protect all areas adjacent to abrasive blast cleaning, including machinery and deck grating. Before the commencement of any cleaning and coating operations, provide a control plan for the protection of adjacent surfaces from damage by nearby blasting and coating to the Engineer for review. Repair any damage to adjacent areas. The repair procedure must be submitted to the Engineer for acceptance prior to any remediation.

907-845.03.10.5 Worker Protection. Comply with the requirements of OSHA 29 CFR 1926 and applicable portions of 29 CFR 1910. Include specific programs as required by 29 CFR 1926.62 (lead), 29 CFR 1926.1118 (inorganic arsenic), 29 CFR 1926.1126 (hexavalent chromium), and 29 CFR 1926.1127 (cadmium) when these hazardous agents are present. Implement appropriate safety procedures for all hazards on the job site whether specifically identified herein or not.

907-845.03.11 Waste Handling and Management.

907-845.03.11.1 General. Prepare a waste management program plan which addresses the applicable requirements from EPA regulations for hazardous waste management and the Contract Documents. Include provisions for the handling and disposal of non hazardous waste. Dispose of all waste in accordance with all federal, state, and local laws and regulations.

907-845.03.11.2 Collection and Handling of Waste.
Properly classify, package, and store all paint removal debris, both solid and liquid in accordance with SSPC Guide 7, Guide for the Disposal of Lead-Contaminated Surface Preparation Debris, the Federal Water Pollution Control Act with amendments, and all other current government regulations and guidelines. Comply with the Resource Conservation and Recovery Act to include, at a minimum, CFR 40 260 through CFR 40 268. Prior to identification and storage, separate solid and liquid waste, and separate individual waste streams.

907-845.03.11.3 Testing and Analysis. Laboratory analyses for all waste stream and environmental samples shall be conducted by an EPA certified, independent laboratory with an approved Quality Assurance Plan. Laboratory analyses for worker monitoring and regulated area samples shall be conducted by an American Industrial Hygiene Association (AIHA) metals accredited laboratory. Provide a copy of all sampling and test reports no later than 72 hours after collection of samples.

907-845.03.11.4 Waste Identification. Collect samples in accordance with EPA SW 846, Test Methods for Evaluating Solid Waste - Physical/Chemical Methods. Use a random and representative sampling technique. Collect a minimum of four representative samples of

each waste stream. These waste streams include, but are not limited to, water, paint chips, dust, and paint chips mixed with disposable abrasives and debris. Complete the initial sampling of each waste stream immediately upon filling the first drum, but do not allow waste to accumulate for longer than 7 days before sampling.

After the representative samples are collected, send them immediately to the EPA certified laboratory for analysis. Unless otherwise directed by the Engineer, required by State regulations, or required by the waste recycling or disposal facility, once each waste stream is sampled, tested, and classified, additional sampling and analysis are not required for subsequent shipments unless the waste stream changes. Submit samples to an approved laboratory to be tested for arsenic, barium, cadmium, hexavalent chromium, lead, mercury, selenium, and silver in accordance with EPA Method 3050 and Method 6010 (content) and EPA Method 1311, Toxicity Characteristics Leaching Procedures (TCLP).Clearly label each sample with sample number, date and time of sampling, name of collector, and location of collection.

Maintain chain of custody forms for each sample. Enter each sample on a sample analysis request form. Enter sample numbers, type of waste, amount of each sample, distribution of samples, signature and all other information into field logbook.

907-845.03.11.5 Waste Storage. Collect waste from the control devices, equipment, and all work surfaces on a daily basis. Keep hazardous and non-hazardous waste separate. Do not mix blasting debris with any other type of waste. Place waste in approved storage drums.

Locate all hazardous waste within a regulated area. The maximum weight for each drum, when filled, is 821 lbs. Properly seal and label all drums. Transport waste storage drums to a secured, marked, temporary storage area. Locate the temporary storage area on well-drained ground not susceptible to flooding or storm water run-off. Place drums on a pallet and cover with fiber reinforced, impermeable tarpaulins. Store drums no more than two drums wide and two drums high. Arrange drums so that labels are easily readable. Do not store waste in the temporary storage area longer than 90 days.

907-845.03.11.6 Waste Disposal. Transport, treat and dispose of all hazardous and non-hazardous waste. Notify the Engineer a minimum of three weeks prior to the date of shipment of any waste to an off- site facility. Provide the Engineer with documentation that the receiving disposal facilities are properly licensed. Provide manifests for all hazardous and non-hazardous waste shipments. Identify any waste disposal subcontractors and provide a copy of their licensing to perform waste disposal and transport operations.

907-845.03.11.7 Permits. The Contractor is responsible for all liability resulting from non-compliance with pertinent rules and regulations including permit requirements.

907-845.03.12— Traffic Closures and Bridge Opening Restrictions. The bridge must remain balanced and operable at all times. See Notice to Bidders "Waterway, Roadway and Lane Closures and Bridge Opening Restrictions" for more information.

907-845.04--Method of Measurement. Coating Existing Structural Steel will be measured as a lump sum quantity. The costs for removal and disposal of the existing coating, providing new coating, and all associated work, including containment systems will be included in the lump sum price.

907-845.05--Basis of Payment. Coating Existing Structural Steel, measured as prescribed above, will be paid for at the contract lump sum price which shall be full compensation for all materials, labor, tools, containment systems, and equipment necessary for completing the work as described herein.

Payment will be made under:

907-845-A: Coating Existing Structural Steel - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-850-1 **CODE: (SP)**

DATE: 3/7/2012

SUBJECT: Mechanical Work

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-850, Mechanical Work, is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-850 – MECHANICAL WORK

907-850.01--Description. This article covers all apparatus, material and labor required to properly detail, manufacture, ship, install, adjust, test, paint and put into approved working order all parts of the bascule span operating machinery, movable fence assemblies and supports specified. Furnish, at no extra cost, any device, material, labor or effort not herein specified, yet required to complete or perfect the equipment in a manner suitable to the department.

907-850.02--Materials.

907-850.02.1—Shop Drawings. Dimensions given on the plans are nominal and intended for guidance. Make note of any variations from nominal dimensions on the shop drawings or provide written notice to the engineer. Where additional information is required or changes must be made; prepare working, erection, and shop drawings and submit to the department as specified.

907-850.02.1.1—General Requirements. Shop drawings must detail and accurately dimension all parts. Shop drawings must define limits of accuracy and tolerances required for machining, surface finishes and allowances for fits.

907-850.02.1.2—Manufacturer's Literature. Submit catalog cuts and detailed manufacturer's literature for all components not detailed in the shop drawings. Clearly mark such items with the item number corresponding to the mark shown on the assembly drawing and the full and complete part number, extended to completely define the part including all optional or custom features. If the same cut sheet is used to define more than one item, submit multiple copies.

907-850.02.1.3—Material Certifications. Submit material certifications for all materials specified to require material testing within the plans and specifications or within a referenced material specification (e.g. ASTM, ANSI, or others).

907-850.02.1.4— Procedures. In addition to required detailed shop drawings, submit to the engineer for review various procedures described herein. The procedures must be thorough and

be supplemented by sketches, calculations, details, catalog cuts, photographs, etc. as required to demonstrate that the specified requirements can be met.

907-850.02.1.5— Notification of Shop Work. Provide advance written notification to the department for all shop work and shop testing for which the specifications require, or indicate that it is the intent of the department, to provide a representative to observe or witness such activities. Provide a minimum of 30 days advance written notice of such work.

907-850.02.2—Material Compatibility. Provide products which are compatible with other products of the operating machinery or movable fence assemblies and with other work requiring interface with the operating machinery or movable fence assemblies, including mechanical/electrical connections and control devices.

907-850.02.3—Nameplates. Provide each piece of movable fence equipment and apparatus with a permanent, corrosion-resisting metal nameplate on which is stamped the name of the manufacturer, the catalog or model number, and the rating or capacity of the equipment or apparatus. Nameplates on all proprietary elements must be readable, clean, and free of all paint before acceptance of the machinery.

907-850.02.4—Substitutions. Specification of a manufacturer's part number, product, and/or name is for the purpose of defining quality, configuration, rating and arrangement of parts. Part numbers shown in the contract documents are not necessarily complete numbers nor are they intended to describe details of the component beyond those that are required. Be aware that manufacturers may change product names and part numbers without advance notification. Select and provide manufactured products that meet the requirements and intent as shown in the contract documents. Provide complete, current part numbers for all proposed equipment and verify that the part as designated is appropriate for the intended function. Contractor is responsible for design changes resulting from substitutions.

907-850.02.5—Shop Inspection and Testing.

907-850.02.5.1—Notification. Provide sufficient written notice to the department prior to the beginning of work at foundries, forge and machine shops so that inspection may be arranged. Provide free access to all premises where preparation, manufacture, assembly and testing of raw materials, materials in process and assembly is conducted.

907-850.02.5.2—Responsibility. Such inspections are to facilitate work and avoid errors. It is understood that inspection by the department does not relieve the contractor of the responsibility for compliance with requirements of the contract documents or for replacing defective materials and workmanship.

907-850.02.5.3—Material Acceptance. Furnish to the department test results of all certifications required of the contract documents, including copies of chemical and physical tests and certifications of compliance. Initial acceptance of materials and finished parts and assemblies will not preclude subsequent rejection if found deficient. Replacement of such materials will be the responsibility of the contractor.

907-850.02.6—General Material Requirements. Provide materials as specified on the plans and in the specifications. Wherever materials are not shown or specified, provide materials conforming to the current specifications as outlined in TABLE 1, Materials. An alternative material may be requested in writing; the request must provide complete data justifying suitability of the alternate materials and must be approved by the department prior to initiating manufacture or construction.

Materials and equipment must be essentially the standard catalogued products of manufacturers regularly engaged in production of such materials or equipment and must be the manufacturer's latest standard design that complies with the specification requirements. Materials and equipment must essentially duplicate items that have been in satisfactory commercial or industrial use at least two (2) years prior to bid opening. Where two units of the same class of equipment are required, these units must be products of the same manufacturer. However, the component parts of the system need not be the products of the same manufacturer. Each major component of equipment must have the manufacturer's name and address and the model and serial number on a nameplate securely affixed in a conspicuous place. The nameplate of the distributing agent will not be acceptable.

TABLE 1 - MATERIALS

MATERIAL	DESCRIPTION	DESIGNATION (ASTM unless otherwise noted)
Steel castings	Structural, high strength Carbon steel, general application	A148 A27
Iron castings	Gray iron	A48
Bronze castings	Bronze castings for bridges (max. sulphur content 0.08%, chemical analysis required for each heat)	B22
Forgings	Carbon steel for industrial use Alloy steel for industrial use	A668
Hot rolled steel	Special quality carbon steel bars	A675
Dowel pins	American National Standard Unhardened Ground Dowel Pins (64 ksi minimum ultimate shear strength)	ANSI B18.8.2
Cold rolled steel	Carbon steel bars	A311
Stainless Steel Shims	Stainless Steel	A666, Grade 304 or 316
Shapes, plates, and bars	Structural steel High strength, weathering steal	A36 or A709 A588
Stainless Steel (corrosion resistant) bolts or anchors	High Strength Stainless steel Fasteners	A193, Grade B8, A193, Grade B8M
Corrosion resistant shapes, bars, and plates	Stainless steel	A276, Type 316

907-850.02.7—Shafting and Pins. Rolled material may be used for shafting and pins up to four (4) inches in diameter. Use forged material for larger diameter shafts and those having integral flanges or pinions. Homogeneity of forgings is required; shafts must be reduced to size from a single bloom or ingot at no less than red heat. The blooms or ingots must have a cross sectional area at least three times that required after finishing. The finished product must be free of injurious flaws such as seams, pipes or cracks. Forged shafts over eight (8) inches in diameter must have a hole bored lengthwise through the center. Make the diameter of the hole about 1/5 the diameter of the shaft.

Test shafting materials for mechanical properties and furnish certificates to the department.

Test all cold-finished shafting for its mechanical properties, and furnish a test certificate to the engineer.

Provide dowel pins per American National Standard. Unless otherwise specified, provide unhardened ground dowel pins with 64 ksi minimum ultimate shear strength. Provide hardened dowel pins with 120 ksi minimum ultimate shear strength.

907-850.02.8—Castings. Unless otherwise specified or shown in the plans, use castings that conform to AASHTO Movable Specifications. Material grades must be as specified or shown in the plans.

907-850.02.9—Forgings. Unless otherwise specified or shown in the plans, use forgings that conform to AASHTO Movable Specifications. Material grades must be as specified or shown in the plans.

907-850.02.10—Fasteners.

907-850.02.10.1—High Strength Bolts. Unless otherwise specified, provide fasteners used for connecting operating machinery parts to each other and to supporting steelwork that conform to the minimum specified physical requirements of high strength, ASTM A325 cut thread, washer faced, hexagonal head bolts. Use nuts that conform to ASTM A563 or A194, Grade DH or 2H, heavy hex series.

907-850.02.10.2—Turned Bolts. Where turned bolts are required in the plans, provide fasteners conforming to the minimum specified physical requirements of high strength, ASTM A325 or ASTM A449 cut thread, washer faced, hexagonal head bolts. Provide threads for turned bolts that conform to the requirements of ASTM A325. Do not use ASTM A490 bolts. Use nuts that conform to ASTM A563 or A194, Grade DH or 2H, heavy hex series.

907-850.02.10.3—Bolt Dimensions. Dimension bolt heads, nuts and hexagonal cap screws in accordance with ANSI B18.2. Such fasteners are to be of the heavy series.

907-850.02.10.4—Socket Head Screws. Conform socket head cap screws, socket flat head cap screws and socket set screws to ANSI B18.3. Such screws must be heat treated alloy steel.

Unless otherwise specified, set screws must be of the headless, safety type and be of the coarse thread series and have cup points. Do not use set screws to transmit torque nor as a stop for equipment that provides stability or contributes to operation of the bridge. Class 2 coarse thread tolerances are required for all bolts, nuts and cap screws.

907-850.02.10.5—Locking of Fasteners. Provide approved type positive locks for cap screws and nuts on turned bolts unless noted otherwise in the plans. Use standard thickness nuts where double nuts are required in locations where occasional opening or adjustment is necessary. Use flat jam nuts only where space prohibits use of standard nuts. Lock washers must be made of tempered steel and conform to regular SAE dimensions and specifications. Properly tension high strength bolts and nuts, which will create a self-locking effect. If wire is used for locking it must be stainless steel.

907-850.02.10.6—Washers. Use hardened steel, plain washers conforming to ASTM F436 at the rotated end of high strength ASTM A325 or A449 bolts.

907-850.02.10.7—Miscellaneous Fasteners and Hardware. Unless otherwise specified or shown in the plans, provide miscellaneous fasteners and hardware, including cotter pins and lock wire of corrosion resistant stainless steel, with material composition of type 316.

907-850.02.10.8—Undercut Anchors. Where specified in the plans, anchor supports to concrete using undercut anchors. Provide undercut anchors of length and diameter as indicated in the plans. When no length is specified, calculate the length based on the information provided and the site-specific conditions. Specify undercut anchors to resist applied loads through bearing on the surface of the conical portion of the drilled hole. Wedge or sleeve anchors that rely on friction to resist applied loads will not be permitted at these locations.

Unless otherwise specified, provide undercut anchors fabricated from the following materials:

Bolt	ASTM A 193 Grade B8M Class 2
Sleeve	AISI Type 316
Conical Nut	ASTM A 193 Grade B8M Class 2
Heavy Hex Nut	ASTM A 194 Grade B8M Strain Hardened
Washer	AISI Type 18/8

907-850.02.11—Bushings. Where required, provide solid bushings, as shown in the plans of one piece bronze sleeve. Where required, configure with spiral cut lubrication grooves.

Provide lubricant fittings for all rear lock items requiring lubrication.

907-850.02.12—Weldments. Fabricate weldments for support of machinery and/or movable fence assemblies from structural steel of the type and grade specified in the plans. Where the type and grade of steel is not specified in the plans, fabricate weldments from ASTM A709, Grade 50 structural steel. Use of steel plate larger than that denoted in the plans may be required to obtain the final required dimensions.

Provide a pair of lifting eye bolts either drilled and tapped into the weldment or through-bolted in a weldment plate to facilitate lifting and handling. Ensure that lugs have a minimum lifting capacity of five times the weight of the weldment.

Where epoxy leveling grout is called for in the plans provide leveling screws drilled and tapped through the weldment base plate for field leveling. Use leveling screws with adequate capacity to support the weldment and any other construction loads anticipated to be applied prior to the application of grout under the base plate.

Immediately following finish machining, coat mounting surfaces with an approved temporary protective coating that prevents oxidation. Clean all base plate surfaces to be in contact with epoxy grout to SSPC SP-6 and prime with epoxy primer within 8 hours of cleaning. Apply primer only, to the weldment base surfaces, do not finish coat them.

Crate and skid the weldments, for protection during handling, shipment and storage.

907-850.02.13—Galvanizing. Where galvanizing of weldments is required hot dip galvanize in accordance with ASTM A123. Galvanize after welding, stress relief and machining. Provide lifting lugs and vent holes as needed for the galvanizing process. Mask surfaces to be machined as required. After fabrication and galvanizing of all weldments, paint unprotected surfaces with an epoxy paint system for structural steel in accordance with the standard specifications.

907-850.02.14—Lubrication of Machinery.

907-850.02.14.1—Fittings. Provide button head fittings for use on all bearings and other machinery (not including gear teeth) requiring grease lubrication.

907-850.02.14.2—Lubrication Charts. Include the operating machinery and movable fence assembly lubrication information on the lubrication charts required for the leaf lubrication.

907-850.02.14.3—Lubrication Tubing. Use tubing of seamless brass pipe meeting the requirements of ASTM B43 and bronze fittings or ASTM A269 type 316 stainless steel tube with type 316 stainless steel fittings. Use stainless steel or corrosion resistant hardware to secure lubrication tubing and fittings. Provide one grease gun for each type fitting.

907-850.02.14.4—Shipping. Immediately after the completion of fabrication, plug all grease fittings until components are installed and regular lubrication is started.

907-850.02.14.5—Sleeve Bearings. The lubricant chosen must be approved for use in sleeve bearings by the lubricant manufacturer. Use NLGI No. 2 grease with rust and oxidation inhibiting additives, ASTM Drop Point, SUS 900 @ 100 °F, water resistant, anti-wear/extreme pressure.

907-850.02.14.6—Unpainted Contact Surfaces. Lubricate unpainted contact surfaces of dowel pins and rollers with a dry moly or other corrosion inhibiting lubricant.

907-850.02.14.7—Drive Chain. Lubricate movable fence drive chains with an aerosol type chain lubricant designed for roller chain applications.

907-850.02.15—Shims. Provide shims required for leveling and alignment that are full depth shims, drilled for all bolts that pass through, and trimmed to the dimensions of the assembled unit. The nominal shim pack thickness will be ½ inch unless otherwise specified. Provide shim material ¼ inch and greater from ASTM A36, shim material less than ¼ inch from ASTM A666, type 316 stainless steel. Thin brass precision thickness shims may be used for final adjustment. Provide sufficient thicknesses to permit 0.005 inch variations of the nominal shim thickness plus one full allowance shim. Provide the department with one full set of additional shims for each type of component.

907-850.02.16—Epoxy Grout. Use epoxy grout manufactured for use in thickness range shown in the plans or detailed in approved shop drawings for each application.

Use epoxy leveling grout having the following minimum properties:

Minimum compressive strength:	10,000 PSI
Minimum tensile strength	2,000 PSI
Fire resistance:	Self-extinguishing
Maximum linear shrinkage	0.0004 in/in

907-850.02.17—Paint for Machinery. Use paint for operating machinery, movable fence assemblies and related equipment in accordance with the 3-coat epoxy system specified for COATING EXISTING STRUCTURAL STEELexcept as noted herein or as shown on the plans. Paint proprietary systems with coatings selected by the manufacturer for use in industrial applications.

907-850.02.19—Couplings. Provide all-metal, self-aligning, full flexible (in bending and torsion)grid-type couplings, unless otherwise specified on the plans. Provide couplings with steel hubs and alloy steel grids, and steel covers of shrouded bolt design.Provide couplings capable of accommodating misalignment between the shafts without introducing bending into the shafts, and with provisions for introducing lubricant to all contact surfaces.

Coupling halves are to be bored and keyed by the coupling manufacturer to the required size and tolerances. Provide ANSI B4.1, FN2 medium drive fit between the hubs and the shafts. Bore hubs concentric with the outside diameter of those parts. Mount couplings on motor shafts in the shop of the manufacturer, as per coupling manufacturer's installation instructions. Mount couplings on speed reducers in the field by qualified Millwrights.

907-850.02.20—Keys and Keyways. Provide keys and keyways conforming to the dimensions and tolerances for square and flat keys of ANSI B17.1, Keys and Keyseats.

Provide keys machined from steel forgings, ASTM A668, Class K.

907-850.02.21—Plain Spherical Bearing. Where required, provide plain spherical bearings of the self-aligning type that are sized to meet B-10 life (as defined by the AFBMA at which 90 percent of a group of bearings will survive the identical loading conditions) of 40,000 hours under the power requirements defined in the AASHTO Movable Bridge Specifications or shown in the plans. All pins and attachments shall be machined to the dimensions and tolerances as specified by the Bearing Manufacturer. Provide all plain spherical bearings with a means for grease lubrication and lip seals to retain the lubrication and guard the spherical surfaces from contamination.

907-850.02.22—Speed Reducer. Provide breather vent with porous bronze element with minimum 40 micron filtration rating. Provide seals as close to original style and material on the existing speed reducer. Provide lubrication approved by the Department maintenance office.

907-850.02.23—Brake Wheel. Supply brake wheels manufactured from ASTM A536 grade 65-45-12 ductile iron and disks manufactured from alloy steel. Machine and bore keyway per manufacturers recommendations. Drum shall be offset such that the brake, or brake weldment, does not interfere with the motor. Brake wheel shall be of the same manufacture as the brake assembly.

907-850.02.24—Neoprene Pad. Provide neoprene pad for slide gate track and gate wheel assembly with the following properties: temperature range: -40° to +220° F; tensile strength: 1500 psi; durometer: 70A; for outdoor use.

907-850.02.25—Slide Gate Operator. Provide slide gate operator to conform to list of items below:

- Conforms to Class IV, when tested in accordance with UL32.
- Operator Enclosure: Fully enclosed, NEMA 3R, weather-resistant, hinged, lockable, 16-gauge steel enclosure with baked-on high durability powder coat finish over a 7 gauge steel frame.
- Operator Motor: 1HP Continuous Duty motor with built-in overload protection operation for gates up to 1700 lbs. and 35ft. (Cantilever) in length.
- Minimum Gate Speed: 12 inches per second.
- Drive System: 20:1 gear reduction using worm-gear reduction in synthetic oil bath with a solenoid-activated brake system that prevents back-driving.
- Open and Close Limit Settings: Limit switches are modular and fully adjustable.
- Control circuit: low-voltage control inputs protected from external spikes and surges that provides long distance control of wiring runs over 1,000 ft. for connection of a full range of optional external devices including loop detectors, telephone entry systems, access control systems, and radio receivers.

- Additional required controls: Internally-mounted RF receiver tuned at 315MHz Inherent obstruction sensing providing separate, single force adjustments for both open and closed directions, allowing a closing gate to reverse to the opposite limit and stop when encountering an obstruction.

- External obstruction sensing providing separate open and close cycle input connections for external contact and non-contact sensors.

- Maglock control relay to activate and deactivate an optional magnetic lock for securing the gate.

- UL 325-compliant entrapment warning alarm system providing ability to offer a warning tone which begins 3-seconds prior to gate movement and continues during gate operation.

- Loop detector inputs allowing for the connection of exit, shadow, and interrupt loop detectors.

- Dual gate operation 2-wire control system that provides for the operation of two separate gate operators in unison at a single entrance and also provides the ability to connect accessories to either operator

- Timer-to-close providing adjustable timer settings between 1 and 180 seconds which resets upon receiving any additional open commands.

- Sequenced Access Management System providing ability to control a slide or swing gate operator in tandem with a barrier gate operator.

- Maximum run timer to protect gate and operator from damage by limiting run time to 120 seconds.

- Emergency Release: External manual release for manual operation of gate during emergencies and maintenance work.

- Emergency Stop: Stop button in a weather-tight outdoor enclosure to halt operation of the operator in an emergency situation.

- Accessory Power: One 24 VAC connection for operator accessories, including a radio receiver and loop detectors.

907-850.02.26—Slide Gate Rollers. All slide gate wheels and rollers shall be compatible with 2 1/2" OD (2 3/8" OD actual size) pipe. Rollers shall have either self-lubricating bronze bushings or sealed roller bearings which do not require additional lubrication riding on a hardened shaft. .Each slide gate wheel shall be capable of handling a dynamic load of 1000 lbs. minimum.

907-850.03--Construction.

907-850.03.1—General. The requirements of Section 810 of the Standard Specifications apply to this work. Construct in accordance with the requirements defined herein and in the plans and the provisions of the AASHTO Movable Specifications. Where a conflict exists between documents, the requirements of the plans and specifications will govern over those of the AASHTO Movable Specifications.

Unless specified in the plans or herein, dimensions between machined surfaces have a tolerance of 0.010 inch and machined surfaces have a flatness tolerance of 0.040 inch.

907-850.03.2—Setting of Machinery. Operating machinery must be set, aligned and verified by experienced millwrights. Millwrights must have a minimum 10 years of experience in setting and aligning heavy machinery and must have completed installation of machinery for a minimum of five (5) bascule bridges. Submit to the engineer for review the qualifications of the proposed millwrights.

Use appropriate means and methods in setting machinery bases and pedestals, such as leveling screws or precision jacks such that the required positioning tolerances are obtained. If steel shims are used between the concrete surface and the machinery or pedestal base, remove the shims prior to tightening anchors. Where leveling grout is shown, remove all other temporary support devices, including leveling screws, jacks, and shims, prior to tightening anchors.

Unless otherwise specified or shown in the plans, position operating machinery to be within the following tolerances:

Horizontal position:	1/32 in.
Vertical position:	1/32 in.
Level (top of machined surface):	0.005 in./foot
Orientation (parallel to plan centerline:	0.5 degrees

907-850.03.3—Bolting. Unless otherwise specified or shown in the plans, drill bolt holes in machinery parts for connection to supporting steelwork in the shop 1/16 inch diameter larger than the finished bolt diameter or match mark and drill from solid at assembly.

Clean all contact surfaces of structural steel to which machinery is to be bolted, in accordance with the specifications for structural steel to be bolted together, before bolting.

Spot face bolt holes through unfinished, rough cast surfaces for the head and nut.

Except as noted herein or in the plans, tension ASTM A325M and ASTM A449 bolts, used for connecting steel machinery parts together or to structural steel and whose nominal threaded diameter is less than or equal to 1½ inches, in accordance with the bolted connection requirements of AASHTO and the standard specifications.

Tension bolts, cap screws, stainless steel and other threaded fasteners as follows:

For permanent connections: Ft = 0.75 x At x Sp

Where: Ft = fastener preload
At = tensile area of the fastener
Sp = fastener proof strength

Preload may be applied by direct hydraulic tensioning or torque. Where torque is used it may be calculated as follows:

$$T = K \times Ft \times d$$

Where: T = required wrench torque applied to fastener
K = constant dependent upon bolt size, material and lubrication
d = nominal fastener diameter

For mild-steel fasteners (SAE Grade 5 and lower) between ¼ and 1 inch diameter a value of K = 0.2 may be used for dry assembly. For other materials and sizes use manufacturer recommended values.

907-850.03.4—Flexible Couplings. Finish boring and cutting of keyways in couplings shall be done by the coupling Manufacturer to limits specified on the Shop Drawings. Ship finished couplings to the proper location for installation on shafts by the Manufacturer of the connected component. Install coupling halves on reducer shafts and other shafts as per the coupling Manufacturer's installation instructions. Coupling-shaft fits shall conform to FN2 (H7/s6) fit. Manufacturer recommended coupling alignment tolerances apply. Confirm motor shaft dimensions and provide the equivalent interference fit to an FN2, though the shaft will not have tolerances meeting ANSI hole based fit dimensions.

907-850.03.5—Shafting and Pins. Provide all shafts and pins with accurate finishes. Provide shafting that is round, true, smooth and straight, and has round fillets at shoulders. Blend all fillets smoothly to adjacent surfaces without tool marks, steps or scratches.

Provide shafts conforming to tolerances in ASTM A29 unless otherwise indicated. Turned, ground and polished shafting straightness tolerances must be 0.002 inch per foot for shafts up to and including 1½ inches in diameter and 0.003 inch per foot for shafts over 1½ inches in diameter.

Finished shafts must be free of camber and run without vibration, noise or chatter at all speeds up to and including 120 percent of design speed.

Where shown on the plans, stepped shafts must have fillets blended in smoothly to adjacent surfaces without tool marks or scratches. Unless otherwise required herein or on the plans to have a finer finish, the surfaces will have maximum roughness of 125 µin.

Each end of all shafts, when finished to the required lengths, must have a 60 degree lathe center, with clearance hole, at the exact center of the shaft. Shafts that are bored with an inspection hole or through hole must have the hole located at the exact center of shaft for each end.

Machine and polish all journal bearing areas on shafts and pins, with no trace of tool marks or scratches on the journal surface or adjoining shoulder fillets. Burnishing of the shaft journal areas and adjoining shoulder fillets will be acceptable in lieu of polishing provided that the burnishing is done with a Stellite roller or equal, finished to a mirror surface.

907-850.03.6—Shaft Journals. Turn and polish journal bearing areas on shafts and pins with no trace of tool marks or scratches on the journal surface, and no step between the journal surface and fillet. Provide and install journals and bearings to the fit specified in the plans.

907-850.03.7—Keys and Keyways. All keys shall be effectively held in place, preferably by setting them into closed-end keyways milled into the shaft. Round the ends of all such keys to a half circle of diameter equal to the width of the key. Keyways shall have a radius in the inside corners. Keyways shall not extend into any bearing. If two keys are used in a hub, locate them 120 degrees apart and in line with wheel arms where practicable.

907-850.03.8—Bushings. For solid bushings provide fits between the bushing OD and housing and between the bore and the shaft as specified in the plans.

907-850.03.9—Welding and Weldments. Unless otherwise noted herein or in the plans, perform all welding and weld inspection of rear locks in accordance with ANSI/AASHTO/AWS D1.5. Unless otherwise noted herein or in the plans treat all welded machinery members that support live load reactions as main members, all welds as subject to tension or stress reversal, and all welds as joining primary components. Do not perform field welding on these elements unless specifically required in the contract documents.

Unless otherwise shown in the plans, connect elements of weldments by complete joint penetration welds. Do not use fillet welds where they would require machining to provide clearance for machinery, fasteners, or other attachments. Clip stiffeners to avoid overlapping stiffener welds with welds at the intersection of main plates.

Stress-relieve weldments after welding and prior to final machining. Unless otherwise shown in the plans, finish machined surfaces of weldments to flatness as required herein and parallel to each other and to the bottom of the base plate. The height of the weldment must be per plan height ± 1/16 inch. All exposed edges of weldments must be ground to a chamfer or radius to eliminate sharp edges and burrs. Weldment base plates which will be placed against concrete or grout must have ¾-inch minimum radii on the corners.

Thoroughly coat finished mounting surfaces with an approved corrosion inhibitor and skid or crate for protection during handling, shipment and storage. Prime weldment base surfaces which will have concrete or grout cast against them, but do not finish coat them.

907-850.03.10—Epoxy Grout. Store, mix, place, and finish epoxy grout in strict accordance with the manufacturer's recommendations. Note that ambient temperature at storing, mixing and pouring must be considered.

907-850.03.11—Testing. Operate movable fence assemblies a minimum of four (4) times each with the leaf in the lowered position.

907-850.03.12—Lubrication of Machinery. Connect grease fittings with tubing or fittings so that grease is introduced directly into the grease passages for distribution. Tubing is to be extended from the bearings to convenient lubrication stations. Install vibration absorbent braided stainless steel hose, 8-inch minimum length, between the pipe and the component lubricated in locations where vibration exists. Provide tubing supports at increments not to exceed three (3) feet between supports.

Immediately after erection and before operation, lubricate all rotating and sliding parts and fill all gear housings with the approved lubricants specified on lubrication charts.

907-850.03.13—Startup Requirements. Implement startup procedures that protect the equipment from damage and ensure safe working conditions during bridge operations throughout construction.

907-850.03.14—Protection for Shipment. Coat all finished metal surfaces as soon as practical, after machining, with an approved rust-inhibiting compound. Completely protect rear locks parts from weather, dirt and foreign materials during manufacture and store indoors while awaiting erection. Assembled units, including bearings, operators and other devices having finished mounting surfaces will have those surfaces thoroughly coated with rust-inhibitor and shall be skidded or crated for protection during handling, shipment and storage. Bag mounting hardware and other small parts for shipment. Provide and secure tags, recording the part number, to each part with wire or plastic ties prior to shipment.

907-850.03.15—Protection of Equipment. During construction, all equipment must be protected from damage as a result of construction operations and contamination from dust and debris. Should any equipment become contaminated, immediately clean the equipment, re-lubricate, and protect from further contamination. The machinery must not be operated and no enclosed equipment opened during any period in which construction operations can contaminate the equipment.

907-850.03.16—Erection and Testing. Erect and assemble machinery in accordance with part numbers and match marks. Adjust all parts for precise alignment by means of shims and pull parts tightly against supporting members by use of clamps, temporary bolts, or other approved means before drilling and reaming holes for connecting bolts. Install rear locks within the specified tolerances and such that satisfactory operation is achieved. Utilize millwrights with demonstrated skill in this type work for all erection and adjustment of rear locks.

Unless otherwise approved by the engineer prior to construction, drill bolt holes in structural steel supports only after alignment of machinery. Do not install machinery unless mounting

surfaces are clean of dirt, paint and other foreign materials. Securely tighten connecting screws, bolts and nuts to the specified torque values.

Maintain positive control of the leaf at all times. Temporary lock systems are permitted which secure the leaf in the closed position, in lieu of the permanent rear locks. Construction plans for all temporary locking systems sealed by a Registered Mississippi Professional Engineer, and submit to the department for approval. No temporary locking systems are allowed without the contractor receiving written department approval.

907-850.03.17—Field System Testing. After the bridge systems have been completely installed, conduct a full functional test of the operating machinery and movable fence assemblies. Include automatic and manual operations of both raising and lowering the span and opening and closing the movable fence.

Verify the fully extended and fully retracted indications at the control console for each of the movable fences.

907-850.03.18—Painting of Machinery. Clean and paint all unfinished, non-stainless or non-aluminum surfaces of operating machinery and movable fence equipment in accordance with the epoxy paint system specified for COATING EXISTING STRUCTURAL STEEL, except as noted herein and as shown on the plans. Apply the finish coat in the shop. Apply field touch-up paint to shop applied coatings that are damaged during construction and installation.

After completing the operating tests and acceptance of the operating machinery and movable fence, wash with an appropriate solvent all accumulated oil, grease, dirt, and other foreign matter from exposed surfaces, except rubbing surfaces. Apply to the exposed surfaces a final field coat. Paint surfaces with the final field coat in the colors selected by the department. Provide color samples for the department to select these colors.

907-850.03.19—Submittals. Submit fully detailed shop drawings of all equipment. Fully dimension shop drawings and indicate adjustment tolerances, fits, finish, profiles, sizes, fasteners and accessories. Submit shop drawings indicating fits, finishes, profiles, sizes, weldments, castings, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, erection tolerances, elevations, rear lock power unit layout with component configuration, and details where applicable. Indicate welded connections using standard AWS welding symbols. Submit a proposed procedure for the installation of operating machinery and movable fence assembly. Provide Manufacturer's literature covering installation and maintenance procedures for operating machinery and movable fence assembly components.

907-850.03.20—Speed Reducer Recondition. Flushing and Cleaning: Contain and remove all debris collected from cleaning and flushing drive Speed Reducer. Dispose of debris in accordance with local and state regulations.

Replace Seals: Install seals by manufacturer's recommendations.

Inspection Cover Gasket: Fabricate and install neoprene gasket which is oil resistant. Gasket shall be adhered to the cover. Gasket shall have thru holes at the bolt locations which do not interfere with installation of the bolts.

Breather: Route breather vent lines such that vent in protected from moisture intrusion (i.e. vent opening is facing down).

Operation: Prior to operating the span, ensure that the speed reducer is filled with the proper oil to a level that the bearings and gears are properly lubricated during operation. All open gear sets and bearing bushings shall be lubricated prior to operation of the span.

907-850.04--Method of Measurement. Mechanical Work will be measured on a lump sum basis. No separate measurement will be made for shop drawings, realignment or delivery of spare parts.

907-850.05--Basis of Payment. Mechanical Work, measured as presecibed above, will be paid for at the contract lump sum price, which price shall be full compensation for removing and installing the operating machinery and movable fence assemblies as described in this special provision and shown in the plans all labor, material, spare parts, testing, equipment, etc. necessary to complete the work.

Payment will be made under:

907-850-A: Mechanical Work - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-851-1 **CODE: (SP)**

DATE: 3/7/2012

SUBJECT: Leaf Alignment

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-851, Leaf Alignment, is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-851– LEAF ALIGNMENT

907-851.01--Description. This work shall consist of furnishing all components and labor required to vertically align the bascule leaves to the bascule piers and each other as described in the plans. This work includes the alignment of the leaves the replacement of the shims for the rear live load shoes and center locks. This work also includes the replacement of the fasteners for each of these assemblies.

907-851.02--Materials.

907-851.02.1—Shims. All shim materials ¼ inch thickness and below shall be stainless steel materials as specified in the plans. Laminated stainless steel shims may be used for fine adjustments. Shims larger than ¼ inch may be carbon steel.

907-851.02.2—Bolts, Nuts and Washers. High-strength bolts shall conform to the minimum specified physical requirements of high strength ASTM A325 Type 1 or ASTM A449 Type 2 cut thread, washer faced, hexagonal head bolts. Use nuts that conform to ASTM A563 or A194, Grade DH or 2H, heavy hex series. Bolt heads and nuts shall be dimensioned in accordance with ANSI B18.2. Such fasteners are to be of the heavy series. Unless otherwise specified or shown in the plans, provide threaded fasteners with American National Standard coarse pitch threads.

907-851.02.3—Cap Screws. Socket head cap screws, socket flat countersunk head cap screws, socket set screws, and socket head shoulder screws shall conform to ANSI B18.3. Unless otherwise noted in the plans, such screws shall be heat treated alloy steel. Unless otherwise specified, set screws shall be of the headless, safety type and be of the coarse thread series and have cup points. Do not use set screws to transmit torque nor as a stop for equipment that provides stability or contributes to operation of the bridge. Class 2 coarse thread tolerances shall be met for all bolts, nuts and cap screws.

907-851.02.4—Washers. Hardened steel, plain washers conforming to ASTM F436 shall be used at the rotated end of high strength ASTM A325 or A449 bolts.

907-851.03--Construction.

907-851.03.1—Adjustment. Install shims as required to adjust the position of the bascule leaves, in the resting position, to the alignment requirements shown in the plans. Shim stacks shall be provided as two times the nominal thickness. Use as few shims as possible to obtain the required shim thickness.

907-851.03.2—Spare Parts. All remaining shims shall be packaged, labeled and delivered as spare parts to the department. The delivery point shall be at the bridge.

907-851.04--Method of Measurement. Leaf Alignment will be measured as a lump sum quantity. No separate measurement will be made for shop drawings, realignment or delivery of spare parts.

907-851.05--Basis of Payment. Leaf Alignment, measured as prescribed above, will be paid for at the contract lump sum price, which price shall be full compensation for all labor, material, spare parts, equipment, etc. and all incidentals necessary to complete the work.

Payment will be made under:

907-851-A: Leaf Alignment - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-852-1 **CODE: (SP)**

DATE: 3/7/2012

SUBJECT: Rear Locks

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-852, Rear Locks, is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-852 – REAR LOCKS

907-852.01--Description. This work consists of furnishing and installing all apparatus, material and labor required to properly detail, manufacture, ship, install, adjust, test, paint and put into approved working order all parts of the bascule span rear lock and supports specified. The Contractor shall furnish, at no extra cost, any device, material, labor or effort not herein specified, yet required to complete or perfect the equipment in a manner suitable to the Department.

907-852.02--Materials.

907-852.02.1--Shop Drawings. Dimensions given on the plans are nominal and intended for guidance. The Contractor shall make notes of any variations from nominal dimensions on the shop drawings or provide written notice to the Engineer. Where additional information is required or changes must be made; prepare working, erection, and shop drawings and The Contractor shall submit to the Department as specified.

907-852.02.1.1--General Requirements. Shop drawings shall detail and accurately dimension all parts. Shop drawings shall define limits of accuracy and tolerances required for machining, surface finishes and allowances for fits.

907-852.02.1.2--Manufacturer's Literature. The Contractor shall submit catalog cuts and detailed manufacturer's literature for all components not detailed in the shop drawings. The Contractor shall clearly mark such items with the item number corresponding to the mark shown on the assembly drawing and the full and complete part number, extended to completely define the part including all optional or custom features. If the same cut sheet is used to define more than one item, the Contractor shall submit multiple copies.

907-852.02.1.3--Material Certifications. The Contractor shall submit material certifications for all materials specified to require material testing within the plans and specifications or within a referenced material specification (e.g. ASTM, ANSI, or others).

907-852.02.1.4--Procedures. In addition to required detailed shop drawings, the Contractor shall submit to the Engineer for review various procedures described herein. The procedures shall be thorough and be supplemented by sketches, calculations, details, catalog cuts, photographs, etc. as required to demonstrate that the specified requirements can be met.

907-852.02.1.5--Notification of Shop Work. The Contractor shall provide advance written notification to the Department for all shop work and shop testing for which the specifications require, or indicate that it is the intent of the Department, to provide a representative to observe or witness such activities. The Contractor shall provide a minimum of 30 days advance written notice of such work.

907-852.02.2--Material Compatibility. The Contractor shall provide products which are compatible with other products of the rear lock and with other work requiring interface with the rear lock, including mechanical/electrical connections and control devices.

907-852.02.3--Nameplates. The Contractor shall provide each piece of rear lock equipment and apparatus with a permanent, corrosion-resisting metal nameplate on which is stamped the name of the manufacturer, the catalog or model number, and the rating or capacity of the equipment or apparatus. Nameplates on all proprietary elements shall be readable, clean, and free of all paint before acceptance of the machinery.

907-852.02.4--Substitutions. Specification of a manufacturer's part number, product, and/or name is for the purpose of defining quality, configuration, rating and arrangement of parts. Part numbers shown in the contract documents are not necessarily complete numbers nor are they intended to describe details of the component beyond those that are required. Be aware that manufacturers may change product names and part numbers without advance notification. The Contractor shall select and provide manufactured products that meet the requirements and intent as shown in the contract documents. The Contractor shall provide complete, current part numbers for all proposed equipment and verify that the part as designated is appropriate for the intended function. Contractor is be responsible for design changes resulting from substitutions.

907-852.02.5--Shop Inspection and Testing.

907-852.02.5.1--Notification. The Contractor shall provide sufficient written notice to the Department prior to the beginning of work at foundries, forge and machine shops so that inspection may be arranged. The Contractor shall provide free access to all premises where preparation, manufacture, assembly and testing of raw materials, materials in process and assembly is conducted.

907-852.02.5.2--Responsibility. Such inspections are to facilitate work and avoid errors. It is understood that inspection by the Department does not relieve the Contractor of the responsibility for compliance with requirements of the contract documents or for replacing defective materials and workmanship.

907-852.02.5.3--Material Acceptance. The Contractor shall furnish to the Department test results of all certifications required of the contract documents, including copies of chemical and

physical tests and certifications of compliance. Initial acceptance of materials and finished parts and assemblies will not preclude subsequent rejection if found deficient. Replacement of such materials will be the responsibility of the contractor.

907-852.02.6--General Material Requirements. The Contractor shall provide materials as specified on the plans and in the specifications. Wherever materials are not shown or specified, the Contractor shall provide materials conforming to the current specifications as outlined in TABLE 1, Materials. An alternative material may be requested in writing; the request must provide complete data justifying suitability of the alternate materials and must be approved by the Department prior to initiating manufacture or construction.

Materials and equipment must be essentially the standard catalogued products of manufacturers regularly engaged in production of such materials or equipment and must be the manufacturer's latest standard design that complies with the specification requirements. Materials and equipment must essentially duplicate items that have been in satisfactory commercial or industrial use at least two (2) years prior to bid opening. Where two units of the same class of equipment are required, these units must be products of the same manufacturer. However, the component parts of the system need not be the products of the same manufacturer. Each major component of equipment must have the manufacturer's name and address and the model and serial number on a nameplate securely affixed in a conspicuous place. The nameplate of the distributing agent will not be acceptable.

TABLE 1 - MATERIALS

MATERIAL	DESCRIPTION	DESIGNATION (ASTM unless otherwise noted)
Steel castings	Structural, high strength Carbon steel, general application	A148 A27
Iron castings	Gray iron	A48
Bronze castings	Bronze castings for bridges (max. sulphur content 0.08%, chemical analysis required for each heat)	B22
Forgings	Carbon steel for industrial use Alloy steel for industrial use	A668
Hot rolled steel	Special quality carbon steel bars	A675
Dowel pins	American National Standard Unhardened Ground Dowel Pins (64 ksi minimum ultimate shear strength)	ANSI B18.8.2
Cold rolled steel	Carbon steel bars	A311
Stainless Steel Shims	Stainless Steel	A666, Grade 304 or 316
Shapes, plates, and bars	Structural steel High strength, weathering steal	A36 or A709 A588
Stainless Steel (corrosion resistant) bolts or anchors	High Strength Stainless steel Fasteners	A193, Grade B8, A193, Grade B8M

Corrosion resistant shapes, bars, and plates	Stainless steel	A276, Type 316

907-852.02.7--Shafting and Pins. Rolled material may be used for shafting and pins up to four (4) inches in diameter. The Contractor shall use forged material for larger diameter shafts and those having integral flanges or pinions. Homogeneity of forgings is required; shafts must be reduced to size from a single bloom or ingot at no less than red heat. The blooms or ingots must have a cross sectional area at least three times that required after finishing. The finished product must be free of injurious flaws such as seams, pipes or cracks. Forged shafts over eight (8) inches in diameter must have a hole bored lengthwise through the center. The Contractor shall make the diameter of the hole about 1/5 the diameter of the shaft.

The Contractor shall test shafting materials for mechanical properties and furnish certificates to the Department.

The Contractor shall test all cold-finished shafting for its mechanical properties, and furnish a test certificate to the Engineer.

The Contractor shall provide dowel pins per American National Standard. Unless otherwise specified, the Contractor shall provide unhardened ground dowel pins with 64 ksi minimum ultimate shear strength. The Contractor shall provide hardened dowel pins with 120 ksi minimum ultimate shear strength.

907-852.02.8--Castings. Unless otherwise specified or shown in the plans, the Contractor shall use castings that conform to AASHTO Movable Specifications. Material grades must be as specified or shown in the plans.

907-852.02.9--Forgings. Unless otherwise specified or shown in the plans, the Contractor shall use forgings that conform to AASHTO Movable Specifications. Material grades must be as specified or shown in the plans.

907-852.02.10--Fasteners.

907-852.02.10.1--High Strength Bolts. Unless otherwise specified, the Contractor shall provide fasteners used for connecting rear lock parts to each other and to supporting steelwork that are turned bolts conforming to the minimum specified physical requirements of high strength, ASTM A325 or ASTM A449 cut thread, washer faced, hexagonal head bolts. The Contractor shall provide threads for turned bolts that conform to the requirements of ASTM A325. Do not use ASTM A490 bolts. Use nuts that conform to ASTM A563 or A194, Grade DH or 2H, heavy hex series.

907-852.02.10.2--Bolt Dimensions. The Contractor shall dimension bolt heads, nuts and hexagonal cap screws in accordance with ANSI B18.2. Such fasteners shall be of the heavy series.

907-852.02.10.3--Socket Head Screws. The Contractor shall conform socket head cap screws, socket flat head cap screws and socket set screws to ANSI B18.3. Such screws must be heat treated alloy steel. Unless otherwise specified, set screws shall be of the headless, safety type and be of the coarse thread series and have cup points. Do not use set screws to transmit torque nor as a stop for equipment that provides stability or contributes to operation of the bridge. Class 2 coarse thread tolerances shall be required for all bolts, nuts and cap screws.

907-852.02.10.4--Locking of Fasteners. The Contractor shall provide approved type positive locks for cap screws and nuts on turned bolts unless noted otherwise in the plans. The Contractor shall use standard thickness nuts where double nuts are required in locations where occasional opening or adjustment is necessary. The Contractor shall use flat jam nuts only where space prohibits use of standard nuts. Lock washers shall be made of tempered steel and conform to regular SAE dimensions and specifications. The Contractor shall properly tension high strength bolts and nuts, which will create a self-locking effect. If wire is used for locking it shall be stainless steel.

907-852.02.10.5--Washers. The Contractor shall use hardened steel, plain washers conforming to ASTM F436 at the rotated end of high strength ASTM A325 or A449 bolts.

907-852.02.10.6--Miscellaneous Fasteners and Hardware. Unless otherwise specified or shown in the plans, the Contractor shall provide miscellaneous fasteners and hardware, including cotter pins and lock wire of corrosion resistant stainless steel, with material composition of type 316.

907-852.02.11--Bushings. Where required, the Contractor shall provide solid bushings, as shown in the plans of one piece bronze sleeve. Where required, the Contractor shall configure with spiral cut lubrication grooves.

The Contractor shall provide lubricant fittings for all rear lock items requiring lubrication.

907-852.02.12--Weldments. The Contractor shall fabricate weldments for support of rear locks and/or hydraulic equipment from structural steel of the type and grade specified in the plans. Where the type and grade of steel is not specified in the plans, the Contractor shall fabricate weldments from ASTM A709, Grade 50 structural steel. The Contractor shall use of steel plate larger than that denoted in the plans may be required to obtain the final required dimensions.

Immediately following finish machining, the Contractor shall coat mounting surfaces with an approved temporary protective coating that prevents oxidation. The Contractor shall clean all base plate surfaces to be in contact with epoxy grout to SSPC SP-6 and prime with epoxy primer within eight hours of cleaning. The Contractor shall apply primer only, to the weldment base surfaces, do not finish coat them.

The Contractor shall crate and skid the weldments, for protection during handling, shipment and storage.

907-852.02.13--Galvanizing. Where galvanizing of weldments is required, the Contractor shall hot dip galvanize in accordance with ASTM A123. Where machining of weldment is not required, the Contractor shall drill holes in support oversized prior to galvanizing. The Contractor shall provide lifting lugs and vent holes as needed for the galvanizing process. The Contractor shall mask surfaces to be machined as required. After fabrication and galvanizing of all weldments, the Contractor shall paint unprotected surfaces with an epoxy paint system for structural steel in accordance with the standard specifications.

907-852.02.14--Lubrication of Rear Locks.

907-852.02.14.1--Fittings. The Contractor shall provide button head fittings for use on all bearings and other machinery (not including gear teeth) requiring grease lubrication.

907-852.02.14.2--Lubrication Charts. The Contractor shall include the rear lock system lubrication information on the lubrication charts required for the drive machinery.

907-852.02.14.3--Lubrication Tubing. The Contractor shall use tubing of seamless brass pipe meeting the requirements of ASTM B43 and bronze fittings or ASTM A269 type 316 stainless steel tube with type 316 stainless steel fittings. The Contractor shall use stainless steel or corrosion resistant hardware to secure lubrication tubing and fittings. The Contractor shall provide one grease gun for each type fitting.

907-852.02.14.4--Shipping. Immediately after the completion of fabrication, the Contractor shall plug all grease fittings until components are installed and regular lubrication is started.

907-852.02.14.5--Sleeve Bearings. The lubricant chosen shall be approved for use in sleeve bearings by the lubricant manufacturer. Use NLGI No. 2 grease with rust and oxidation inhibiting additives, ASTM Drop Point, SUS 900 @ 100 °F, water resistant, anti-wear/extreme pressure.

907-852.02.14.6--Unpainted Contact Surfaces. The Contractor shall lubricate unpainted contact surfaces of dowel pins, strike plate and rocker arm with a dry moly or other corrosion inhibiting lubricant.

907-852.02.15--Shims. The Contractor shall provide shims required for leveling and alignment that are full depth shims, drilled for all bolts that pass through, and trimmed to the dimensions of the assembled unit. The nominal shim pack thickness will be ½ inch unless otherwise specified. The Contractor shall provide shim material ¼ inch and greater from ASTM A36, shim material less than ¼ inch from ASTM A666, type 316 stainless steel. Thin brass precision thickness shims may be used for final adjustment. The Contractor shall provide sufficient thicknesses to permit 0.015 inch variations of the nominal shim thickness plus one full allowance shim. The Contractor shall provide the Department with one full set of additional shims for each type of component.

907-852.02.16--Epoxy Grout. The Contractor shall use epoxy grout manufactured for use in thickness range shown in the plans or detailed in approved shop drawings for each application.

The Contractor shall use epoxy leveling grout having the following minimum properties.

Minimum compressive strength:	10,000 PSI
Minimum tensile strength	2,000 PSI
Fire resistance:	Self-extinguishing
Maximum linear shrinkage	0.0004 in/in

907-852.02.17--Paint for Rear Locks. The Contractor shall use paint for rear locks and related equipment in accordance with the 3-coat epoxy system specified for COATING EXISTING STRUCTURAL STEEL, except as noted herein and as shown on the plans. The Contractor shall paint proprietary systems with coatings selected by the manufacturer for use in industrial applications.

907-852.02.18--HPU Requirements.

907-852.02.18.1--Hydraulic Power Unit. The Contractor shall provide rear lock HPUs as shown in the plans, or of equal quality, with flow and pressure delivery as shown in the plans. The Contractor shall provide auxiliary hand-pump plumbed into the HPU system and permanently mounted near the HPU, as shown in the plans, for manual operation of the rear lock post in the event of power failure.

Design and assemble hydraulic equipment in accordance with standard NFPA hydraulic practices. Completely pre-pipe, test, and paint HPUs prior to arrival at the job site. The Contractor shall open ports for field piping must be securely capped with steel plugs. Changes or modifications in the field shall not be permitted.

907-852.02.18.2--Hydraulic Cylinders. The Contractor shall provide lock system cylinders as shown in the plans or of equal quality with stroke and bore as shown in the plans. The Contractor shall provide cylinder rods of the material shown in the plans. If not shown in the plans, rod material shall be ASTM A276 Grade 316. The Contractor shall paint cylinders with a shop applied epoxy enamel. The Contractor shall field touch-up paint as required following installation. The Contractor shall provide quick disconnect fittings on the cylinders for connection with the hydraulic hoses.

907-852.02.18.3--Lock System Hydraulic Valves. The Contractor shall mount the rear lock system relief valves on the self-contained power unit, (HPU).

907-852.02.18.4--Hydraulic Fluid. The Contractor shall provide all hydraulic fluid required to test, store, clean, and install the hydraulic systems. The Contractor shall use fluid for the rear lock hydraulics that is of a premium grade, high-performance, anti-wear hydraulic mineral oil with an ISO Grade VG of 32. The Contractor shall provide components, seals, etc. that are compatible with the approved fluid.

907-852.02.18.5--Filtration. The Contractor shall provide each hydraulic system with filtration suited for the application and components supplied.

907-852.02.18.6--Plumbing and Fittings. The Contractor shall provide flexible hose of the proper SAE rating, consistent with working pressures noted on the plans. The Contractor shall connect all hydraulic cylinders to fixed plumbing with flexible hose. The Contractor shall assemble all hose assemblies with a suitable sealant. The Contractor shall size tubing, fittings and pipe to provide a minimum Factor of Safety of four (4) against bursting (based on yield). The Contractor shall base Factors of Safety on the maximum working pressure as defined in the plans.

907-852.02.18.7--Hardware and Fasteners. The Contractor shall use ASTM A193, Grade B8M or ASTM A276 Type 316 Stainless Steel for all fastener bolts, nuts, washers and all other mounting hardware used on all the hydraulic equipment and power units, and plumbing unless otherwise specified.

907-852.03--Construction.

907-852.03.1--General. The requirements of Section 810 of the Standard Specifications shall apply to this work. The Contractor shall construct in accordance with the requirements defined herein and in the plans and the provisions of the AASHTO Movable Specifications. Where a conflict exists between documents, the requirements of the plans and specifications will govern over those of the AASHTO Movable Specifications.

Unless specified in the plans or herein, dimensions between machined surfaces shall have a tolerance of 0.010 inch and machined surfaces have a flatness tolerance of 0.040 inch.

Rear locks must be set, aligned and verified by experienced millwrights. Millwrights must have a minimum 10 years of experience in setting and aligning heavy machinery and must have completed installation of machinery for a minimum of five (5) bascule bridges. The Contractor shall submit to the Engineer for review the qualifications of the proposed millwrights.

907-852.03.2--Setting of Rear Locks.

907-852.03.2.1--Rear Lock Adjustment. The Contractor shall not perform final shimming of the rear lock assemblies until the following have been completed.

- Final shimming of rear live load shoe assemblies and center lock assemblies, including final tensioning of all fasteners
- All items of work on the related bascule leaf causing significant balance changes (±7.5 kip-ft)

The Contractor shall install rear locks such that clevis pins are parallel to main girder web, with leaf lowered, within 0.030 inch over the length of the pin.

The Contractor shall align strike plate such that the strike plate is parallel to the lock shoe within 1/64" over the length of the lock shoe.

907-852.03.2.2--Hydraulic Cylinder. The Contractor shall install and align the cylinder supports with the rear lock such that no binding exists at the cylinder pivot points at any position of travel.

The Contractor shall coordinate hydraulic cylinder details with other rear lock components. The Contractor shall submit justification with shop drawings for any changes in the cylinder dimensions, lengths or other features from those shown in the plans.

The Contractor shall erect and assemble in accordance with part number and match marks.

907-852.03.3--Bolting. Unless otherwise specified or shown in the plans, the Contractor shall drill bolt holes in machinery parts for connection to supporting steelwork in the shop 1/16 inch diameter larger than the finished bolt diameter.

The Contractor shall clean all contact surfaces of structural steel to which machinery is to be bolted, in accordance with the specifications for structural steel to be bolted together, before bolting.

Except as noted herein or in the plans, the Contractor shall tension ASTM A325M and ASTM A449 bolts, used for connecting steel machinery parts together or to structural steel and whose nominal threaded diameter is less than or equal to 1½ inches, in accordance with the bolted connection requirements of AASHTO and the standard specifications.

907-852.03.4--Bushings. For solid bushings, the Contractor shall provide fits between the bushing OD and housing and between the bore and the shaft as specified in the plans.

907-852.03.5--Welding and Weldments. Unless otherwise noted herein or in the plans, the Contractor shall perform all welding and weld inspection of rear locks in accordance with ANSI/AASHTO/AWS D1.5. Unless otherwise noted herein or in the plans, the Contractor shall treat all welded rear lock members that support live load reactions as main members, all welds as subject to tension or stress reversal, and all welds as joining primary components. Do not perform field welding on these elements unless specifically required in the contract documents.

Do not use fillet welds where they would require machining to provide clearance for machinery, fasteners, or other attachments. The Contractor shall clip stiffeners to avoid overlapping stiffener welds with welds at the intersection of main plates.

The Contractor shall stress-relieve weldments after welding and prior to final machining. Unless otherwise shown in the plans, the Contractor shall finish machined surfaces of weldments to flatness as required herein and parallel to each other and to the bottom of the base plate. The height of the existing rear strut weldment is fixed and must be maintained ± 1/16 inch to existing height. All exposed edges of weldments must be ground to a chamfer or radius to eliminate sharp edges and burrs.

The Contractor shall thoroughly coat finished mounting surfaces with an approved corrosion inhibitor and skid or crate for protection during handling, shipment and storage. The Contractor

shall support weldments for hydraulic power units shall be fully galvanized with no exposed machined surfaces.

907-852.03.6--Epoxy Grout. The Contractor shall store, mix, place, and finish epoxy grout in strict accordance with the manufacturer's recommendations. Note that ambient temperature at storing, mixing and pouring must be considered.

907-852.03.7--Testing. The Contractor shall operate rear locks a minimum of four (4) times each with the leaf in the lowered position to the position indicated in the plans. Between tests, The Contractor shall raise the leaf to create clearance at the live load shoes a minimum of two (2) feet. During the test, the rear lock must drive and retract to the driven and retracted positions as indicated on the plans and the HPU pressure not exceed 75 percent of relief valve setting in order to be acceptable.

907-852.03.8--Lubrication of Rear Locks. The Contractor shall connect grease fittings with tubing or fittings so that grease is introduced directly into the grease passages for distribution. Tubing shall be extended from the bearings to convenient lubrication stations. The Contractor shall install vibration absorbent braided stainless steel hose, 8-inch minimum length, between the pipe and the component lubricated in locations where vibration exists. The Contractor shall provide tubing supports at increments not to exceed three (3) feet between supports.

Immediately after erection and before operation, the Contractor shall lubricate all rotating and sliding parts.

907-852.03.9--Startup Requirements. The Contractor shall implement startup procedures that protect the equipment from damage and ensure safe working conditions during bridge operations throughout construction. The rear lock assemblies will not be left in the engaged position unless appropriate interlocking--preventing the operation of the bascule leaf are in place, tested and working.

907-852.03.10--Protection of Equipment. During construction, all equipment must be protected from damage as a result of construction operations and contamination from dust and debris. Should any equipment become contaminated, the Contractor shall immediately clean the equipment, re-lubricate, and protect from further contamination. The rear lock must not be operated and no enclosed equipment opened during any period in which construction operations can contaminate the equipment.

907-852.03.11--Erection and Testing. The Contractor shall erect and assemble rear locks in accordance with part numbers and match marks. The Contractor shall adjust all parts for precise alignment by means of shims and pull parts tightly against supporting members by use of clamps, temporary bolts, or other approved means before drilling and reaming holes for connecting bolts. The Contractor shall install rear locks within the specified tolerances and such that satisfactory operation is achieved. The Contractor shall utilize millwrights with demonstrated skill in this type work for all erection and adjustment of rear locks.

Do not install rear locks unless mounting surfaces are clean of dirt, paint and other foreign materials. The Contractor shall securely tighten connecting screws, bolts and nuts to the specified torque values.

Only one rear lock may be removed from service at any time. Three rear locks must be in the fully driven position at all times that roadway traffic is permitted to cross the span.

The Contractor shall maintain positive control of the leaf at all times. Temporary lock systems are permitted which secure the leaf in the closed position, in lieu of the permanent rear locks. The Contractor shall provide construction plans for all temporary locking systems sealed by a Registered Mississippi Professional Engineer, and submit to the Department for approval. No temporary locking systems are allowed without the contractor receiving written Department approval.

907-852.03.12--Field System Testing. After the bridge systems have been completely installed, the Contractor shall conduct a full functional test of the rear lock operation. The Contractor shall include automatic and manual operations for both driving and retracting the locks at each location in this test.

The Contractor shall verify the fully driven and fully retracted indications at the control console for each of the rear locks.

907-852.03.13--Shafting and Pins. The Contractor shall provide all shafts and pins with accurate finishes. The Contractor shall provide shafting that is round, true, smooth and straight, and has round fillets at shoulders. The Contractor shall blend all fillets smoothly to adjacent surfaces without tool marks, steps or scratches.

The Contractor shall provide shafts conforming to tolerances in ASTM A29 unless otherwise indicated. Turned, ground and polished shafting straightness tolerances must be 0.002 inch per foot for shafts up to and including 1½ inches in diameter and 0.003 inch per foot for shafts over 1½ inches in diameter.

Finished shafts must be free of camber and run without vibration, noise or chatter at all speeds up to and including 120 percent of design speed.

Where shown on the plans, stepped shafts must have fillets blended in smoothly to adjacent surfaces without tool marks or scratches. Unless otherwise required herein or on the plans to have a finer finish, the surfaces shall have maximum roughness of 125 μm.

Each end of all shafts, when finished to the required lengths, must have a 60 degree lathe center, with clearance hole, at the exact center of the shaft. Shafts that are bored with an inspection hole or through hole must have the hole located at the exact center of shaft for each end.

The Contractor shall machine and polish all journal bearing areas on shafts and pins, with no trace of tool marks or scratches on the journal surface or adjoining shoulder fillets. Burnishing

of the shaft journal areas and adjoining shoulder fillets will be acceptable in lieu of polishing provided that the burnishing is done with a Stellite roller or equal, finished to a mirror surface.

907-852.03.14--Shop Assembly Operations. Upon completion of all shop testing, the Contractor shall submit duplicate certificates of compliance to the Engineer. Any parts or assemblies, which do not fulfill the requirements of the contract, must be approved by the Engineer before installation or use.

907-852.03.15--Installation Requirements. The Contractor shall utilize a Certified Fluid Power Technician with prior experience on similar sized systems for installation, start-up, piping and flushing of hydraulic systems. The Contractor shall use a five (5) micron filter with an efficiency rating of Beta 10=50 for initial system filling and flushing. The Contractor shall perform charging and flushing only when atmospheric particles are at a minimum (no sandblasting or painting in progress). The Contractor shall check reservoir condition through cleanout covers prior to charging. All surfaces should be clean of dirt, rust or moisture. Once the reservoir has been cleaned, the Contractor shall charge the reservoir with the fluid approved for final use in the system.

After installation of the rear lock hydraulic system, and after all cylinders have been properly plumbed, the Contractor shall operate each system for a minimum of 10 complete cycles to allow cylinder and reservoir oil to become sufficiently mixed. Using proper NFPA techniques, the Contractor shall draw a fluid sample from each system and analyze per the ISO Solid Contaminant Code. The Contractor shall flush, filter, and test fluid as required to obtain the required cleanliness level. Prior to final acceptance of the rear lock hydraulic system, the Contractor shall provide certified test evidence of fluid cleanliness for all units following the ISO standard.

907-852.03.16--Hose Installation. The Contractor shall manufacture hose assemblies to the proper length and install such that they only have sufficient length to avoid flexing and straining the hose during operation. Torsional deflection of hoses will not be allowed. The Contractor shall locate and install hoses such that they do not rub against or contact rigid objects or other hoses.

907-852.03.17--Fluid Condition. The Contractor shall provide fluid at functional acceptance and final acceptance that is clean and in acceptable condition. The Contractor shall provide fluid cleanliness level for all units of ISO 18/15 or cleaner. The Contractor shall replace any fluid that has been heated beyond 160 °F at any time during construction or testing. The Contractor shall replace any fluid that is contaminated with water or other foreign materials detrimental to the fluid or hydraulic system components.

907-852.03.18--Qualifications. The Contractor shall use a qualified subcontractor for this work. The subcontractor must have had at least five (5) years of experience in the design, fabrication, and installation of hydraulic systems of this size and type. The Contractor shall use Certified Fluid Power Technicians or Certified Fluid Power Specialists with prior experience on similar applications for piping and flushing. The Contractor shall submit the certification number and

experience for review. The Contractor shall use only personnel with demonstrated skill in this type of work for installation and adjustment of hydraulic components.

907-852.03.19--Painting of Rear Locks. The Contractor shall clean and paint all unfinished, non-stainless surfaces of rear locks and equipment in accordance with the epoxy paint system specified for COATING EXISTING STRUCTURAL, except as noted herein and as shown on the plans. The Contractor shall apply the finish coat in the shop. The Contractor shall apply field touch-up paint to shop applied coatings that are damaged during construction and installation.

After completing the operating tests and acceptance of the rear locks, the Contractor shall wash with an appropriate solvent all accumulated oil, grease, dirt, and other foreign matter from exposed rear lock surfaces, except rubbing surfaces. The Contractor shall apply to the exposed surfaces a final field coat. The Contractor shall paint rear lock surfaces with the final field coat in the colors selected by the Department. The Contractor shall provide color samples for the Department to select these colors.

907-852.03.20--Protection for Shipment. The Contractor shall coat all finished metal surfaces as soon as practical, after machining, with an approved rust-inhibiting compound. The Contractor shall completely protect rear locks parts from weather, dirt and foreign materials during manufacture and store indoors while awaiting erection. Assembled units, including bearings, operators and other devices having finished mounting surfaces will have those surfaces thoroughly coated with rust-inhibitor and shall be skidded or crated for protection during handling, shipment and storage. The Contractor shall bag mounting hardware and other small parts for shipment. The Contractor shall provide and secure tags, recording the part number, to each part with wire or plastic ties prior to shipment.

907-852.03.21--The Contractor shall submittals. The Contractor shall submit fully detailed shop drawings of all equipment. The Contractor shall fully dimension shop drawings and indicate adjustment tolerances, fits, finish, profiles, sizes, fasteners and accessories. The Contractor shall submit shop drawings indicating fits, finishes, profiles, sizes, weldments, castings, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. The Contractor shall include erection drawings, erection tolerances, elevations, rear lock power unit layout with component configuration, and details where applicable. Indicate welded connections using standard AWS welding symbols. The Contractor shall submit a proposed procedure for the installation of rear locks. The Contractor shall provide Manufacturer's literature covering installation and maintenance procedures for lock assembly components.

907-852.03.22--Rear Lock Hydraulic Drive System. The Contractor shall submit a complete system schematic with component reference numbers matching reference numbers on the plans. The Contractor shall provide a Bill of Materials for all components of the rear lock hydraulic equipment including a table of contents and Manufacturer's data cuts on all system components. The Contractor shall provide a Bill of Materials that includes, but is not limited to: cylinders, cylinder attachments, HPUs and hydraulic oil. The Contractor shall submit all hydraulic equipment component data to the Engineer for approval prior to fabrication. The Contractor

shall submit supporting details for any HPU item proposed to be custom fabricated. The Contractor shall match reference numbers for the Bill of Materials with those shown in the schematics of the plans. The Contractor shall clearly indicate initial values for all adjustable components on the system schematic. The Contractor shall indicate dimensions and placement of all system components on HPU layout. The Contractor shall provide a layout that details clearances between the HPU and adjacent structures, and equipment.

The Contractor shall submit shop drawings detailing the dimensions of the supporting structures and the procedure for the alignment of the cylinder supports and a full installation procedure. The Contractor shall submit for approval in shop drawing format the method to be used to locate the components. The Contractor shall submit all procedures to the Engineer for review prior to the start of the work. The Contractor shall provide names and certification numbers (Certified Fluid Power Technician, Specialist, or Engineer) of individuals proposed for hydraulic installation and startup. Material data cuts for all plumbing and support devices including piping, tubing, flexible hose, hose ends, fittings, pipe and tube support devices, and all related hardware required for installation shall be included. Factors of safety as required of these special provisions or the plans apply to all hydraulic plumbing. The Contractor shall submit material and painting procedures, including color identifications, surface preparation procedures and product specifications.

907-852.04--Method of Measurement. Rear Locks will be measure on a lump sum quantity. No separate measurement will be made for shop drawings, realignment or delivery of spare parts.

907-852.05--Basis of Payment. Rear Locks, measured as prescribed above, will be paid for at the contract lump sum price, which price shall be full compensation for all labor, material, spare parts, equipment, etc. and incidentals necessary to complete the work.

Payment will be made under:

907-852-A: Rear Locks - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-853-1 **CODE: (SP)**

DATE: 3/9/2012

SUBJECT: Electrical Work

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-853, Electrical Work is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-853 – ELECTRICAL WORK

907-853.01--Description. This special provision describes furnishing labor, tools, equipment and materials necessary for the manufacture, installation, finishing, testing, and making fully operational the electrical components and systems for the bascule span bridge. All additional special provisions provide further information, requirements, and guidelines that are applicable to the work paid for under the bid items addressed by this special provision.

Comply with all local codes, all laws applying to electrical installations in effect and with the regulations of the latest National Electrical Code, where such regulations do not conflict with the laws in effect and with the requirements of the utility company.

It is the intention of the contract plans to call for completely finished work, fully tested and ready for reliable and consistent operation. Furnish, deliver, and install any apparatus, appliance, materials, or work not shown on the plans but mentioned in the special provisions or vice versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, to be furnished, delivered, and installed without additional expense to the department.

907-853.01.1--Scope. The work under this item includes the following:

- Conduit, junction boxes, hand holes and wiring required for installation of all control cabinets, motors, brakes, rear locks, limits, gates, barriers, traffic signals, roadway lighting, CCTV, auxiliary equipment and bridge amenities (i.e. furnace, etc.) that require electrical connections.
- Lights and receptacles in bridge house, machinery rooms and on/in the bascule piers.
- Motor Disconnects and misc. electrical equipment not specified in other special provisions.
- Lighting transformer and Panelboards

907-853.01.2--Related Provisions. Unless otherwise noted, work under this special provision conform to the requirements of the following special provisions:

- Electrical Work

- Electrical Service
- Auxiliary Electrical Equipment
- Control Console
- Motor Control Center
- PLC Cabinet and Programming
- Span Drives
- Limits and Sensors
- Submarine Cable
- Lightning and Surge Protection
- Training, Manual and Spare Parts

907-853.01.3--Coordination of Electrical Work. The contract documents are diagrammatic in showing certain physical relationships which must be arranged within the electrical work, and which must interface with other work including utilities and mechanical work. Coordinate electrical work with the work of other trades to eliminate conflicts. Advise other trades of openings required in their work for the subsequent move-in of large units of electrical equipment.

Schedule and arrange electrical work in a neat, well organized manner.

Locate operating and control equipment to provide easy access, and arrange entire electrical work with adequate access for operation and maintenance, as per the latest NEC requirements.

907-853.01.4--Electrical Journeymen.

907-853.01.4.1--Designation of Electrical Journeymen. Provide a listing of pre-qualified electrical journeymen to perform the electrical work in accordance with this special provision. Perform all work either by, or under the immediate supervision of an electrical journeyman. For this project, "under the immediate supervision" is defined to mean that the journeyman is in the immediate vicinity and physically involved in performing the electrical work. It is the intention of this special provision that the journeyman's knowledge, talents, and skills in performing certain critical work will be judged and approved by the engineer and that the journeyman will do the actual work utilizing those talents and skills. Helpers are expected to aid the journeyman in the performance of the work and not to act as non-credentialed surrogates of a remote journeyman. Non-approved helpers may only perform tasks of a support nature that do not directly involve responsibility for the installation, connection, or adjustment of electrical materials.

907-853.01.4.2--Qualification of Electrical Journeymen. Each electrical journeyman must hold, at a minimum, an active journeyman electrician's license and have at least five (5) years of experience in industrial electrical work. The journeyman must also have knowledge and experience on emergency power systems and other electrical devices required to operate the movable bridges. Each journeyman must be pre-approved by the engineer based on submitted documentation of licensing, training and experience history. The engineer might also require a demonstration of knowledge of the tool and technique requirements of specialty electrical work

to be performed including, but not limited to: conductor pulling, termination, testing, conduit and device mounting before the journeyman will be permitted to perform such specialty work.

907-853.02--Materials. Provide all new materials that conform to the standards of the Underwriters Laboratories, Inc., in every case where such a standard has been established for the particular type of materials in question. Submit to the engineer for approval, prior to purchase of any materials or equipment required to be furnished and installed, a complete list of all such materials and equipment including manufacturer's catalog (part and/or model) numbers, catalog data sheets, illustrations, and shop drawings.

907-853.02.1--General. In addition to the standard specifications, provide and install all equipment in accordance with the applicable requirements of the following:

- AASHTO Standard Specifications for Movable Highway Bridges
- NFPA 70, National Electrical Code
- NFPA 79, Electrical Standard for Industrial Machinery

Ensure that equipment and its installation present a neat and attractive appearance. Use new heavy-duty industrial design, equivalent to the best grade of the particular type of equipment made by the leading manufacturers of such equipment.

Furnish new equipment that is compatible with all other associated equipment in the system. Ensure that all items furnished perform the function indicated on the approved drawings and as required by the design.

Equipment sizes and space shown on design drawings are approximate. Ensure that all required electrical equipment components can be adequately located in the operator's house and elsewhere on the project as required.

Provide the department a written warranty for operation of the bridge and for all of the components furnished under this work, to cover a period of one year after Substantial Completion as described in article "Control of the Work". Have normal manufacturer warranties extended to cover parts and labor for this period.

907-853.02.2--Disconnect Switches. Furnish and install heavy-duty disconnect switches having electrical characteristics, ratings, and modifications shown on the drawings. Furnish and install fuses for fused disconnect switches. Provide fuses and switches conforming to the following:

- UL 248-1-Low Voltage Fuses- Part 1: General Requirements
- UL 248-12- Low Voltage Fuses- Part 12: Class R Fuses.
- FS W-F-870 - Fuse Holders and Fuse Clips (For Plug and Enclosed Cartridge Fuses).
- FS W-S-865 - Switch, Box, (Enclosed), Surface-Mounted.
- NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600V).

Provide the following:

- NEMA Type 4X (stainless steel) enclosures in the machinery room.
- NEMA 12 units in the operator room, entry level and utility rooms.
- Metal front cover mounted factory nameplates that contain a permanent record of switch type, catalog number, and HP rating.
- Pad-lockable handles with easily recognizable positions are required.
- Switches that include visible blades, reinforced fuse clips, and non-teasible positive quick make-quick break mechanisms.
- Switch assemblies and operating handles that are an integral part of the enclosure base.
- Switches that are HP rated and meet Federal and NEMA Specifications.
- Switches that have defeatable door interlocks that prevent the door from opening when the operating handle is in the ON position.
- Heavy duty switches with line terminal shields.
- Fusible switch assemblies of NEMA KS 1 construction with quick-make, quick-break load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position and Handle lockable in OFF position. Furnish fuse clips designed to accommodate Class R fuses.
- Non-fusible switch assemblies of NEMA KS 1 construction Type HD with quick-make, quick-break load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position and Handle lockable in OFF position. One N.C. (normally closed) and one N.O. (normally open) set of auxiliary contacts is required.
- Fuses that are time delay, current-limiting type with 200KA interrupting rating at 600 VAC. Rejection type are required that are, UL listed to minimize short circuit damage. Use UL Class RK1 for service entrance, transformer feeder and panelboard feeder. Use UL Class RK5 for motor branch circuit.

907-853.02.3--Wiring Devices.

907-853.02.3.1--General Requirements. Conform to UL 943- Ground-Fault Interrupters.

907-853.02.3.2--Toggle Switches. Toggle switches are to be heavy-duty use, totally enclosed type with bodies and, handles of thermosetting plastic, supported on a metal mounting strap. Provide wiring terminals of the screw type, side-wired. Back-wired, clamp-type terminals are not allowable. Use switches with snap type with toggle handle, rated quiet type, AC only, 20 A, 120/277 VAC, single pole. Use three-way switches as shown in plans. Install with OFF position down.

907-853.02.3.3--Receptacles. Receptacles are to be heavy-duty use, specification grade, duplex 3-wire , NEMA 5-20R grounding type rated 20 A and 125 VAC. Provide bodies with thermosetting plastic composition, supported on a metal mounting strap. Use receptacles with side-wired with binding-type terminals. Back-wired, clamp-type terminals are not allowable. Use grounded pole type that is connected to the mounting strap.

907-853.02.3.4--Ground Fault Circuit Interrupter (GFCI) Receptacles. Provide GFCI duplex receptacles that are heavy-duty jufeed-through type, convenience receptacle with integral

ground fault current interrupter. Provide GFCIs that are rated at 125 VAC and 20 A and capable of detecting a current leak of five (5) mA. Receptacles shall be connected to protect the local load without disruption of the rest of the circuits.

907-853.02.4--Lighting.

907-853.02.4.1--General Requirements. Construct, wire, and install all luminaries in compliance with all applicable national, state and local codes. Unless otherwise specified, each luminaire shall be listed by the Underwriters' Laboratories as suitable for application and location shown and conform to any additional regulations necessary to obtain approval for use in locations shown. If Underwriters' Laboratories listing of luminaire is waived, all electrical components shall be UL recognized. Include provision for thru-branch circuit wiring for all recessed incandescent and high intensity discharge luminaires shall include provision for thru-branch circuit wiring. Provide internal wiring of luminaires with a minimum number of splices and make all splices with approved connectors. Ensure wiring and connectors are suitable for the current, voltage and temperature to which they will be subjected.

Construct luminaires with the minimum possible number of joints. Make joints only by means of approved welded, brazed, screwed, or bolted construction methods. Soldered joints are not acceptable. No self-tapping screws, bled metal tapping methods, or rivets shall be employed for fastening any parts which must be removed to gain access to electrical components requiring service or replacement, or for fastening any electrical component or support for same. Manufacture ferrous metal parts and supports of luminaires other than parts manufactured of stainless steel completely rustproofed after fabrication and before finishing coatings are applied, by treatment with an approved rust-preventing process. Pre-treated sheet steel shall not be accepted unless treated as above. Provide mounting frames and all screws, bolts, nuts, and other fastening and latching hardware of stainless steel, unless otherwise specified.

Final finish shall be uniform, even in appearance, free from runs and surface imperfections. Luminaires for use at wet or damp locations must be suitably gasketed to prevent access of moisture into electrical components or enclosing diffusers, lenses, or globes.

Unpainted aluminum parts of luminaires must be anodized with coating of sufficient weight to protect against corrosion. Anodize visible surfaces and trim with minimum coating of 35 mg. per square inch.

Where stainless steel or non-ferrous metal surfaces (other than reflectors) are to remain unpainted, or where steel surfaces are to be electroplated, unless otherwise specified, coat with a baked-on clear lacquer. Reflectors must be free of ripples, tool marks and other surface imperfections.

Provide sockets for all luminaires suitable for the specified lamps and set so that lamps are positioned in an optically correct relationship to lenses, reflectors, baffles, etc. Ensure lenses, diffusers or louvers contained in frames are removable, but positively held within the frame so that hinging or other motion of the frame will not cause the diffusing element to drop out. Face

trims fabricated in pieces for rectangular or square luminaires must have mitered corners, continuously welded and smoothed before finishing. Lapping of trim metal is not acceptable.

Provide glass used for lenses, refractors, or diffusers of water-white crystal quality and provide minimum 88 percent light transmittance. Unless otherwise specified, equip glass for incandescent and H.I.D. luminaire of borosilicate or aluminosilicate, tempered for high impact and high heat resistance.

Unless otherwise specified, fabricate plastic lenses or diffusers of virgin, clear material, cast, molded or extruded. The material shall provide minimum 88 percent light transmittance and maximum five (5) percent haze factor. If not specified, the thickness shall be sufficient to prevent sagging, warping or other deflection under luminaire operating conditions.

Provide fluorescent fixtures with hinged frames with stainless steel latches, and 1/8-inch thick virgin acrylic lenses. Provide each industrial type open-tube fluorescent fixture with spring loaded telescoping sockets or lamp retainers (two per lamp). Construct fluorescent fixture housings so that all electrical components are easily accessible and replaceable without removing the fixture body from its mountings. Provide fluorescent Lamps of warm white, all by same manufacturer. Ensure fluorescent ballasts meet the requirements of ANSI C82.1 and are high power factor type. Ballasts must be labeled Certified Ballast Manufacturers (CBM) certified by Electrical Testing Laboratories (ETI). Provide ballasts of Class P with a sound rating "A."

Provide exterior fixtures, accessories, and enclosures complete with gaskets to form weatherproof assembly.

Provide hermetically sealed cadmium sulfide photocell rated for the system voltage with single throw contacts rated 1,000 watts. The unit shall turn ON below three (3) footcandles and OFF at 3 to 10 footcandles. Provide a time delay to prevent accidental switching from transient light sources. Mount a directional lens in front of the cell to prevent fixed light sources from creating a turn-off condition. Aim the unit according to manufacturer's instructions.

Provide self-contained incandescent emergency lighting units with rechargeable storage batteries, charger, and lamps. Equip each unit with an automatic power failure device, test switch, pilot light, and fully automatic high/low trickle charger. Provide sealed wet-cell type batteries, with 1.5 hour capacity to supply the connected lamp load, operate unattended, and be maintenance-free for a period of not less than 10 years. Emergency lighting units shall be rated for 12 V, except units having no more than two (2) unit-mounted lamps may be rated 6 V. Provide dual-rate charger, capable of maintaining the battery in a full-charge state during normal conditions, and capable of recharging discharged battery to full charge within 12 hours. Lamps shall be 12 watts minimum, sealed beam type in plastic housing. Unit shall have plastic enclosure. Provide lamps to indicate AC ON and RECHARGING. Provide TEST switch.

907-853.02.5--Boxes.

907-853.02.5.1--Control Panels & Cabinets. Furnish and install NEMA 12 enclosures for all enclosures located in each Operator's house or as noted in plans. Wall mounted enclosures must

be a minimum of 14 gauge sheet steel. Free standing enclosures must be a minimum of 12 gauge sheet steel. Provide enclosures with data pockets, 3 point latches and a continuous hinge. Provide back panels on all enclosures and side panels if required.

Furnish and install NEMA 4X stainless steel enclosures for all locations other than the operator's room, entry level or utility room. Wall mounted enclosures must be a minimum of 14 gauge 304 stainless steel. Free standing enclosures must be a minimum of 12 gauge stainless steel. Provide enclosures with heavy duty three-point latching mechanism. Provide enclosures with data pockets, three-point latches and a continuous hinge. Provide back panels on all enclosures and side panels if required.

Install all electrical equipment in each cabinet on sheet steel back or side panels. The components will be front connected, front wired and removable from the front. Arrange the equipment in a systematic and neat arrangement that allows for ease of maintenance.

Provide all control cabinets with a door operated fluorescent light and a convenience receptacle. The power for these devices will be separate from control power. Provide an individual 5 A circuit breaker in each cabinet to isolate and protect the circuit.

907-853.02.5.2--Device Boxes. Provide wall-mounted boxes for wiring devices (toggle switches, duplex receptacle, GFCI) that are cast metal. Provide drain holes in the boxes. Provide all boxes with mounting lugs and securely fasten them to the structure with not less than four bronze or monel metal through-bolts.

Boss, drill, and tap for threaded conduit ends, which enter squarely, all cast iron boxes Fabricate from hot-dip galvanized structural steel Type A36 not less than 3/8-inch thick framework for supporting boxes, switches, and other externally mounted electrical devices.

Use brass, monel metal, or stainless steel for all mounting bolts, nuts, washers, and other hardware used for fastening boxes, disconnect switches, devices, lighting outlet boxes, conduit clamps, and similar devices. Use hexagonal bolt heads and nuts, and do not use bolts smaller than 3/8 inch in diameter except as may be necessary to fit the mounting holes in small devices, outlet boxes, and similar standard equipment.

907-853.02.5.3--Boxes and Enclosures. All pull boxes, junction boxes, and all enclosures, panels and cabinets, and all other miscellaneous housings used for pulling wires, terminating wires, or otherwise used to install electrical equipment must conform to the following requirements unless specifically stated elsewhere. For all locations, provide 4X (stainless steel) enclosures that are UL-listed for the application. If unavailable, then NEMA 4 rating may be substituted. Specify all mounting hardware material for Supporting Devices. Specify construction requirements device boxes. Provide sheet metal enclosures with "O-ring" sealing hub connectors. Equip the conduit ends projecting into all boxes and enclosures with insulated bushings. Drill no box or enclosure for more conduits than actually enter it. Use of wireways (metallic or non-metallic) and/or sheet metal troughs with hinged or removable covers are acceptable provided their use is limited and locations are approved by the engineer. Comply with the 40 percent fill allowance per NEC.

907-853.02.5.4--Boxes and Enclosures. Use hand-holes that conform to the standard specifications.

907-853.02.6--Terminal Blocks. Provide terminal blocks for any conductor that enters or leaves a cabinet or junction box. Provide spring clamp style terminal blocks for conductors 10 AWG and smaller. Use terminal blocks rated at a minimum 600 Volts, 30 A. Provide terminal blocks with a minimum of three (3) conductors with field side of terminal blocks utilizing two (2) conductors. Use terminal blocks fabricated from Allen Bradley, Wago, Phoenix or approved equal.

Use manufacturer accessories for jumpers, end barriers, clamps and wire markers. All terminal block markers will be printed. Hand marked terminals will not be accepted.

907-853.02.7--Electrical Identification.

907-853.02.7.1--Cabinets. Provide legend nameplates for all major pieces of equipment named on the plans, and for all control devices. Provide a plastic laminated engraved nameplate mounted with stainless steel screws for each device. Mark devices as indicated on electrical schematics, for fuses and breakers, include the amperage or fuse part number. Use white nameplates with black lettering. Taped labels can be used on the inside of the console top to identify the selector switches, pushbuttons lights and etc.

Provide nameplates for equipment identification with minimum letter height of 3/16 inch. Use a minimum ¼-inch high nameplates for the console top. Use 1/16-inch minimum thickness plastic nameplates.

Degrease and clean surfaces to receive nameplates. Install nameplates parallel to equipment lines. Secure nameplates to equipment fronts using stainless steel screws or approved manufacturer's recommended adhesive. Secure nameplates to inside of recessed panelboard doors in finished locations.

907-853.02.7.2--Conduit Markers. Provide adequate marking of primary conduits, which are exposed or concealed, in accessible spaces, to distinguish each run as either a power or signal/communication conduit. Use orange banding with black lettering except as otherwise indicated. Provide snap-on type plastic markers. Indicate voltage ratings of conductors where above 240 VAC. Locate markers at both ends of conduit runs, near switches and other control devices, near items of equipment served by the conductors, at points where conduits pass through walls, floors or into non-accessible construction, and at spacing of not more than 50 feet along each run of exposed conduit. Switch-leg conduit and short branches for power connections need not be marked, except where conduit is larger than one (1) inch. Both ends of each marked conduit run shall be provided with a brass tag having a number stamped thereon in accordance with the conduit diagrams. These tags shall be securely and permanently fastened to the conduit ends with bare copper wire.

907-853.02.7.3--Console. Provide plastic laminated engraved nameplates for the top of the console. For new consoles, provide black lettering on white background plastic laminated engraved nameplates for the top of the console.

Secure nameplates not secured by a pushbutton or indicator light with stainless steel screws. Adhesive backed nameplates as the only means of securing nameplates will not be allowed.

Provide nameplates for equipment identification with minimum letter height of 3/16 inch. Use a minimum ¼-inch high nameplates for the console top. Use 1/16-inch minimum thickness plastic nameplates.

907-853.02.7.4--Wire and Cable Markers. Provide wire and cable markers that are vinyl cloth, split sleeve, or tubing type. Wire numbers printed on wire insulation are not acceptable.

907-853.02.8--Supporting Devices.

907-853.02.8.1--General. Conduit and equipment supports and anchors and fasteners.

- NECA - National Electrical Contractors Association.
- ANSI/NFPA 70 - National Electrical Code.
- UL - Underwriter Laboratories, Inc.

907-853.02.8.2--Manufacturer's Instructions. Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

907-853.02.8.3--Regulatory Requirements. Conform to requirements of ANSI/NFPA 70. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

907-853.02.8.4--Material Requirements. Provide adequate corrosion resistance. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products. Minimum safety factor is 2.0. Framework for supporting boxes, switches, and other externally mounted electrical devices shall be hot-dip galvanized steel. For U-Channel strut systems utilizing bolted construction, all components shall be of the same manufacturer, and shall be 12 gauge and 1-5/8-inch width minimum.

907-853.02.9--Conduit and Wiring.

907-853.02.9.1--General. Furnish and install conduit and raceways in the quantities and sizes required to complete the work as shown on the plans and as required by NEC. Conduit and circuits indicated on plans diagrams and schedule may be recombined in the field where appropriate, with the approval of the engineer. Section Includes: metal conduit, non-metallic conduit, liquidtight flexible metal conduit, and fittings and conduit bodies.

Use rigid galvanized steel conduit for conduit in the utility, entry and operator level rooms. Use of thinwall EMT is allowed for lighting and receptacle circuits that are installed behind finished drywall. Use PVC coated rigid galvanized steel conduit for all exterior conduit that is located outside the three rooms listed above. Use PVC schedule 40 for concrete embedded and installed in a trench, unless the conduit is under a roadway, then use Schedule 80.

907-853.02.9.2--Conduit drawings. Before the initial start of construction, submit a full size drawing showing all conduit runs between all pieces of equipment for review and approval. Provide "as-built" drawing for riser diagrams and schedules.

907-853.02.9.3--Definitions:

- Conduit: Pipe that has been treated, threaded, and classified to be suitable for use as an electrical raceway.
- Conduit Body: Fitting with removable cover to allow pulling conductors and which may also provide means for making a tight turn or "tee" connection in conduit.
- Fitting: Accessory component for joining conduit (coupling), connecting conduit to box or enclosure (connector or hub), or providing other functions (such as expansion fitting).

907-853.02.9.4--Conform to the following:

- NEMA/ANSI C80.1 - Rigid Steel Conduit - Zinc Coated (GCR).
- NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- NEMA RN 1 - Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
- NEMA TC 2 - Electrical Polyvinyl-Chloride (PVC) Tubing and Conduit.
- NEMA TC 3 - PVC Fittings for use with Rigid PVC Conduit and Tubing.
- NEMA TC 14 - Filament-Wound Reinforced Thermosetting Resin Conduit.
- UL 651 - Schedule 40 and 80 Rigid PVC Conduit.
- NCEA 101 - Standard Practice for Good Workmanship in Electrical Construction.
- NEMA VE 2 - Metal Cable Tray Installation Guidelines.
- UL 1684 - Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
- UL 514B - Fittings for Cable and Conduit.
- UL 360 - Liquid-Tight Flexible Steel Conduit.
- UL 6 - Rigid Metal Conduit.

907-853.02.9.5--Conduit Requirements:

- Minimum Size: ¾ inch minimum trade size for rigid and PVC, unless otherwise specified. ½ inch for EMT.
- PVC Coated Metal Conduit Description: NEMA RN 1; rigid steel conduit (ANSI C80.1) with external PVC coating, 40 mil thick. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with external PVC coating to match conduit.

- Liquidtight Flexible Metal Conduit Description: UL 360; Interlocked steel construction with PVC jacket. Fittings: NEMA FB 1.
- Non-metallic conduit description: NEMA TC 2, schedule 80 (UL 651). PVC fittings NEMA TC 3 to match conduit. Embedded in concrete use only.

907-853.02.10--Conductors.

907-853.02.10.1--General. For building wire and cable, wiring connectors and connections, and flexible cable,
Conform to the following:

- ANSI/NFPA 70 - National Electrical Code.
- ASTM B3/ANSI C7.1 - Standard Specifications for Soft or Annealed Copper Wire.
- UL 83 - Thermoplastic-Insulated Wires and Cable.
- UL 44 - Thermoset-Insulated Wires and Cable.
- UL 854 - Service Entrance Cables.
- UL 1063 - Machine-Tool Wire and Cables.
- UL 1685 - Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical Cables.
- Conform to requirements of ANSI/NFPA 70. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

907-853.02.10.2--Project Conditions. Verify that field measurements are as shown on plans. Wire and cable routing shown on plans is approximate unless dimensioned. Route wire and cable as required to meet project conditions. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required. Determine required separation between cable and other work. Determine cable routing to avoid interference with other work.

907-853.02.10.3--Building Wire and Cable. No aluminum or solid copper conductors allowed. For single conductor insulated wire use no wire smaller than No. 12 AWG for power and lighting circuits and no smaller than No. 14 AWG for control wiring, except that control wiring within a cabinet may be No. 16 AWG. Minimum field wire size is No. 12 AWG for control and No. 10 AWG for motor loads. Use minimum No. 10 AWG for 20 A, 120 VAC, branch circuit home runs longer than 75 feet, and for 20 A, 208/240/277 VAC, branch circuit home runs longer than 200 feet.

Furnish insulated conductors of seven or nineteen strand copper, minimum 98 percent conductivity and connector accessories for copper in sufficient quantities for a complete installation. Use twisted shielded pairs in cases of low level audio or digital signal when required. Provide XHNW, THHW/THWN-MTW insulation rated 600 VAC unless otherwise noted. Provide type SE, USE-2, RHW-2 or RHW insulation for incoming conductors, unless otherwise noted. All field wiring shall be rated 90 ºC.

907-853.02.11--Lighting Transformer. Provide transformers with proven 220 °C, UL tested insulation system. Wind coils with copper. Insulate material with proven, high temperature resistant 220 °C material. Insure all materials in the transformer are flame retardant and do not

support combustion as defined in ASTM Standard Test Method D635. Provide final insulation treatment by total immersion in a 220 °C insulating varnish that maintains superior bond strength, high dielectric strength, and outstanding power factors at temperatures normally associated with 220 °C system. After immersion, cure the varnish thoroughly at normal operating temperatures to assure the scourging of all volatiles in the varnish solvent.

Construct transformers with core materials of high quality and low loss characteristics to minimize exciting currents, no-load loss, and interlaminar vibrations. Incorporate built-in vibration dampening systems to minimize and isolate sound transmission. Mechanically brace the core-coil assembly to withstand short circuit tests as defined in NEMA TR-27. Coil construction and mechanical bracing members must prevent mechanical degradation of the insulation structure during short circuit.

Provide self-bracing transformer enclosure and provide drip-proof and rodent-proof protection. Include convenient knockouts for conduit entrance. Locate terminal compartment in bottom of transformer, below the core-coil assembly, for side or bottom conduit entrance. Temperature rise in terminal compartment must not exceed 5 °C above ambient. Run line and load conductors in separate conduits.

Provide transformers with two 22 percent full capacity taps above rated voltage and two 22 percent full capacity taps below rated voltage. Minimum basic impulse level (BIL) allowed is 10 kV. Ground core and coil assembly to enclosure by means of a visible flexible copper grounding strap. Provide transformers 75 kVA and less, suitable for wall, floor, or trapeze mounting; transformers larger than 75 kVA shall be suitable for floor or trapeze mounting. Provide continuous winding coils with terminations brazed or welded. Include transformer connection data and overload capacity based on rated allowable temperature rise on the factory nameplate.

Conduct the following tests at the factory:

- Applied voltage test (one minute) 4 kV.
- Induced voltage test - two times normal for 7,200 cycles.
- Ratio and phase relation.

Test reports on electrically duplicated units must certify that the following tests have been completed on the first rating of any design:

- No load losses.
- Induced voltage.
- Total losses.
- Sound level.
- Applied voltage.
- Impulse test.
- Temperature rise.

Submit three (3) copies of test results to the engineer for approval.

907-853.02.12--Panelboards. Furnish and install, where indicated, a dead-front panelboard incorporating switching and protective devices of the number, rating, and type noted herein or shown on the Plans. Panelboards shall be circuit breaker equipped. Panelboards shall have general purpose enclosures and shall be surface mounted except where noted. All panelboards shall be rated for the intended voltage and shall be in accordance with the Underwriters' Laboratories, Inc. "Standard for Panelboards" and "Standard for Cabinets and Boxes" and shall be so labeled where procedures exist. Where panelboards are to be used as service entrance equipment, they shall be so labeled. Panelboards shall also comply with NEMA Standard for Panelboards, National Electric Code, and Federal Specification 115a (Power Distribution Panels) where applicable. Manufacturer shall be a company specializing in manufacturing the product specified with a minimum of five (5) years documented experience.

Factory-assemble interiors with switching and protective devices, wire connectors, etc. All terminals shall be suitable for copper wire of the sizes indicated. Interiors shall be so designed that switching and protective devices can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling, or tapping. Arrange branch circuits using double row construction. Provide a factory nameplate listing panel type and ratings. Bus bars for the mains shall be copper and sized in accordance with UL standards. Unless otherwise noted, full size neutral bars shall be included. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of the branch circuit devices. The short circuit rating of the assembled panelboard shall be in accordance with UL standards and their test verification. Phase bussing shall be full height without reduction. Cross and center connectors shall be copper. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection. Spaces for future switching and protective devices shall be bussed for the maximum device that can be fitted into them.

Provide boxes made from galvanized code gauge steel of sufficient size to provide a minimum gutter space of six inches on all sides. Where feeder cables supplying the mains of a panel are carried through its box to supply other electrical equipment, size the box to include this wiring space. This wiring space shall be in addition to the minimum gutter space specified above and the limiting width may be increased accordingly. Provide a minimum of four (4) interior mounting studs.

Include hinged doors covering all switching device handles in all panel trims, except that panelboards having individual metal clad externally operable deadfront units may be supplied without such doors. In making switching device handles accessible, doors shall not uncover any live parts. Provide doors with a cylinder lock and catch. Key all locks alike. Furnish a directory frame and card having a transparent cover on each door. Fabricate the trim from code gauge sheet steel. Clean and finish all exterior and interior steel surfaces of the panelboard trim with gray ANSI-61 paint over a rust-inhibiting phosphatized coating. For flush panels overlap trim for the box by at least ¾ inch all around.

Protect electrical circuits with molded case circuit breakers with inverse time delay and instantaneous circuit protection. Operate the breakers with a toggle type handle with a quick-make, quick-break, over-center switching mechanism that is mechanically trip free from the handle. Include provisions so that the contacts cannot be held closed against short circuits and

abnormal currents. Tripping because of overload or short circuit shall be shown by the handle automatically assuming a position midway between the manual ON and OFF positions. Ground and polish all latch surfaces. Plug-in type circuit breakers are not acceptable. Breakers must be completely enclosed in a molded case, bolt-on type construction. For non-interchangeable trip breakers seal their covers; for interchangeable trip breakers seal the trip unit sealed to prevent tampering. Provide non-welding silver alloy contacts with Arc chutes, consisting of metal grids mounted in an insulating support.

Circuit breakers shall conform to the applicable requirements of NEMA Standards, and meet the appropriate classifications of Federal Specifications W-C-375b. Provide molded case breakers of the following types: Thermal magnetic standard type that provides inverse time delay overload and instantaneous short circuit protection by a thermal-magnetic element; or magnetic only standard (Motor Circuit Protector) that provides instantaneous short circuit protection by a front adjustable magnetic element with supplemental thermal overload protection. The adjustment button(s) shall have main setting points and mid-setting points following a linear scale so that each point has a significant value within calibration tolerance.

Provide multi-pole breakers with a single operating handle that is independently removable without disturbing adjacent units or other bus connections and is fastened to the main bus bars with a bolted connection. Plate all copper parts to prevent corrosion. Provide 100 A frame breakers with an interrupting rating of 10,000 A (minimum). Provide larger frame size breakers with an interrupting rating of 22,000 A (minimum).

907-853.03--Construction Requirements.

907-853.03.1--General.

907-853.03.1.1--Codes. Comply with all local codes, all laws applying to electrical installations in effect and with the regulations of the latest edition of the National Electrical Code, where such regulations do not conflict with the laws in effect and with the requirements of the utility company.

907-853.03.1.2--Protection of Electrical Equipment . Protect electrical equipment from water damage, especially from rain, snow, condensation, and water dripping or splashing on equipment and wiring, at all times during shipment, storage and construction (prior to final acceptance). Provide temporary electrical connections to equipment heaters, or provide temporary heaters, as required to prevent damage from moisture.

Thoroughly dry out and put through a special dielectric tests as directed by the engineer at no cost to the department, or replace if not tested to the satisfaction of the engineer, any apparatus that has been subjected to possible injury by water or dampness (including the interiors of motor control equipment, submarine cable ends, or any other electrical devices).

907-853.03.1.3--Coordination of Electrical Work. The plans are diagrammatic in showing certain physical relationships which must be arranged within the electrical work, and which must interface with other work including utilities and mechanical work. Coordinate as necessary

between trades to allow for proper installation of all electrical work and to eliminate conflicts. Locate operating and control equipment to provide easy access, and arrange entire electrical work with adequate access for operation and maintenance, as per the latest NEC requirements.

907-853.03.1.4--Field Measurements and Surveys. Prior to development of submittals, conduct field surveys to verify construction dimensions. Identify field dimensions on submittals that have been field verified. Conduct field measurements and surveys as required to supplement information provided to provide a complete and satisfactory fitting and fully operational installation.

907-853.03.2--Submittals. Submit electrical equipment, hardware, drawings, testing plans, and documentation for all electrical items described in the contract documents, except for the submarine cables installation. Submarine cables installation is submitted as a separate bid item.

Submit working plans and shop drawings as prescribed in the contract documents and in this special provision. Clearly mark manufacturer's standard drawings that indicate dimensions and/or options for more than one piece of equipment to clearly indicate what data applies.

Provide a separate submittal package for this and all other electrical bid items unless otherwise indicated. Label each submittal package to indicate the project name and bid item number. Label data sheets for individual components such as motors, limit switches, etc. with the identification numbers shown in the plans and the special provisions.

Submit all components of a bid item by task (Traffic Gates, Traffic Signals, Navigational Lights & Aids, Sump Pump, etc.). Include shop drawings drawn to scale and certified by the manufacturer for all submittals for major electrical equipment. Where wiring diagrams, schematic diagrams, engraving schedules, conduit drawings, interconnection diagrams, one-line, three-line diagrams, etc. are called for or provided, they are to be site specific.

For motors, submit manufacturer's product data, installation instructions, operation and maintenance data. Include assembly drawings, bearing data with replacement sizes, and lubrication instructions. Clearly identify the locations of each motor terminal connection box relative to the bridge drive machinery. Ensure proper clearances of all components.

Submittal approval shall be on an "all or none" basis. Provide complete resubmittals even if some items on the original submittals may not have been marked deficient. Provide sufficient time in project schedule to allow for the possibility of repetitious submittals without creating delays to the project. The department will not bear any responsibilities for delays caused by repetitious submittals.

907-853.03.3--As-Built Drawings. At the completion of the project, provide complete as-built drawings. As-built drawings will be essentially the same as the working plans and shop drawings submitted for approval but showing all of the changes made during construction.

907-853.03.3.1--Working Drawings. Prepare and submit to the engineer for approval the following working drawings and documents executed in accordance with the provisions of the contract:

- A drawing to scale showing the location, depth, and length of cables, together with the proposed method of installing the cables and all equipment. Submit drawings for approval prior to placing cable and equipment orders with any manufacturer.
- Typical published test data showing physical and electrical characteristics of the proposed submarine cable insulating compound.
- Manufacturer's construction drawings of all submarine cables showing the sizes of conductors, thickness of insulation, makeup of the cable layers, type and size of jackets, armor, jute serving and other components, and the outer diameters of the finished cables.
- Detail drawings showing the construction of the submarine and terminal boxes and cabinets and all equipment and components mounted therein. Terminal and wire tagging must be shown prior to cable installation.
- Submit calculations and locations of heaters within each termination cabinet. Provide thermostats that are internal to each self-contained heater unit. Size each heater unit per the internal space of each terminal cabinet, and per heater manufacturer's recommendations.
- Provide Manufacturer's data sheets (including type, length, and minimum bending radius), certified test data, and cross section drawings for each cable. Provide manufacturer's data sheets for each type of cabinet, heater, terminal block, ground bar(s), and other devices within each cabinet. Provide detailed dimensioned drawings for termination cabinets including terminal/wire number designations, cable routing, cabinet and cable support devices and mounting details. Submit drawings showing configuration of conduits and devices entering submarine cable termination cabinets, and detailed layouts of terminal blocks within submarine cable termination cabinets. Submit details of termination cabinets, showing dimensions, segregation shields, and mounting arrangement of all equipment. Provide electrical schematics and system diagrams showing all system wiring. Provide dimensioned drawings that detail all surrounding mounting walls and structures. Where existing cables and conduit penetrations are to be re-used, provide details of how the new cables, conduits and fittings are to be installed. Where new submarine cables route through new or existing penetrations sleeves, provide details on sealing the openings.

907-853.03.4--Wiring Devices. Provide devices installed outside of control house with corrosion-resistant metal weatherproof covers. Furnish cover plates with a1 mm thick satin finished Type 302 stainless steel that fit Type FS or FD boxes without overlapping edges or corners.

907-853.03.5--Terminal Block Requirements. Provide terminal blocks with white marking strips. Group them for easy accessibility unrestricted by interference from structural members and instruments. Provide two (2) inches, minimum on each side of each terminal block to allow an orderly arrangement of all leads to be terminated on the block. Do not terminate more than two wires on any one terminal position. Permanently label each terminal block, device, fuse block, and both ends of each conductor to coincide with the identification indicated on the manufacturer's wiring diagrams.

907-853.03.6--Electrical Identification (Nameplates). Degrease and clean surfaces to receive nameplates and tape labels. Install nameplates and tape labels parallel to equipment lines. Secure nameplates to equipment fronts using a minimum of two (2) stainless steel screws or approved manufacturer's recommended adhesive. Secure nameplates to inside of recessed panelboard doors in finished locations.
Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit or feeder number for power and lighting circuits, and with control wire number as indicated on schematic and interconnection diagrams or equipment manufacturer's shop drawings for control wiring.

907-853.03.7--Supporting Devices. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit. Do not drill any holes in any structural steel or concrete members without approval of engineer. All mounting bolts, nuts, washers, and other hardware used for fastening boxes, disconnect switches, devices, lighting outlet boxes, conduit clamps, and similar devices shall be monel metal, bronze, or stainless steel. Use hexagonal bolt heads and nuts with spring lock washers under all nuts. Use minimum 3/8-inch diameter bolts except as may be necessary to fit the mounting holes in small devices, outlet boxes, and similar standard equipment.

Fasten hanger rods, conduit clamps, and outlet and junction boxes to structure using proper fasteners. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction. Attachment to steel or concrete shall be by stainless steel straps or hangers held at not less than two points by galvanized bolts or lag screws. Concrete inserts shall be fabricated from stainless steel. Install surface-mounted cabinets and panelboards with a minimum of four anchors. Do not use powder-actuated anchors. Do not drill or weld structural steel members.

907-853.03.8--Motors.

Megger all motors before final connection. Record these readings and submit with "as-built" drawings at time of functional testing. Coordinate motor shaft diameters and lengths with requirements for machine and service brakes. Before ordering motors, verify that the sizes and lengths of all shafts, location of conduit boxes match the requirements for the brake and mechanical equipment furnished.

907-853.03.9--Conduit and Wiring.
Unless otherwise specified in the plans, install conduit in accordance with NECA Standard Practice. Install nonmetallic conduit in accordance with manufacturer's instructions. Arrange supports to prevent misalignment during wiring installation. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers. Do not use plastic straps or plastic hangers. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits. Fasten conduit supports to building structure and surfaces under provisions of supporting devices. Attachment to steel or concrete shall be by galvanized or stainless steel straps, hangers held at

not less than two points by galvanized, stainless steel bolts, or lag screws. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary support.

Provide pull boxes or junction boxes wherever necessary to facilitate the installation of the conductors. Pull boxes are used for pulling conductors through. No splicing or terminations are permitted. Junction boxes are used for field connections of conductors. Conductors are to be connected using approved terminal blocks. Do not use condulets for pulling more than 10 conductors or for making such turns in conduit runs or for branching conductors, except for indoor wiring to lighting fixtures and receptacles. At any point where a conduit crosses an expansion joint, or where movement between adjacent sections of conduit can be expected, install a bronze or alloy expansion fitting.

Use of flexible conduit is allowed only for the connection of motors, limit switches, and other devices that must be periodically adjusted in position. Make connections between the rigid conduit system and all motors, and limit switches with flexible conduit with couplings and threaded terminal fittings. Do not exceed two (2) feet in length for flexible conduit extensions. Install flexible conduit with bonding jumpers and arrange to drain away from the device it serves.

Provide at both ends of each conduit run a brass tag having a number stamped thereon in accordance with the conduit diagrams. Secure and permanently fasten these tags to the conduit ends with bare copper wire. Run concealed in walls, ceiling, or floor conduits in the control room. Run exposed conduits in the bascule piers. Where conduits pass through the floors or walls of the control room, provide galvanized rigid conduit sleeves for free passage of the conduits. After the conduits are installed, caulk openings with an elastic compound and provide escutcheon plates on the interior walls, ceilings, and floors for airtight fits.

Arrange conduit to maintain headroom and present neat appearance. Route exposed conduit parallel and perpendicular to walls. Route conduit in and under slab from point-to-point. Maintain adequate clearance between conduit and piping. Maintain 12-inch clearance between conduit and surfaces with temperatures exceeding 104 ºF.

Connect conduit sections to each other with threaded couplings. Install conduits to be continuous and watertight between boxes or equipment. Protect conduits at all times from the entrance of water and other foreign matter by capping or well plugging overnight when the work is temporarily suspended.

Conduits mounted exteriorly on parts of the steel work must be set not less than 1½ inch clear from the supporting structure to prevent accumulation of dirt. Space parallel horizontal conduit one inch apart and securely clamp to the steel work to prevent rattling and wear. The clamps, in general, shall consist of U-bolts attached to angle or channel iron supports bolted to the members. The spacing of the clamps shall not exceed 6 feet of spacing per NEC 346 and 347 whichever is less.

Cut conduit square using saw or pipe cutter; de-burr cut ends. Bring conduit to shoulder of fittings; fasten securely. Long running threads will not be permitted. Join nonmetallic conduit

using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum. Embedded conduit stub-outs shall be provided with threaded 316 stainless steel.

Use conduit hubs to fasten conduit to sheet metal boxes. Install no more than equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2 inches. All field bends shall be long sweep, free from kinks, and of such easy curvature as to facilitate the drawing in of conductors without injury to the conductors. Make conduit runs with as few couplings as standard lengths will permit.

Avoid moisture traps; provide junction box with drain fitting at low points in conduit system. Install all conduits so that they will drain properly and provide drainage tees at low points where required. Provide suitable pull string in each empty conduit except sleeves and nipples. Use suitable caps to protect installed conduit against entrance of dirt and moisture. Carefully clean all conduits before and after installation. Upon completion of the conduit installation, clear each conduit with a tube cleaner equipped with a mandrel of a diameter not less than eighty percent of the nominal inside diameter of the conduit, and draw in the conductors. Identify conduit under provisions of the Electrical Identification section of this special provision.

907-853.03.10--Conductors. Do not splice conductors (except for "pigtail" leads and lighting circuits). Use solderless pressure connectors with insulating covers for wire splices and taps, No. 8 AWG and smaller, for lighting circuits. Make lug connections with high-pressure indent connector tools as recommended by the lug manufacturer. Use split bolt connectors for wire splices and taps, No. 6 AWG and larger, and all motor connections or other approved method.

Tape uninsulated conductors and connectors with electrical tape to 150 percent of the insulation value of conductor. Make splices and taps to carry full ampacity of conductors without perceptible temperature rise. All splices shall be waterproof. Terminate spare conductors with electrical tape.

Neatly train and lace wiring inside boxes, equipment, and panelboards. Place an equal number of conductors for each phase (three-phase system) of a circuit in same raceway or cable. Make conductor lengths for parallel circuits equal. Pull all conductors into a raceway at the same time. Use soap base wire pulling lubricant for pulling No. 4 AWG and larger wire. Tighten all connections to manufacturer's recommendations. Take precautions to avoid "sawing" through PVC conduit. Pull ropes shall be braided. Bare conductors shall not be pulled through PVC conduits. Conduit shall be swabbed with lubricant prior to pulling the conductors.

Identify wire and cable under provisions of Electrical Identification. Identify each conductor with its circuit number or other designation indicated on plans.

907-853.03.10.1--Conductor Tests. Test each circuit for continuity and short-circuits for its complete length before being connected to its load. Verify identification numbers for the entire

length of the circuit. Inspect wire and cable for physical damage and proper connection. Perform insulation testing on all power conductors.

907-853.03.10.2--Insulation Resistance Test. Perform insulation resistance test (wire-to-wire and wire-to-ground) at 1,000 VDC for one minute. Minimum insulation resistance for new cable shall be 100 mega-ohms or greater. When insulation resistance must be determined with all MCCs, panelboards, switches, and over current devices in place, the insulation resistance when tested at 500 VDC shall be no less than 50 megaohms. Test results shall be recorded and witnessed by the engineer. Submit test results to the engineer for review prior to energizing the circuit. Include a table of the test results with the "as-built" drawings with additional columns left blank for future readings to be recorded.

907-853.03.11--Panel Boards. Obey the following directives for the installation of panelboards:

- Install panelboards in accordance with NEMA PB 1.1.
- Install panelboards plumb. Install recessed panelboards flush with wall finishes.
- Height: 6 feet (1.8 m) to top of panelboard; install panelboards taller than 6 feet (1.8 m) with bottom no less than 4 inches (102 mm) above floor.
- Provide filler plates for unused spaces in panelboards.
- Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.
- Provide engraved plastic nameplates under the provisions of Article 508-4.11 Electrical Identification.
- Minimum space for five spare conduits (future).
- No 2 size breakers shall be used.
- Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the running phase loads to within 10 percent of each other. Maintain proper phasing for multi wire branch circuits.
- Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses. Take care to maintain proper phasing for multi-wire branch circuits. The engineer will witness this test.

Prior to energization of the panelboard:

- Megger check phase-to-phase and phase-to-ground insulation for proper resistance levels.
- Check panelboard electrical circuits for continuity and for short-circuits.

907-853.03.12--Incoming Bridge Power. Provide a concrete pad with retaining wall as shown in plans. Furnish a UL listed 13 terminal meter socket with room beneath for test switches that is approved by Two Rivers Water & Light. Install a 1½-inch PVC coated rigid galvanized steel conduit from the meter socket to the secondary side of the transformer. Install two PVC coated rigid galvanized steel conduits for new electrical service. Stub and cap one of the two conduits for future use.

907-853.04--Method of Measurement. Electrical Work will be measured as a lump sum quantity.

907-853.05--Basis of Payment. Electrical Work, measured as prescribed above, will be paid for at the contract lump sum price which shall be full compensation for all materials, labor, tools, equipment, testing and all incidentals necessary to complete the work.

Payment will be made under:

907-853-A: Electrical Work - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-854-3 **CODE: (SP)**

DATE: 7/11/2012

SUBJECT: Electrical Service

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-854, Electrical Service is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-854 – ELECTRICAL SERVICE

907-854.01--Description. This special provision describes furnishing labor, tools, equipment and materials necessary for the manufacture, installation, finishing, testing, and making fully operational the permanent and backup electrical service components for the bascule span bridge.

Comply with all local codes, all laws applying to electrical service installations in effect and with the regulations of the latest National Electrical Code, where such regulations do not conflict with the laws in effect and with the requirements of the utility company.

It is the intention of the contract plans to call for completely finished work, fully tested and ready for reliable and consistent operation. Furnish, deliver, and install any apparatus, appliance, materials, or work not shown on the plans but mentioned in the special provisions or vice versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, to be furnished, delivered, and installed without additional expense to the department.

907-854.01.1--Scope. The work under this item includes the following:

- Replace existing cables and messenger wire for the electric service incoming feed from the electric utility transformer pole to the service entrance equipment inside the bridge operator house. This task includes furnishing and installing 5KV rated cables, steel messenger wire, and all hardware and supports required to attach the new cables in the same manner and location as existing cables.
- Replace existing 3-phase electric service transformers inside the operator house with new dry type transformers. Transformer shall be rated at 300kva, 4.16kv-480/277V, 3-phase.
- Run, test, and perform comprehensive maintenance on the existing 250 KW, diesel, standby generator set. Provide and Install new remote control panel as described in section 854.02.4.
- Furnish and Install a new fusible service entrance disconnect switch, 400A, 600V, 3P, heavy duty.
- Test the operation of the existing Automatic Transfer Switch (ATS). Make any necessary repairs and maintenance, as needed, to ensure full operation. Furnish and replace any damaged or inoperable parts.

- Furnish and install any other parts, materials, and equipment related to electric service not mentioned above.
- Furnish and install all new cables and conduits between the transformers and the MCC as part of the Electrical Work special provision and payment.

907-854.01.2--Related Provisions. Unless otherwise noted, work under this special provision conforms to the requirements of the following special provisions:

- Electrical Work
- Auxiliary Electrical Equipment
- Control Console
- Motor Control Center
- PLC Cabinet and Programming
- Span Drives and Motors
- Limits and Sensors
- Submarine Cable
- Lightning and Surge Protection
- Training, Manual and Spare Parts

907-854.01.3--Coordination of Electrical Service. The contract documents are diagrammatic in showing certain physical relationships which must be arranged within the electrical service, and which must interface with other work including utilities and mechanical work. Coordinate electrical service with the work of other trades to eliminate conflicts. Advise other trades of openings required in their work for the subsequent move-in of large units of electrical equipment.

The Contractor shall contact and coordinate both the work required and the timing of the installation with the electric utility. Schedule any electric service outages with Mississippi Power Company at least 72 hours in advance.

All work and materials must conform to Power Company requirements and per the latest NEC Code.

907-854.02--Materials. Provide all new materials that conform to the standards of the Underwriters Laboratories, Inc., in every case where such a standard has been established for the particular type of materials in question. Submit to the engineer for approval, prior to purchase of any materials or equipment required to be furnished and installed, a complete list of all such materials and equipment including manufacturer's catalog (part and/or model) numbers, catalog data sheets, illustrations, and shop drawings.

907-854.02.1--General. In addition to the standard specifications, provide and install all equipment in accordance with the applicable requirements of the following:

- AASHTO Standard Specifications for Movable Highway Bridges
- NFPA 70, National Electrical Code
- NFPA 79, Electrical Standard for Industrial Machinery

Ensure that equipment and its installation present a neat and attractive appearance. Use new heavy-duty industrial design, equivalent to the best grade of the particular type of equipment made by the leading manufacturers of such equipment.

Furnish new equipment that is compatible with all other associated equipment in the system. Ensure that all items furnished perform the function indicated on the approved drawings and as required by the design.

Equipment sizes and space shown on design drawings are approximate. Ensure that all required electrical equipment components can be adequately located in the operator's house and elsewhere on the project as required.

Provide the department a written warranty for operation of the bridge and for all of the components furnished under this work, to cover a period of one year after Substantial Completion as described in article "Control of the Work". Have normal manufacturer warranties extended to cover parts and labor for this period.

907-854.02.2--Electric Service Cables. Furnish and install Medium Voltage rated power cable and steel messenger wire to replace incoming service cables. Conductor material shall be Copper. Cable shall be thermosetting crosslinked polyethylene insulated (XLP), shielded power cables for use in circuits not exceeding 5000 volts 100% and 133% insulation levels at conductor temperatures of 90°C for continuous normal operation, 130°C for emergency overload conditions and 250°C for short-circuit conditions. Cables are intended for power cable applications, in wet or dry locations, including conduit, duct, direct burial and aerial installation. The cable shall be rated 90 ºC wet and dry and shall be resistant to oils, chemicals, sunlight, and shall have a Type USE-2 rating. The UL listing mark, cable voltage, insulation type and ratings, as well as the cable size shall all be clearly printed on the cable in a color contrasting with the insulation color. All electric cables installed shall be color coded. Neutral wires shall be color coded white; three phase three wire runs of cable shall be color coded one black, one red, and one blue. The insulated ground wires and the equipment grounding conductor shall be green. Tape on the conductor or color striping of cables will not be acceptable in lieu of the specified color coding means.

A polyvinyl chloride jacket shall be applied overall. This jacket shall meet the requirements of Part 7 of ICEA S-97-682 and the Sunlight Resistant requirements of UL Standard 1072. The thickness of the jacket shall be as specified in Part 7 of ICEA S-97-682 and UL 1072. The minimum thickness at any point shall be not less than 80% of the specified UL thickness.

Copper Conductors shall be according to ICEA S-93-639, NEMA WC-74, and UL Listed as MV-90 per standard 1072.

Conductors shall have sufficient ampacity to carry the current for the load as calculated in accordance with NEC Article 220 and shall have adequate mechanical strength. The conductors shall not be smaller than 6 AWG.

907-854.02.3--Transformers. Furnish and install an energy efficient Medium Voltage Transformer, 300kva, 4160V-480/277V, 3-Phase, 60Hz, Copper Wound, dry type transformer in a NEMA 3R rated enclosure. Transformer shall have a 220ºC insulation system, 150ºC rise. Transformer shall meet all applicable NEMA, ANSI and IEEE Standards and shall be UL Listed and labeled. Install transformer in the same location as existing transformers to be removed.

Transformer shall be Eaton Catalog No. V46D47T33CUE3R, or approved equal.

907-854.02.4--Disconnect Switches. Furnish and install heavy-duty disconnect switches having electrical characteristics, ratings, and modifications shown on the drawings. Furnish and install fuses for fused disconnect switches. Provide fuses and switches conforming to the following:

- UL 248-1-Low Voltage Fuses- Part 1: General Requirements
- UL 248-12- Low Voltage Fuses- Part 12: Class R Fuses.
- FS W-F-870 - Fuse Holders and Fuse Clips (For Plug and Enclosed Cartridge Fuses).
- FS W-S-865 - Switch, Box, (Enclosed), Surface-Mounted.
- NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600V).

Provide the following:

- NEMA Type 4X (stainless steel) enclosures in the machinery room.
- NEMA 12 units in the operator room, entry level and utility rooms.
- Metal front cover mounted factory nameplates that contain a permanent record of switch type, catalog number, and HP rating.
- Pad-lockable handles with easily recognizable positions are required.
- Switches that include visible blades, reinforced fuse clips, and non-teasible positive quick make-quick break mechanisms.
- Switch assemblies and operating handles that are an integral part of the enclosure base.
- Switches that are HP rated and meet Federal and NEMA Specifications.
- Switches that have defeatable door interlocks that prevent the door from opening when the operating handle is in the ON position.
- Heavy duty switches with line terminal shields.
- Fusible switch assemblies of NEMA KS 1 construction with quick-make, quick-break load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position and Handle lockable in OFF position. Furnish fuse clips designed to accommodate Class R fuses.
- Non-fusible switch assemblies of NEMA KS 1 construction Type HD with quick-make, quick-break load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position and Handle lockable in OFF position. One N.C. (normally closed) and one N.O. (normally open) set of auxiliary contacts is required.
- Fuses that are time delay, current-limiting type with 200KA interrupting rating at 600 VAC. Rejection type are required that are, UL listed to minimize short circuit damage. Use UL Class RK1 for service entrance, transformer feeder and panelboard feeder. Use UL Class RK5 for motor branch circuit.

907-854.02.5--Existing Standby Generator Set. Perform comprehensive maintenance operations on the existing diesel powered standby generator set (Gen Set Model No. SD250). The following are the minimum steps required to complete this task:

- Furnish and Install a new remote annunciator panel in the operator room. Wall mount panel near the operator console in full view of operator. This panel shall be an approved panel for use with the existing generator set (Generac Panel Model 984-0). The remote panel shall have all of the available alarms and indicators and provide remote monitoring & annunciation of the standby generator.
- Inspect generator set and make note of all visible damage, leaks, and grime. Thoroughly clean all parts with a manufacturer approved industrial cleaner and/or degreaser, as necessary.
- Drain all fuel in generator tank and lines completely, and refill tank with fresh fuel.
- Drain engine oil in generator and refill with fresh oil. New oil type and quantity shall be as recommended by generator manufacturer.
- Drain, or flush, engine coolant completely and refill with approved coolant type and mix.
- Replace generator set charger batteries with new batteries. New batteries shall be as recommended by generator set manufacturer.
- Replace all existing filters with new ones as recommended by generator set manufacturer.
- Test battery charger and alternator to verify that it is operating as intended. Make any necessary repairs.
- Check all lines and pans for oil and other fluids, and Drain old fluids before adding new fluids. Clean all pans as necessary.
- Lubricate and grease parts as specified by the manufacturer.
- Perform a complete tune up as recommended by the manufacturer.
- Verify the operation of the control panel.
- Repair or replace any parts that are not operating according to generator manufacturer standards, malfunctioning, damaged, or worn out.
- Fully test the operation of the standby generator set with the incoming utility power turned off.
- Make any necessary adjustments as a result of the testing process.
- Document all findings and provide three (3) certified copies to the engineer.
- Obtain maintenance and operating instructions manuals from the generator manufacturer or an authorized dealer if not available on site. Provide three (3) copies to the engineer.
- Provide adequate training on operation and maintenance of generator, ATS and remote panel to bridge operator and Mississippi DOT interested personnel.

Full inspection and testing shall extend to any other equipment or parts not specifically mentioned here, including any detached parts installed near the generator.

907-854.02.6--Existing Automatic Transfer Switch (ATS). Perform the following steps on the Automatic Transfer Switch (ATS):

- Inspect the outside and inside of the Automatic Transfer Switch Cabinet.

- Perform required maintenance as recommended by the manufacturer.
- Test the operation of the Automatic Transfer Switch after all maintenance steps have been completed on the generator set.
- Repair or replace any damaged or inoperable parts.

907-854.03--Method of Measurement. Electrical Service will be measured as a lump sum quantity.

907-854.04--Basis of Payment. Electrical, measured as prescribed above, will be paid for at the contract lump sum price which shall be full compensation for all materials, labor, tools, equipment, testing and all incidentals necessary to complete the work.

Payment will be made under:

907-854-A: Electrical Service - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-855-1 **CODE: (SP)**

DATE: 7/11/2012

SUBJECT: Auxiliary Electrical Equipment

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-855, Auxiliary Electrical Equipment is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-855 -- AUXILIARY ELECTRICAL EQUIPMENT

907-855.01--Description. This special provision describes furnishing labor, tools, equipment and materials necessary for the manufacture, installation, testing, and making fully operational miscellaneous electrical auxiliary equipment. The following equipment is included in this provision:

- P.A. System
- CCTV Cameras, Pole and Control
- Commercial Fire and Security System
- Air Horn
- Navigational Lights
- Marine Radio
- Pedestrian Gate
- Traffic Signals and Poles

907-855.01.1—References. In addition to those listed in article "Definitions and Acronyms", numerous acronyms are used in this special provision. Interpret acronyms used throughout as follows:

AGC	Automatic Gain Control
BNC	Bayonet Neill Concelman (Connector)
CCD	Charged Coupled Device
Cd	Candela
CD	Compact disc
dB	Decibel
DVR	Digital Video Recorder
DSL	Digital Subscriber Line
IP	Internet Protocol
PA/IC	Public Address/Intercom
RH	Relative Humidity
TV	Television
THD	Total Harmonic Distortion

UV Ultra-violet
XGA eXtended Graphics Array
SXGA Super eXtended Graphics Array

907-855.01.2—Related Provisions. Unless otherwise noted, work under this special provision shall conform to the requirements of the following special provisions:

- Electrical Work
- PLC Cabinet
- Control Console
- MCC
- Programming
- Limits and Sensors
- Submarine Cable
- Lightning and Surge Protection
- Training, Manual and Spare Parts

907-855.02--Materials.

907-855.02.1—P.A. System. Equipment will be a NEMA Class 1 or NEMA Class 4 (as required) wall mounted unit incorporating an intercom and public address systems served by a common handset, as specified below. Supply equipment by a single manufacturer with at least five (5) years' experience of manufacturing this type of equipment. Manufacturer of the equipment is to be ISO 9002 (or equivalent) certified. Employ a communications system with the capability of providing several different communications functions.

Depressing a pushbutton switch will allow the operator to select the desired communication system function. Functions include one-way page (PA system) and Intercom communications. Provide a common interface for switching the handset (and speaker) between communications zones, matching impedance to selected zone.

Mount the selector switch assembly with push buttons in a row. The handset, with a press bar page switch in the handle will be used on the master control station and intercom stations. The speakers connected to the intercom stations must monitor the intercom zone. Mute a speaker connected to an intercom station when the intercom station handset press bar is depressed. Provide adjustable speaker volume control at the intercom or speaker amplifier that connects to the speaker.

Furnish one distributed PA amplifier per speaker and mount in close proximity to the speaker. The amplifier must deliver 10 watts RMS minimum to each speaker. Two (2) speakers for roadway and two (2) speakers for marine channel (separately controlled) are required. Maximum distortion is five (5) percent for first and third harmonics. Use industrial type equipment. Provide speakers immune to salt spray and be capable of 120 degree dispersion at 12 watts. Frequency response at 3 dB is 450 to 8000 Hz, ±0.5 dB.

The intercom system consists of page/party stations located at all levels of the operator house, pier and the machinery room areas. Provide 25-foot coiled cords with the interior or exterior type units as required. Equip units with page speakers. Page and private voice communication (party line communication) between intercom station locations are indicated in the plans. Provide transmit/receive page line communication with duplex party line communication between two or more intercom stations.

Master control station operator selects intercom zone by depressing selection pushbutton associated with intercom zone. A page is initiated by lifting handset, depressing press bar, and speaking into the handset microphone. A responding individual approaches the nearest intercom station and lifts the handset. Duplex telephone type communication can occur on the intercom system party line without broadcast to all intercom system stations. Pages can be initiated from all intercom system handset locations.

Install the desk or wall mount the intercom master control unit as directed by engineer with standard molded plastic telephone handset with 25 foot long permanently coiled cord. Provide the master unit with a speaker amplifier rated 12 watts output with less than 5 percent total harmonic distortion and frequency response of 250 to 4,000 Hz. Provide the handset amplifier circuit with a minimum rated 1.5 VRMS nominal output level into 33 ohm load, 55 dB nominal gain (below limiter level of 1.5 VRMS nominal). Provide adequate input sensitivity to deliver rated amplifier output when no more than 10 dynes per square centimeter impinge on speaker.

907-855.02.2—CCTV.

907-855.02.2.1—Pan/Tilt/Zoom Cameras. Furnish and install high resolution digital IP Pan/Tilt/Zoom dome-type cameras. Set camera up to control and monitor over an IP network. Provide cameras that meet the following minimum standards:

- Horizontal resolution - NTSC & PAL > 540 TV lines
- Zoom – 35X Optical, 12X digital
- Interlace/Progressive scan selectable
- Lens- f/1.4(focal length 3.4 -119 mm)
- Sensitivity at 35 IRE – 0.55 lux at 1/60sec (color), 0.018 lux at ½ sec (color)
- Resolution – 704 x 480 NTS format
- H2.64 , MPEG-4 and MJPEG compression

907-855.02.2.2—Camera Assemblies. Camera assemblies must conform to the following minimum specifications:

- Provide enclosures rated outdoor, harsh environment, dust-tight, waterproof. Enclosure must be lightweight, aluminum construction and meet NEMA 4 and IP66 standards. Include a sun shroud enclosure, heater/controller/defroster to eliminate fogging, obstructions, and visual artifacts. Size enclosure to make compatible with camera, lens, mounts, and accessories required. Make all external connections through watertight fittings. Provide easily serviceable enclosure and provide stainless steel fasteners.

- Provide transient suppressors at each BNC video output. Suppressors shall be CX-12-BNC, VG-BNC or equal.
- Mount cameras, pan-tilt-zoom lenses, and accessories securely in the enclosures.
- Provide camera assemblies from the same manufacturer as the digital video recorder, supports, and controls that has been regularly engaged in providing similar type and quality of equipment for at least the last five years.

907-855.02.2.3—Camera Power Supplies Provide individual 24 VAC, 60 Hz camera power supplies for each camera assembly. Fuse power supply and size to provide 125 percent of full load amperes for camera and accessory loads. Account for voltage drops to provide 24 VAC @ +/- 15 percent (with heaters on) at each camera power input connector. Install, mount, and label into the 19-inch rack cabinet and provide service access to fuses. One (1) power supply for multiple cameras shall not be permitted unless each output is fused.

Power supplies must be in a NEMA 4 minimum rated enclosure, 120 VAC input, 24 VAC, with five (5) A minimum output per camera assembly.

907-855.02.2.4—Digital Video Recorder Digital video server system includes an industrial IBM compatible computer with access door to disk drives and controls. Contain all disk drives, including CD backup system, in the rack cabinet system. Permit no loose or un-mounted equipment, except for the monitor. Mount keyboard and mouse (if required) as shown in the plans.

Conform the digital video server system to the following minimum requirements:

- Include a DSL/Modem data port and software capable of connecting to multiple video servers via external IBM compatible computers and the internet. The minimum transfer data rate of 384k transmit and receive.
- Include digital video recorder hardware and software capable of recording high quality digital images and data at a minimum of three frames/second, for fifteen cameras, 24 hours/day, for up to 30 days. After 30 days of recording, the system has an option to write over the video file(s). Size the computer hard disk(s) accordingly to provide 25 percent minimum free disk space with 30 days of image data, plus all other software. Analog VCR type video recorders are not be permitted.
- Include a CD backup system to easily backup timed sections of the video recorded hard disk.
- Operate digital video server and all peripheral equipment on 120 VAC, 60 Hz, with an operating temperature of 41 °F to 104 °F, 80 percent RH non-condensing.
- Provide a minimum of five (5) video outputs and eight (8) configurable alarm inputs.
- Include an x86 32-bit processor, 1.2 GHz minimum, with 1 Gb RAM, 10/1000 NIC, USB, 480GB HD, 24x CD-RW (minimum), mouse & keyboard, four (4) USB ports (minimum).
- Applications software: Event logging, live viewing, search video, motion detection, alarm-based recording, image alteration recognition, multiple camera display, time/date/camera stamping, hardware watchdog, playback by date/time/camera.

- Minimum Connections: 16 BNC inputs to NTSC A-V processor with M-JPEG compression, 1 – ISDN, 1 – RS-422, 8 – alarm inputs, 8 – control/fault form "C" output terminals, 1 – RJ-45, 1 – USB, 1 – mouse, 1 – keyboard, 2 – serial DIN, 1 – SVGA, 1 – printer, 1 – RS-422, 1 – 10/100bt
- Certifications: CE class B, UL, FCC class B
- Provide Electronic Keyboards, 83-pkb-sams-ckps2r NEMA 4 industrial membrane keyboard with integrated touchpad (or approved equal).

907-855.02.2.5—Cabinet. Provide an industrial 19-inch rack chassis on a swing out frame with slide out rails and rack ears. Front door of the server cabinet is to be a glass front. Furnish cabinet with lockable access door. Install fans and filters as necessary to dissipate heat generated by the equipment. The fans are to be temperature switch controlled. Install a fluorescent cabinet light with a built-in ON/OFF switch and a separately mounted door switch. All connections are to be made from the rear of the enclosure. Conform the enclosure to the following minimum standards:

- NEMA 1 minimum rated steel, vented back and side panels
- Slide out rails for all equipment
- Rack slide supports
- 19-inch LCD monitor
- Slide out Keyboard and mouse.
- Blank panels installed over unused space

907-855.02.2.6—Monitors. Provide two (2) high-bright SXGA/video LCD color monitors that will be functional components of the digital video server system located inside of the bridge operator house. Attach monitors to a height and tilt adjustable ceiling bracket located above the control console in the operator's room as shown in the plans. Monitors that conform to the following performance requirements shall be provided:

- IBM compatible with a minimum of 18.1- to 20.1-inch, SXGA thin film transistor (TFT) mm pitch LCD flat-panel screen with frame work for desk mounting.
- Have a minimum brightness of 900 Cd/m^2, a minimum contrast ratio of 500:1, a minimum horizontal viewing angle of 170 degrees, and a maximum response time of 11 ms.
- Produce a minimum resolution of 1280 x 1024 dpi at 75 Hz.
- Be compatible with digital video server and cameras specified.
- Be powered by 95 – 130 VAC, 60 Hz. and include a grounded power cable plug.
- Have dual inputs: BNC NTSC video and DVI VGA. Provide NTSC to DVI converters as required.
- All wiring, cables, and adjustments shall be provided as required.
- Connections to monitor with sufficient service loops for easy removal shall be provided.
- High-resolution and high contrast in night time fluorescent overhead room lighting conditions and day time high ambient external room lighting and not "wash out" or become dark during operation shall be provided.
- Operate in a minimum 32 °F to +104 °F environment.

- Pictures shall be free of video artifacts including noise, hum bars, and flicker.

907-855.02.2.7—Quality Control. All items specified in this article must be compatible and tightly integrated with the rest of the CCTV system to produce a high quality, high-resolution, high contrast, and artifact free picture.

907-855.02.2.8—Camera Pole. Provide and install camera poles, including bridge anchorages, poles, mounting adapter, all hardware and all fittings necessary to completely install the pole as shown in the plans.

Paint all exposed surfaces, including but not limited to, poles, bases (if applicable), bolts, pole caps, and mounting hardware black.

907-855.02.3—Air Horn. Furnish and install a weatherproof, self-contained, air driven, dual projector, 120 dB air horn equipped with a rapid response, direct drive, oil-less piston type compressor, powered by a 60 Hz, 120 VAC one (1) HP motor with sealed, self-lubricated ball bearings. Ensure the horn mechanism is air pressure actuated with free floating, vibrating type, tempered phosphor bronze diaphragm and coupled to a resonant chrome plated zinc die-cast trumpet style projector capable of producing 120 dB (as measured at a distance 10 feet) at 320 cycles per second.

907-855.02.4—Navigational Lights. Provide a complete navigation hazard lighting system operating at 120 VAC and complying with USCG CFR 118.80(b). Furnish all Fender and Clearance lights with shock proof LED lamps and surge suppressors. Lamps shall consist of 48 individual LED beams arranged in four tiers in an optically clear elastomer medium. The viewing angle of the individual LED beams shall not be less than 22 degrees for red, 20 degrees for green. The MTBF rating of the LED's shall be 100,000 hours. Lamp base shall be Rynite FR350 or approved equal. Provide lamp lens of UV Polycarbonate. Wattage consumption should not exceed 1.8 watts for red, 1.44 watts for green. Candela output should be not less than 78 candela for red, 270 candela for green. Provide lamps with integral surge suppression with a clamping voltage of not less than 380 VAC at two (2) A. Provide clear silicon filled lamps that have been field tested and documented for not less than six (6) months continuous service in extremely high vibration movable bridge applications.

907-855.02.4.1—Fender/Pier Lights. Furnish and install unpainted housings of cast aluminum construction with a one inch threaded conduit opening at the bottom, equipped with a red 180°, standard marine Fresnel type, rigid, heat resistant glass lens, 7- to 8-inch diameter. Furnish manufacturer's recommended wall mounting bracket and 90° post. Furnish all stainless steel closure bolts, lens tie rods, and attachment hardware. Use only marine type junction boxes. All joints, including lid shall be sealed with weatherproof gaskets. All fastenings shall be tamper resistant. Access cover shall require a special wrench.

907-855.02.4.2—Channel Lights. Furnish and install unpainted housings of cast aluminum with cushioned lenses, weatherproof gasketed joints and large service access door equipped with 180°, standard marine molded single-piece Fresnel type, rigid, heat resistant glass, 7- to 8-inch diameter. with the Lower Section; Red, Upper Section; Green. Furnish all stainless steel closure

bolts, lens tie rods, and attachment hardware. Ensure swivel assembly is cast bronze housing and bracket with stainless steel pivot, watertight "O" ring seal, bronze bearings, cable entrance fitting, and #35 stainless steel service chain rated for 225 pounds. Use a hanger stem 1½- or 2-inch galvanized pipe as recommended by manufacturer with anti-swing brake and automatic lock. No solid wire conductors shall be permitted.

907-855.02.5—VHF Marine Radio. Provide a separate, battery powered, marine radio VHF transceiver (157 - 160 MHz) with an output of 1.0 watts capable of scanning channels 9 and 16, transmitting on at least three additional channels as required by the engineer. Couple the system to a stainless steel or fiberglass whip antenna of 39 inches in length mounted as directed by the engineer. Ensure the Maximum audio distortion is less than five (5) percent. Radio must comply with FCC Rules and Regulations, Part 80. Provide a battery charger capable of maintaining the radio battery fully charged.

907-855.02.6—Fire and Security Alarm System. Provide a commercial combination fire and security alarm system to monitor, alarm and callout to a programmed phone number. Furnish the system control center in a wall mounted cabinet.

The system shall include the following features:

- Minimum of eight (8) programmable zones for two (2) wire detectors.
- UL listed
- Auxiliary contacts for alarms
- Arm/disarm keypad at entry door.
- Smoke detectors in each room and machinery room. Smoke detectors shall be multiplex photoelectric smoke detector with 57 °C heat detector.
- Door open sensors for each entrance to the pier and operator house.
- Built in automatic telephone dialer with digital coder
- Built in power supply with backup battery and charger
- Programmable auxiliary relay
- External voice siren driver to provide audible selectable tones and two voice synthesized channel
- Strobe Light
- Agency Listings - UL609 Grade A, UL1610A, UL864, NFPA72A & NFPA71

907-855.02.7—Pedestrian Gate. Furnish and install a new pedestrian gate. Gate shall be similar to the existing traffic gates, with a short arm to block sidewalk. Traffic gates shall be vertical to horizontal type; electrically operated with manual cranking ability at locations shown in the plans equipped with warning gongs on the on-coming gate assembly enclosures, in accordance with manufacturer's instructions. Equip gate arms with steel hot-dip galvanized, sectional bolt-on counterweights with at least 10 percent adjustment and lights. Size anchorages for new gate installations on gate pilasters per manufacturer's recommendations with drilled anchor bolts, set with epoxy adequately sized to support all attachments. During the opening and closing cycles, begin the gate arm movement with zero velocity and accelerate smoothly, reaching maximum velocity at mid stroke (45 degrees) then decelerate smoothly to zero velocity at full stroke (90 degrees) without whip or bounce. Standard operating time is 13 seconds for full

opening or closing cycle. Size gate assemblies and anchorages to handle the weight of the arm used and to operate against a wind speed of 50 mph.

The gate shall be equipped with a manual disconnect switch and with an automatic disconnect switch to break control circuit when any door is opened. Furnish two spare gate arms (complete with lights and striping) in proper length, and one spare gate operator motor for each type of gate installed. One gate arm shall be used for temporary traffic control. Traffic gates shall include cam limit switch, warning gong and LED warning lights.

907-855.02.7—Traffic Signals. Furnish and install new traffic signals and cantilevered poles. Signals shall conform to sections 634, 639 and 640 of the Standard Specifications. Traffic signal heads shall be 12 inch 3 unit red/yellow/green LED type. Lighting control for signals shall utilize the existing bridge electrical control system, with any modifications as necessary.

The new poles shall utilize the same anchor bolts as the existing pole. The contractor shall gather existing anchor bolt information and pole height to select the proper pole. The contractor shall submit anchorage calculation for approval.

907-855.03--Construction Requirements.

907-855.03.1—P.A. System. Interface all PA and common audio party signal lines to the submarine cable system. Provide a submittal to the engineer detailing the interfacing and testing of the PA/IC system. Provide manufacturer recommended cables and wiring and consult with the PA/IC manufacturer to provide seamless integration that is void of feedback, hum, distortion, and noise. Adjust the PA/IC system for maximum performance as determined by the engineer. Install new communications system and balance system. Adjust roadway and waterway speakers as required to provide the optimum audio signals to the roadway and waterways.

907-855.03.1.1—Wiring. All wiring is to be run in separate conduits. All interconnecting conductors between various units will be manufacturer approved twisted shielded pairs of conductors. Inter-wiring between units will not be smaller than No. 18 AWG. Wiring for units on the far side of the channel is to be incorporated in the bridge submarine cables.

907-855.03.1.2—Testing. The Contractor will arrange for and provide all necessary field tests required by the engineer to demonstrate that the entire public address/intercom system is in proper working order and in accordance with the plans and these special provisions.

Adjust intercom speaker volume to so as to be heard over operating noise and to a level that can be easily understood anywhere in the room.

Operational tests of the complete installation is to be conducted by the Contractor in the presence of the engineer to demonstrate to his satisfaction that all components and systems are installed, connected and operate in accordance with the plans, specifications and approved shop drawings. If the tests show that any piece of equipment, in the judgment of the engineer, is defective or

functions improperly, make such adjustments and/or replacements so that the installation is satisfactory to the engineer, and at no extra cost to the department.

907-855.03.2—CCTV. Perform the following tasks for the installation of the camera assemblies:

- Verify system voltage matches camera requirements.
- Install in accordance with manufacturer's instructions.
- Attached the proper test instruments and adjust AGC, video levels and field of vision to ensure proper operation for day, night and inclement conditions. Do not rely on video monitors only to properly adjust the levels.
- All connections shall be tested for tightness and for intermittent connections.
- Furnish and install new camera assemblies into the enclosures at the locations shown in the plans.
- Make all electrical connections and adjustments to provide proper operation of the cameras as specified herein.

Install interior wiring neatly and carefully with proper connectors of video and power connections per manufacturer's instructions. Use conductors approved by the camera manufacturer.

907-855.04--Method of Measurement. Auxiliary Electrical Equipment will be measured as a lump sum quantity.

907-855.05--Basis of Payment. Auxiliary Electrical Equipment, measured as prescribed above, will be paid for at the contract lump sum price which price shall be full compensation for all materials, labor, tools, equipment, testing and all incidentals necessary to complete the work.

Payment will be made under:

907-855-A: Auxiliary Electrical Equipment - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-856-1 **CODE: (SP)**

DATE: 7/11/2012

SUBJECT: Control Console

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-856, Control Console is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-856 – Control Console

907-856.01—Description. This special provision describes furnishing labor, tools, equipment and material necessary for the manufacture, installation, testing, and making fully operational a control console and a gate station.

907-856.01.1—Related Provisions. Unless otherwise noted, conform work under this special provision to the requirements of the following special provisions:

- Electrical Work
- Electrical Service
- Auxiliary Electrical Equipment
- Span Drives and Motors
- PLC Cabinet and Programming
- Motor Control Center
- Limits and Sensors
- Submarine Cable
- Lightning and Surge Protection
- Training, Manual and Spare Parts

907-856.02—Materials.

907-856.02.1—Cabinet. Control enclosure will be NEMA 12 with hinged access doors and hinged control top plates. Provide access doors with flush lockable handles. Design the console with shipping splits for installation in the bridge house. Include gasketing and stainless steel hardware to connect each shipping split.

Manufacture console cabinet with 12 gauge steel painted an ANSI gray finish. Use minimum 10 gauge stainless steel with a smooth brushed finish for each console top.

Console top will have a stainless steel piano hinge for opening. Install two (2) gas filled shocks to assist in opening the console tops. Include an arm on each side to support the console top

when it is open. Size shocks to support the weight of the top and the weight of the components and wire.

Clean and phosphatize internal and external surfaces prior to application of high-quality rust inhibiting primer. Apply a light gray ANSI No. 61 baked enamel or polyester powder for the finish coat. Use a gloss white lacquer finish over suitable primers for the backplates.

907-856.02.2—Pushbuttons, Selector Switches and Indicator Lights

907-856.02.2.1—Indicating Lights. Use 30.5 mm push-to-test industrial heavy-duty, oil tight NEMA 13, 120 V transformer type, with LED bulbs. Lens colors are as indicated on plans.

907-856.02.2.2—Pushbuttons. Furnish single button operator with one normally open (1 N.O.) and one normally closed (1 N.C.) momentary contact, 30.5 mm corrosion resistant, heavy duty, oil tight pushbuttons.

907-856.02.2.3—Selector Switch. Supply selector switches with a lever operator knob, one N.O. and one N.C. contact in each position. Provide switches that are 30.5 mm corrosion resistant, heavy duty, and oil tight. Provide key switch operator where required.

907-856.02.3—Contact Blocks. Provide contact blocks rated at 10 A, NEMA Class A300. Blocks are to be clear to allow visual inspection and are oil-tight.

907-856.02.4—Span Control Switch. Pistol grip rotary switches will be multi-position with spring return-to-center mill duty type switches. Rotary contacts are to be double sided and knife type. There will be terminal screws for easy installation. Furnish controller with a handle interlock for movement and a detent for each position. Configure controller per the design plans. All connections will be finger safe. Contacts are to be rated at 10 A.

907-856.02.5—Pistol Grips. Pistol grip rotary switches will be 3-position with spring return-to-center capability. Rotary contacts are to be double sided and knife type. There will be terminal screws for easy installation. All connections are finger safe. Contacts are to be rated at 10 A.

907-856.02.6—Meters. Furnish red LCD programmable digital displays with 4½-digit resolution. Furnish meter with a minimum of 0.48-inch high digits, programmable decimal points and a NEMA 4x sealed front bezel.

They will have vertical orientation with colored bars for easy viewing. There is to be peak and valley hold capability and trend indication for signal direction. There will be an accuracy of at least 0.1 percent of full scale.

907-856.02.7—Legend Plates. Legend plates are to be rectangular and manufactured out of laminated plastic or any similar non-metal corrosion resistant material. Provide ½-inch black lettering on a white background.

907-856.02.8—HMI. Provide an Operator Interface Terminal with a color touch screen for the operator to view alarms and status of bridge devices. This Operator Terminal or HMI will also provide the capabilities for maintenance personnel modify key setpoints and parameters in the PLC and drives. These parameters will have the capabilities of being password protected, so only authorized personnel will have access to changing the values. Supply an HMI that meets the following minimum requirements:

- 15-inch color display with touchscreen control.
- Same Manufacturer of PLC.
- Two USB Ports
- 18 bit Color Graphics with minimum 640 x 480 resolution
- NEMA 4X rated
- Ethernet communications
- 85 to 264 VAC or 18 to 32 VDC Power input
- The HMI will operate at 0 °C to 55 °C with a relative humidity of 5 percent to 95 percent non-condensing

Install HMI in an NEMA 12 enclosure with three (3) axis adjustable arm as shown in as shown in plans. Attach and adjust arm to of console to provide the optimum operator view.

907-856.03—Construction.

907-856.03.1—Cabinets and Enclosures. Clean and phosphatize internal and external surfaces prior to application of high-quality rust inhibiting primer. Apply finish coat of light gray ANSI No. 61 baked enamel or polyester powder. Finish back panel with gloss white lacquer over suitable primers.

907-856.03.2—Wiring. Provide interconnection wiring between all electrical devices mounted in the panels and enclosures. If the devices are to be connected to external equipment, connect them to terminal blocks. Provide conductors that are UL listed type THWN-MTW. The minimum field installed control wire within the control console is No. 16 AWG. Everywhere else, use No. 14 AWG minimum wire size.

Install all interior wiring neatly and carefully, and terminate on UL approved terminal blocks as per manufacturer's instructions. Individually bundle wiring to each control switch and install with a "drop loop" of sufficient length to allow for its removal for maintenance without disconnecting the wiring. Use plastic wireways (open slot type) for routing all internal wiring in the control panels. Internal wiring in the factory prewired electronic system cabinets may be installed according to the manufacturer's standard as to wire size, insulation, and method of termination on internal equipment.

Permanently identify individual conductors. The marking will be done on a sleeve not less than ½ inch long. Mark each sleeve with permanent and waterproof identification. Do not use adhesive-type labels.

907-856.03.3—Terminal Blocks. Group for easy accessibility unrestricted from structural members and instruments. Provide sufficient space (2 inches minimum) on each side of each terminal block to allow an orderly arrangement of all leads to be terminated on the block. Do not terminate more than two (2) wires on any one (1) terminal position.

907-856.03.4—Marking and Labeling. Each terminal block, device, fuse block, terminal, and both ends of each conductor will be permanently labeled to coincide with the identification indicated on the manufacturer's wiring diagrams. Terminal blocks and devices already numbered in the plans are to be so numbered on the equipment supplied. Mounted electronic components are to be identified by marking with contrasting colored ink beside the component.

907-856.04—Measurement. Control Console will be measured as a lump sum quantity.

907-856.05—Payment. Control Console, measured as prescribed above, will be paid for at the contract lump sum price which price shall be full compensation for all materials, labor, tools, equipment, testing and all incidentals necessary to complete the work.

Payment will be made under:

907-856-A: Control Console - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-857-1 **CODE: (SP)**

DATE: 7/11/2012

SUBJECT: Motor Control Center

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-857, Motor Control Center is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-857 Motor Control Center

907-857.01—Description. This special provision describes furnishing labor, tools, equipment and materials necessary for the manufacture, installation, testing, and making fully operational a Motor Control Center.

907-857.01.1—Related Provisions. Unless otherwise noted, conform work under this special provision to the requirements of the following special provisions:

- Electrical Work
- Electrical Service
- Auxiliary Electrical Equipment
- Control Console
- PLC Cabinet and Programming
- Span Drives and Motors
- Limits and Sensors
- Submarine Cable
- Lightning and Surge Protection
- Training, Manual and Spare Parts

907-857.02—Materials.

907-857.02.1—MCC.

907-857.02.1.1—Assembly. Structures are to be totally enclosed dead-front, free-standing assemblies. They will be 90 inches high and approximately 20 inches deep for front-mounted units. Structures will contain a horizontal wire way at the top, isolated from the horizontal bus and will be readily accessible through a hinged cover. Adequate space for conduit and wiring to enter the top or bottom will be provided without structural interference.

A vertical wire way with minimum of 35 square inches of cross-sectional area is to be adjacent to each vertical unit and covered by a hinged door. Wire ways are to contain steel rod cable supports.

All full voltage starter units through NEMA Size 5 will be of the draw out type. Draw out provisions will include a positive guide rail system and stab shrouds to absolutely ensure alignment of stabs with the vertical bus. Draw out units will have a tin-plated stab assembly for connection to the vertical bus. No wiring to these stabs will extend into the bus compartment. Interior of all units is to be painted white for increased visibility. Units will be equipped with side-mounted, positive latch pull-apart type control terminal blocks rated 600 volts. Provide knockouts for the addition of future terminal blocks. All control wire to be 14 gauge minimum.

All draw out units to be secured by a spring-loaded quarter turn indicating type fastening device located at the top front of the unit. Each unit compartment will be provided with an individual front door.

An operating mechanism will be mounted on the primary disconnect of each starter unit. It will be mechanically interlocked with the unit door to prevent access unless the disconnect is in the OFF position. A defeater will be provided to bypass this interlock. With the door open, an interlock will be provided to prevent inadvertent closing of the disconnect. A second interlock will be provided to prevent removal or reinsertion of the unit while in the ON position. Padlocking facilities will be provided to positively lock the disconnect in the OFF position with one (1) to three (3) padlocks with the door open or closed. In addition, means will be provided to padlock the unit in a partially withdrawn position with the stabs free of the vertical bus.

Provide each structure with a main horizontal copper tin-plated bus, with minimum ampacity of 600 A. Vertical bus feeding unit compartments will be copper and will be securely bolted to the horizontal main bus. All joints will be front-accessible for east of maintenance. The vertical bus will have a minimum rating of 300 A for front mounted units and 600 A for back-to-back mounted units or fully rated amperes.

Provide each MCC with a vertical bus that is completely isolated and insulated by means of a labyrinth design barrier. It will effectively isolate the vertical buses to prevent any fault-generated gases to pass from one phase to another. The vertical bus will include a shutter mechanism to provide complete isolation of the vertical bus when a unit is removed.

Buses are to be braced for a minimum of 42,000 A rms symmetrical minimum.

A copper ground bus is secured to each vertical section structure and will extend the entire length of the MCC.

Each structure will contain tin plated vertical ground bus rated 300 A minimum. The vertical ground bus will be directly connected to the horizontal ground bus via a tin-plated copper connector. Units are to connect to the vertical bus via a tin-plated copper stab.

Wiring will be NEMA Class 1B. Pull apart terminal blocks will not be used on motor leads.

Provide MCC with a NEMA 1 gasketed enclosure.

Provide a MCC such as the Allen Bradley 2100 series, Cutler Hammer Freedom series, Square D Model 6 or approved equal.

Shop paint will be UL recognized enamel finish, light gray (like NEMA 61) over a rust inhibitor and paint adhesion pretreatment.

Provide laminated nameplates on each door. Identification nameplates will have black characters on a white background. Attach nameplates with stainless steel screws. Each nameplate will identify each starter unit, circuit breaker or other control unit and include the horsepower or current rating of the device.

Provide high voltage safety warning name plates with white characters on red background. Also provide power disconnect locations for MCC compartments not equipped with a power disconnect.

Provide the MCC with shipping splits as required to be installed in the control house. These shipping splits will need to be coordinated with the contractor to allow for clearances in doorways or stairwells.

Incoming feeders, load and control line entrances to MCC are to be as indicated in the Plans. A ground will be provided in each vertical section as well as a connecting horizontal bus. Vertical sections will be provided with a vertical wireway and wireways on top and bottom. An insulated barrier with removable access covers will conceal vertical bus work.

907-857.02.1.2—Starter Buckets. Provide all starters with a minimum NEMA size 1 starter. Each starter will have its own control power transformer. Each starter will have a minimum of 1 N.O. and 1 N.C. contacts. Provide each starter with door mounted 120 volt LED "ON" indicator lights. Provide overload relays with Class 20 trip. Overload relays are to be re-settable from outside the enclosure by means of an insulated bar or button. Starters are to be protected by motor circuit protectors.

Provide 3-pole 480 VAC, full voltage, NEMA type starters of the magnetic combination type. Motor starters will be a combination circuit breaker, NEMA controller with overload relay protection. Connection to the bus will be by stab-type contacts, including ground, and a screw-type locking mechanism to hold the chassis firmly in place. Quantities are to be as shown in the plans. Provide through-the-door overload RESET button. For FVNR units a HAND-OFF-AUTO switch and pilot lights for OFF, RUN, and OL TRIPPED status will be provided. For FVR units provide a HAND-OFF-AUTO switch, a FORWARD-OFF-REVERSE spring return to center switch and pilot lights for FORWARD, OFF, REVERSE, and OL TRIPPED status.

Furnish, where indicated or required, motor controls having the electrical characteristics, ratings, and modifications shown in the plans. All magnetic starter coils shall be 120 VAC.

- NEMA ICS 1 - Industrial Control and Systems- General Standards
- NEMA ICS 2 - Industrial Control and Systems- Controllers, Contractors and Overload Relays Rated not More than 200 VAC or 750 VDC

- NEMA ICS 4 - Industrial Control and Systems- Terminal Blocks
- NEMA ICS 5 - Industrial Control and Systems- Control Circuit and Pilot Devices
- NEMA ICS 6 - Industrial Control and Systems- Enclosures
- NEMA ST 1- Standard for Specialty Transformers (Except General Purpose Type)

907-857.02.1.2.1—Non-Reversing Starters (Across-the-line magnetic starters for motors up to 100 HP, 600 VAC). Provide starters that are built and tested in accordance with the latest NEMA standards. Non-reversing starters shall be equipped with three NEMA Class 20 overload relays. Provide for field installation of up to 3 N.O. and 4 N.C. NEMA ICS 2, Class A300, auxiliary contacts in addition to the hold-in interlock.

907-857.02.1.2.2—Reversing Starters (Reversing magnetic starters for motors up to 100 HP, 600 VAC). Provide starters that are built and tested in accordance with the latest NEMA standards. Reversing starters shall be equipped with three NEMA Class 20 overload relays. Provide for field installation of up to 4 N.O. and 4 N.C. NEMA ICS 2, Class A300, auxiliary contacts in addition to the normal interlocks.

907-857.02.1.2.3—Overload Relays. Overload relays shall be block-type with a push-to-test feature. An isolated, field-mountable alarm contact shall be available.

907-857.02.1.3—Feeder Buckets. Provide thermal magnetic molded case heavy duty breakers of the correct size for all feeder type breakers. Operating handle will always remain connected to the MCP or circuit breaker. The operating handle is not to be mounted in the door of the enclosure, but to the side of the door for safe "stand-aside" operation. Position of the operating handle will indicate ON, OFF, or TRIPPED condition. Interlock provision will prevent unauthorized opening or closing of the cubicle door with the disconnect in the ON position as well as turning the switch ON with the door open.

907-857.02.1.4—Main Breakers. Furnish a molded case circuit breaker with an adjustable electronic trip unit and rated for service entrance and minimum interrupting rating of 10,000 KA. Operating handle will always remain connected to circuit breaker. The operating handle is not to be mounted in the door of the enclosure, but to the side of the door for safe "stand-aside" operation.

907-857.03—Construction.

907-857.03.1—Motor Control Center. Deliver MCC individually wrapped in factory fabricated fiberboard type containers and with lifting angles on each MCC supporting structure. Handle MCC carefully to prevent internal component damage, and denting or scoring of enclosure finish. Do not install damaged MCC. Store MCC in a clean, dry space. Protect units from dirt, fumes, water, construction debris and traffic.

907-857.04—Measurement. Motor Control Center will be measured as a lump sum quantity.

907-857.05—Payment. Motor Control Center, measured as prescribed above, will be paid for at the contract lump sum price which price shall be full compensation for all labor, materials, tools, testing and incidentals necessary to complete the work.

Payment will be made under:

907-857-A: Motor Control Center -lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-858-1 **CODE: (SP)**

DATE: 7/11/2012

SUBJECT: PLC Cabinet and Programming

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-858, PLC Cabinet and Programming is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-858 PLC Cabinet and Programming.

907-858.01—Description. This special provision describes furnishing labor, tools, equipment and materials necessary for the manufacture, installation, testing, and making fully operational a PLC cabinet, a laptop computer and all associated programming for the PLC and the HMI interface.

During construction, temporary programs will be required to maintain operation of the bridge at all times as the different pieces of equipment are installed. The program includes an automatic sequence that opens and closes the leaf using the motor drives. Control camera triggers with logic programmed in PLC.

907-858.01.1—Related Provisions. Unless otherwise noted, conform work under this special provision to the requirements of the following special provisions:

- Electrical Work
- Electrical Service
- Auxiliary Electrical Equipment
- Control Console
- Motor Control Center
- Span Drives and Motors
- Limits and Sensors
- Submarine Cable
- Lightning and Surge Protection
- Training, Manual and Spare Parts

907-858.02—Materials.

907-858.02.1—Cabinet. Provide heavy NEMA type 12 enclosures manufactured with 10-guage steel. Apply a baked powder coat gray finish on the outside and white finish on the inside to the enclosure.

907-858.02.2—Programmable Logic Controller (PLC). Provide a PLC system manufactured by a single source and that will be the product of a company with a minimum of five (5) years of experience in the manufacture and service of this type of equipment. The PLC systems must have the communication capability to communicate and program drive parameters and settings.

Provide the PLC processor with a minimum of two (2) Mb user memory, compactflash nonvolatile user memory a built in communication port, extensive instruction set and ladder logic programming capability.

Provide the PLC system with Ethernet communications, hubs and switches.

Provide a modem or a means of monitoring and troubleshooting the PLC from a remote location.

Provide 16 point digital input cards rated for 120 VAC. Provide output cards rated at 120 VAC. Provide 16-point output cards having a minimum 0.5 A per point rating. Individually isolate relay output cards with a rating of 2 A continuous. Supply digital input and outputs with 20 percent spares

Provide analog inputs and outputs with a 4-20 milliampere range.

907-858.02.3—Relays, Timers and Contactors. Furnish relays, timers and contactors that are listed and classified by UL as suitable for the purpose specified and indicated.

907-858.02.3.1—Relays. Provide ice cube type control relays for non-load carrying control circuits. Relays will be rated for 120 VAC with a minimum contact rating of 10 A. Provide all relays with LED indicating lamp across coil. Relays will be Allen Bradley 700-FS, Square D 8501 type K, Cutler Hammer D5 series or approved equal.

For load carrying circuits and latching circuits less than 10 A, provide industrial control/machine tool relays with contacts rated at a minimum of 20 A. Relays will be Allen Bradley 700-P, Square D 8501 type X, Cutler Hammer D26 series or approved equal.

907-858.02.3.2—Timers. Provide solid state multifunction timers. Timers will be rated for 120 VAC. Timers will be Allen Bradley 700-H, Square D RE7, Cutler Hammer TR series or approved equal.

907-858.02.3.3—Contactors. For all lighting loads, provide contactors with a minimum of 20 A tungsten contacts. Contactors are to be Allen Bradley, Square D, Cutler Hammer or approved equal.

907-858.02.4—Circuit Protection.

907-858.02.4.1—Supplemental Protectors. Provide single pole UL listed or recognized miniature thermal magnetic circuit breakers. Provide breakers that are track mountable with a positive trip-free holding mechanism and a 10 kA interrupting rating.

907-858.02.4.2—Control Fuses. Provide ferrule end type, ceramic or fiberglass body, midget type, rated 250 VAC, 10 kA interrupting, UL listed for control circuit application. Automotive type, glass body fuses are not acceptable. Provide fuse blocks to house the control fuses. Provide terminal block style with isolating feature, and rail mounted, rated 600 VAC, 30 A maximum for midget type fuses. Provide a hinge type cover for isolating and automatic fuse extraction from circuit when cover is lifted.

907-858.02.5—Uninterruptible Power Supplies (UPS). Provide backup power to the PLC power supply, Ethernet switch and HMI by a computer type on-line UPS.

Provide self-contained UPSs with battery chargers, internal battery banks, local controls, and on-line inverters that provides continuous power output when incoming power is lost. Loss of output power is unacceptable during loss of input power. Size UPSs to provide power for full load connected plus 25 percent (minimum) for a total of 20 minutes continuous output power at 120 VAC. Provide built in surge protection.

907-858.02.6—PLC Program Development Software. The programming software is to be an industry standard package supplied by an industrial controls manufacturer. Supply all security keys for development software.

Software is to be manufactured by the PLC manufacturer. Furnish the latest version of software. Make the software compatible with the laptop's operating system. One (1) package will be installed on the new laptop with all licenses.

Provide software package that allows PLC off line and on line programming as well as on line monitoring, utilizing the approved PC, displaying the labels ("nicknames"), coil and rung comments, search for registers and rungs, coils, contacts by address and by label. It must allow printing of selected rungs or the entire logic to either a file or a printer. The software must allow access to the PLC local network through all ports, including the PLC Ethernet module.

The software must be capable of creating logic to modify key setup parameters of each drive, such as speed setpoints and ramps.

907-858.02.6.1—PLC Program Development Software. Provide one development package for programming the HMI and downloading revisions in the future. The software is to be an industry standard package supplied by an industrial controls manufacturer. Supply all security keys for development software.

Software is to be manufactured by the HMI manufacturer. Furnish the latest version of software. Install one (1) package on the laptop with license.

907-858.02.6.2—Laptop Computer. Provide one new laptop computer to be used for programming and troubleshooting the PLC. Include the following minimum requirements for the laptop computer; a CD/DVD burner, 80 GB hard drive, 1 GB ram memory, 512 MB USB memory storage device, three (3) year warranty, Microsoft Office Professional, modem, Ethernet

port, USB ports and necessary communication ports or adapters and cables to communicate with the PLC. Laptop computer is to be Dell, Compaq, IBM or approved equal.

907-858.03—Construction.

907-858.03.1—Cabinets and Enclosures. Make all PLC equipment accessible through the front doors of the enclosure.

Clean and phosphatize internal and external surfaces prior to application of high-quality rust inhibiting primer. Apply finish coat of light gray ANSI No. 61 baked enamel or polyester powder. Finish back panel with gloss white lacquer over suitable primers.

907-858.03.2—Wiring. Provide interconnection wiring between all electrical devices mounted in the panels and enclosures. If the devices are to be connected to external equipment, connect them to terminal blocks. Conductors are to be UL listed type THWN-MTW. The minimum field installed control wire within the control console is No. 14 AWG.

Install all interior wiring neatly and carefully, and terminate on UL approved terminal blocks as per manufacturer's instructions. Use plastic duct (open slot type) for routing all internal wiring in the control panels. Internal wiring in the factory prewired electronic system cabinets may be installed according to the manufacturer's standard as to wire size, insulation, and method of termination on internal equipment.

Permanently identify individual conductors. The marking will be done on a sleeve not less than ½ inch long. Mark each sleeve with permanent and waterproof identification.

907-858.03.3—Terminal Blocks. Group for easy accessibility unrestricted from structural members and instruments. Provide sufficient space (2 inches minimum) on each side of each terminal block to allow an orderly arrangement of all leads to be terminated on the block. Do not terminate more than two (2) wires on any one terminal position.

907-858.03.4—Marking and Labeling. Permanently label each terminal block, device, fuse block, terminal, and both ends of each conductor to coincide with the identification indicated on the manufacturer's wiring diagrams. Terminal blocks and devices already numbered in the plans will be so numbered on the equipment supplied. Identify mounted electronic components by marking with contrasting colored ink beside the component.

907-858.03.5—PLC Program. Develop the PLC application program for bridge control and alarm logic based on the function block chart in the plans. Submit hard copies and electronic files for review and approval. Provide user's manual(s) and instruction manual(s) and hardware, including cables and connectors.

All programming will be performed using ladder logic style programming method. Each address and rung of program will be well documented. The program will be organized to group the core bridge movement operations separate from any alarm or overhead type functions. Subroutines, and/or files, are to be utilized to separate and organize the program.

Avoid the use of latching/unlatching relays. Every step is to be interlocked to prevent movement, unless all conditions have been satisfied. Some of the circuits in the sequence are combined and interlocked with relay controls for added safeguards. All sequences can be stopped at any time and the sequence can be continued in either direction from the point the sequence was stopped, provided that all interlocks are satisfied.

907-858.03.6—Alarms. Program alarms with a debounce circuit or delay to prevent nuisance trips. Group alarms in a separate file or subroutine that can be enabled at a later date. The following is a minimum list of alarms. Protect the HMI alarm screen via password, so only authorized personnel will have access to changing the values.

- Gate and Lock travel time exceeded
- Gate and Lock limit switch trouble (both limits tripped)
- Span limit/inclinometer out of range
- Drive Faults
- Motor overloads

907-858.03.7—Camera Controls. Program outputs for relays that are connected to the camera control equipment. Trigger the outputs by the sequence of the bridge operation as described in the camera communication plans. Submit proposed camera sequence to engineer for approval.

907-858.03.8—HMI Program. Program a minimum of five (5) screens. Add additional setup parameters to setup screen as needed to allow field adjustments. Password-protect the setup screen. Provide color animation to devices on screen to indicate status of signals, gates, barrier, rear locks and span. Submit color copies of each screen for approval prior to testing.

907-858.04—Measurement. PLC Cabinet and Programming will be measured for payment as a lump sum quantity.

907-858.05—Payment. PLC Cabinet and Programming, measured as prescribed above, will be paid for at the contract lump sum price which price shall be full compensation for all labor, materials, tools, testing and all incidentals necessary to complete the work.

Payment will be made under:

907-858-A: PLC Cabinet and Programming -lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-859-1 **CODE: (SP)**

DATE: 3/9/2012

SUBJECT: Span Drives and Motors

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-859, Span Drives and Motors, is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-859 – SPAN DRIVES AND MOTORS

907-859.01—Description. This special provision describes furnishing labor, tools, equipment and materials necessary for the manufacture, transporting, installation, testing, and making fully operational new span main motors and drives.

The existing auxiliary motor and mechanical gearing on each leaf shall be removed and replaced with a new AC induction motor and flux vector AC drive. Once the auxiliary motors have been replaced and new motor/drives have been commissioned, the existing main motor will be replaced with an identical system that will provide a redundant operating system.

907-859.01.1—References.

- IEEE 112 – Test Procedures for Polyphase Induction Motors and Generators
- NEMA MG 1 – Motors and Generators
- NEMA MG 2 – Safety Standards for Construction and Guide for Selection, Installation, and Use of Electric Motors and Generators

907-859.01.2—Related Provisions. Unless otherwise noted, conform work under this special provision to the requirements of the following special provisions:

- Electrical Work
- Electrical Service
- Auxiliary Electrical Equipment
- Control Console
- Motor Control Center
- PLC Cabinet and Programming
- Limits and Sensors
- Submarine Cable
- Lightning and Surge Protection
- Training, Manual and Spare Parts

907-859.02—Materials.

907-859.02.1—General. Each span drive cabinet shall contain two AC flux vector drives that will be "synched" together to form an electronic line shaft function between adjacent leafs. Each cabinet shall be complete with AC drives, dynamic braking resistors, brake choppers (as required), disconnect, fusing, contactors, cabinet, communications, metering and miscellaneous equipment necessary to meet the performance requirements of this specification.

Power ratings given in the plans and specifications are for general reference only. The supplier is responsible for ensuring that the Variable Speed Drive (VSD) and motor package is properly sized to accommodate the speed and torque requirements of the project

907-859.02.2—Three Phase Power - Squirrel Cage Motors. Refer to Plans for required electrical characteristics. Provide stamped, stainless steel visible nameplate indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model and serial number, design class and service factor. Provide a full test report for each motor. Provide conduit connection boxes, threaded for conduit.

Provide three phase power squirrel cage motors with the following minimum specifications:

- 8 pole motor, 900 RPM at 60 Hertz
- Continuous Duty in 40 °C environment.
- Start-Ups: 6 per hour. two (2) per 10 minute period.
- Power Output, Locked Rotor Torque, Breakdown or Pullout Torque: NEMA Design B Characteristics for pumps,
- Conform to NEMA MG one (1) for Design B & D Motors.
- Insulation System: NEMA Class F or better.
- Testing Procedure: In accordance with IEEE 112, Test Method B. Load test motors to determine freedom from electrical or mechanical defects and compliance with performance data. Perform additional testing to determine speed/torque curve relationship.
- Motor Frames: TENV or TEFC steel or cast iron frames (no aluminum frames allowed). Motor bases have been designed based on a L3213 frame. Coordinate actual motor frame with machinery fabricator. No external blower allowed.
- Three PTC thermistors imbedded in motor windings and epoxy encapsulated solid state control relay for wiring into motor starter.
- Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum AFBMA 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.
- Sound Power Levels: To NEMA MG 1.
- Nominal Efficiency: Meet or exceed values in Schedules at full load and rated voltage when tested in accordance with IEEE 112.
- Nominal Power Factor: Meet or exceed values in Schedules at full load and rated voltage when tested in accordance with IEEE 112.

- Service Factor: 1.15. Horsepower ratios shall be referenced from a 1.0 service factor.

Motors are integral to assemblies being provided for rear locks and are paid for as part of those assemblies.

907-859.02.3—Span Drives. Each span drive shall be a complete system that includes two variable speed drives, a cabinet, disconnects, resistors, contactors, fuses and various components necessary to operate two motors in an electronic line shaft configuration.

The Variable speed drives shall be a high performance flux vector drives with advanced programming features and built in diagnostics. Each individual drives shall be capable of side-by-side mounting. Each individual drive shall have closed loop speed control with an encoder mounted on the new drive motors. Each drive pair shall be connected with a high speed communication link capable of precisely synchronizing each motor's speed and position.

Design, fabrication, and performance requirements for VSD:

- Rated for operation in 460 V, 3-phase, 60 Hz systems.
- Installed in NEMA 12 enclosure with a fused flange mounted disconnect.
- Dynamic braking Resistors with chopper modules as required.
- Dynamic braking function capable of 100 percent braking of full load motor torque for three (3) minutes
- Include suitable warning labels inside and outside the enclosure in those cases where it is possible for the maintenance electrician to wire circuits into the enclosure that are not disconnected by the disconnect device.
- Operate in an ambient temperature of 0 °C. to 40 °C., an altitude of up to 3,300 feet above sea level, and humidity of 0 to 95 percent non-condensing.
- Have complete front accessibility with easily removable assemblies.
- Human interface module with alphanumeric display, local/remote and start/stop buttons.
- The control shall be capable of providing selectable current/torque limit settings.
- Drives shall be capable of controlling both Ethernet and relay interface.
- Have complete front accessibility with easily removable assemblies.
- AC drive with the following requirements and features:
  - Contact outputs: two (2) form "c" min. (functionally programmable).
  - Programmable analog outputs
  - Reduced Torque Capability
  - Acceleration time: 0-3600 second with two (2) independently programmable timers.
  - Deceleration time: 0-3600 second with two (2) independently programmable timers.
  - Minimum of four (4) digital Speed inputs.
  - Sensorless Flux Vector Control to within 0.1 percent of base speed across 100:1 speed range.
  - Ethernet port
  - Control and Setup Parameters programmable from PLC program and programming software.
  - Electronic Class 10 overload protection.
  - Programmable current Limit

- Able to withstand output terminal line-to-line short circuits without component failure.
- Power ride-thru of 15 MS at full load.
- Insensitive to input line rotation.
- Over temperature protection.
- Acceleration and deceleration control.
- Electrical isolation between the power and logic circuits, as well as between the 120 VAC control power.
- Line transient voltage protection.
- Slip compensation speed regulation to 0.5 percent.

907-859.02.4—Cabinet. Provide heavy duty free standing NEMA type 12 enclosures manufactured with 10-guage steel. Furnish enclosure with a flange mount disconnect. Apply a baked powder coat gray finish on the outside and white finish on the inside of the enclosure.

Furnish two ground lugs, one for incoming line power and one for outgoing motor ground connections. Furnish and install vents or fans to dissipate heat generated by the drives.

907-859.03—Construction.

907-859.03.1—General. Coordinate motor frame size with brake and mechanical manufacturers. Install motors per manufacturers' instructions. Install motor mounting bases as required to accommodate motors. Properly align motor shaft with driven shaft before connecting motor coupling. Align if required. Megger motors before final connection. Record these readings and submit with "as-built" drawings. Connections shall be accomplished with bolted compression lugs.

907-859.03.2—Factory Load Testing. Before shipping, conduct a factory design proof test on each drive and motor system with a calibrated dynamometer to verify that the performance requirements have been met. The test will be witnessed by the engineer. Provide 30-day advanced notice and submit description of the test stand to document the accuracy of the torque readings.

Supply test results to confirm that the VSD has been tested to substantiate designs according to applicable ANSI and NEMA Standards. The tests shall verify not only the performance of each unit and integrated assembly, but also the suitability of the enclosure venting and rigidity. All units shall be factory tested in accordance with ANSI standards in addition to the design proof tests conducted on all units.

Testing procedures shall include:

- Apply loads equal to the torques specified for AASHTO Condition A to motor shafts. Run motor at 100 percent speed for three (3) minutes (driving). Motor-drive combinations should be capable of driving the load.

- Apply overhauling loads equal to the AASHTO Condition A torque to motor shafts. Run motors at 100 percent speed for three (3) minutes (dynamic braking). Motor-drive combinations should be capable of dynamically braking the load.
- Demonstrate that motors/drive cannot produce or exceed the never-exceed torque value at zero or any other speed. NOTE: Zero speed is defined at 0-20 RPM max.
- Make final adjustments to installed drive to assure proper operation of fan system. Obtain performance requirements from installer of driven loads. Touch up scratched or marred surfaces to match original finish. Demonstrate operation of controllers in automatic and manual modes.

907-859.03.3—Shop Control Testing. Interconnect both drives and motors with the entire control system. Demonstrate the operation of both drives using the control system. Demonstrate the following in an unloaded condition during the shop test:

- Speed changes for both raising and lowering for each motor/drive in one motor operation
- Speed changes for both raising and lowering for in two (2) motor operation.
- Speed setpoint and ramp programming changes from HMI setup screen.
- Normal Stop sequence
- Emergency Stop sequence
- Apply overhauling

907-859.04—Method of Measurement. Span Drives and Motors will be measured for payment as a lump sum quantity.

907-859.05—Basis of Payment. Span Drives and Motors, measured as prescribed above, will be paid for at the contract lump sum price which price shall be full compensation for all labor, materials, tools, testing and all incidentals necessary to complete the work.

Payment will be made under:

907-859-A: Span Drives and Motors - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-860-1 **CODE: (SP)**

DATE: 3/9/2012

SUBJECT: Limits and Sensors

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-860, Limits and Sensors is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-860 – LIMITS AND SENSORS

907-860.01—Description. This special provision describes furnishing labor, tools, equipment and materials necessary for the manufacture, installation, adjusting, calibrating, testing, and making fully operational new span position cam limits, brake limits, rear lock limits, and span position inclinometers as indicated in the plans.

907-860.01.1—Related Provisions. Unless otherwise noted, conform work under this special provision to the requirements of the following special provisions:

- Electrical Work
- Electrical Service
- Auxiliary Electrical Equipment
- Control Console
- Motor Control Center
- PLC Cabinet and Programming
- Span Drives and Motors
- Submarine Cable
- Lightning and Surge Protection
- Training, Manual and Spare Parts

907-860.02—Materials.

907-860.02.1—Rear Lock Limits. Provide non-contact, inductive proximity style switches. Switch contacts shall be rated for 250 VAC. Supply switches that are heavy duty 30 mm diameter, NEMA Type 4 construction with a stainless steel housing and temperature rating between -25 ºC and 70 ºC. Sensing distance shall be a minimum of 15 mm. Sensor shall be supplied with quick disconnect cables.

907-860.02.2—Inclinometer – Span Position Transmitter. Install a leaf angle position transmitter/inclinometer to the bascule girder at a suitable location to the centerline of bridge rotation as practical. Power unit with 120 VAC and provide a voltage or current output signal relative to leaf angle. This output signal is 4 to 20 mA as required to properly interface with the

PLC. House position transmitters in a NEMA 4X rated enclosures with terminal blocks, and power supply as required for connecting to power source and angle position meters. The position transmitter itself is adjustable and calibratable without having to physically move the NEMA enclosure.

Do not exceed 0.01 percent per °C for the position transmitter temperature drift. Have suitable vibration resistance and dampening for a bridge leaf application. Non-Linearity is <1*10 –3 full scale. Transverse sensitivity is < 1 percent at 45 degree tilt.

907-860.02.3—Span Position Cam Limits. Cam limits shall be 6 circuit rotating cams in a NEMA 12 enclosure with a straight drive with SPDT snap action type switches with a minimum 10 amp rating at 120 VAC. The limit shall be furnished with all necessary couplings and or adapters. The contractor shall verify the shaft locations of the existing cam limits. All sprockets and gears shall be cleaned, reused and lubricated.

907-860.02.4—Span Seated Plunger Limits. Switch shall be a weather-sealed design, with neoprene gaskets between exterior bolted connections. Cover shall be designed to positively retain a gasket. Drain plugs and a breather shall allow condensation to evaporate or drain from housing. Construction shall be stainless steel, heavy duty, durable and suitable for marine environment. Plunger extension shall permit at least .75" field adjustment and shall have a ball end. Design shall also allow for simple field swapping of service cover hand. Plunger shaft shall be stainless steel. Pre-travel shall be approximately 1.50" with a minimum over-travel of 2.00". Trip plate shall be spring loaded with an over-center mechanism to provide simultaneous, positive, accurate, and repeatable snap-action activation of all switches. Trip point shall be field adjustable by simple adjustment of plunger extension. Each circuit shall provide independent normally open and normally closed sets of contacts (1 NO and 1 NC). Heavy-duty snap-action microswitches shall be double-break type to increase contact life. Individual switches shall be rated for 15A make / 40A break at 120V

907-860.03—Construction. Install limit switches in accordance with manufacturer's instructions. Provide all mounting hardware and supports as required. The method of mounting and hardware allows for field adjustment at construction and for future maintenance. Terminate all limit switches on terminal blocks. Install drainage "T" below takeoff for limit switches on all applicable conduit runs. Submit to the engineer, for review, prior to installation the limit switch target materials, shapes, and mounting methods.

907-860.03.1—Testing. After installation, test switches, in the presence of the engineer, to determine if operation is as intended. Switches will relay signal to the control console and/or control panel at intended "point of operation." Switches will provide positive indications with no intermittent signals or flickering of lights on control console. Adjust position of switches as required.

907-860.03.2—Installation. Fabricate brackets out of stainless steel material with 3-axis adjustability. Use stainless steel material for all mounting hardware. Use painted steel for sensing plates.

907-860.04—Measurement. Limits and Sensors will be measured for payment as a lump sum quantity.

907-860.05—Payment. Limits and Sensors, measured as prescribed above, will be paid for at the contract lump sum price which price shall be full compensation for all labor, materials, tools, testing and all incidentals necessary to complete the work.

Payment will be made under:

907-860-A Limits and Sensors - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-861-1 **CODE: (SP)**

DATE: 3/9/2012

SUBJECT: Submarine Cable

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-861, Submarine Cable is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-861 Submarine Cable

907-861.01—Description. This special provision describes furnishing, installing and testing new submarine cables and termination cabinets.

The submarine cable system includes the physical cables that cross the channel, the submarine cable termination cabinets, all mounting hardware and cable supports, timber pier protection and all electrical and mechanical connections to and from the submarine cable termination cabinets.

907-861.01.1—Related Provisions. Unless otherwise noted, conform work under this special provision to the requirements of the following special provisions:

- Electrical Work
- Electrical Service
- Auxiliary Electrical Equipment
- Control Console
- Motor Control Center
- PLC Cabinet and Programming
- Span Drives
- Limits and Sensors
- Lightning and Surge Protection
- Training, Manual and Spare Parts

907-861.02—Materials.

907-861.02.1—Submarine Cable. Verify the conductor count of the cable with the vendor of the bridge control system to ensure the specified number of spare conductors is provided. Ascertain the correct continuous length of submarine cables, including sufficient excess length to accommodate pulling eyes, adequate slack for submarine cable settling, cable clamping, connections, testing, and for samples. Ascertain the correct conductor counts (to include spares) based on approved working drawings. In no case can the conductor counts be less than those herein before specified.

907-861.02.1.1—Cable Materials. Furnish cables with a weather and UV resistant high density polyethylene (HPDE) outer jacket with galvanized steel armor conforming to the requirements of ICEA S-95-658 and NEMA WC70. Provide soft annealed copper wire conductors conforming to the requirements of ICEA Publication. Provide Class B concentric stranding conductors. Provide a moisture-resisting, cross-linked, polyethylene compound insulation for each conductor conforming to the requirements of ICEA #S-95-658/NEMA WC70, Part 3.7. Conform the thickness of insulation as given under Column A of Table 3-1 for 2,000 volts rated circuit voltage. Provide mineral filler (not carbon) insulation to inhibit treeing.

Before cable orders are placed with any manufacturer, determine the true length of each cable between the submarine cable terminal cabinets. Splicing or joining of conductors between these points will not be permitted. Ascertain and order the correct continuous length of submarine cables, including sufficient excess length to accommodate pulling eyes, adequate slack for submarine cable settling, cable clamping, connections, testing, and for samples.

907-861.02.1.2—Cable. Furnish 600 volt rated power, control and communication cables as shown in plans. Include copper conductors, twisted shielded pairs, coax cables and an inner ducts of the sizes and quantities shown in the plans.

907-861.02.1.3—Conformance. Conform all materials and construction of the submarine cables to the requirements of ICEA Publication #S-95-658/NEMA No. WC70.

Conform all electrical equipment and installations to the requirements of the Standard Specifications for Movable Highway Bridges of the American Association of State Highway and Transportation Officials, except as may be otherwise provided herein. Conform all materials and construction items to the requirements of the Electrical Code of Mississippi and to any applicable local rules and ordinances.

907-861.02.2—Terminal Cabinets. Furnish and install terminal cabinets to provide termination for the submarine cables. All cabinets shall be adequately sized to mount all terminal blocks and to provide ample space between blocks for routing of the wires. Size will be determined by the number of conductors and available wall space.

Provide Stainless Steel type NEMA 4X terminal cabinet enclosures fabricated from No.10 gauge, Type 316 stainless steel reinforced by steel angles. Install framed overlapping door(s) hung on continuous stainless steel piano hinges to provide access to the equipment inside. Construct the door(s) from No. 10 gauge stainless steel, suitably reinforced with a three-point, vault-type latch and padlock. Provide door(s) with rubber gaskets to prevent water from entering the cabinets. Weld reinforcing plates to the walls where conduits and cables enter the cabinets. Provide each cabinet with drain fittings of the same type as specified for conduit drains under this bid item.

Provide spring clamp type disconnect type terminal blocks in each terminal cabinet for control conductors in the submarine cables. Provide feed through coaxial connectors for each coax cable and RJ-45 patch panel for Cat 5E cable. Provide space in cabinet for installation of fiber optic patch panel for future use by the city. Provide sufficient terminals for termination of all spare

conductors and other conductors to be terminated inside the cabinet. Mount all terminal blocks and boards on structural steel brackets in such a manner as to permit routing the cables behind the blocks. Provide one-piece terminal blocks suitable for use in highly corrosive atmospheres conforming to the requirements specified under this bid item.

Provide for grounding and bonding of all termination cabinets. Provide grounded vertical stainless steel segregation shield between the power terminal blocks and the control and signal terminal blocks. Extend the segregation shield at a height from the backplate of the terminal cabinet to the inside of the cabinet door. Bolt the shield to the bare metal backplate with stainless steel fasteners and test for proper grounding.

Provide cabinet heaters that are sized for the interior dimensions of the cabinet. Include internal thermostat for controlling the temperature inside.

907-861.02.3—Hardware. Use a threaded cable support clamp screwed onto the end of the threaded conduit for supporting each submarine cable at the top end of its pier encased conduit run. Provide clamp assemblies that are fabricated of hot dipped galvanized steel and made specifically for this use. Provide stainless steel hardware conforming to the requirements of ASTM Designation A276, Type 316. Provide bolt heads and nuts that are hexagonal and with medium series lock washers.

Secure each jacketed core of each submarine cable entering terminal cabinets at the entrance wall by a watertight, bronze cable entrance sealing bushing. Do not drill a box for more conduits or cables than actually enter it.

Furnish and install a stainless steel cover to protect the cables from the floor brackets to the bottom of the cabinet. Use grommet and or cord grips to seal the cable's entrance into the cabinet.

907-861.03—Construction.

907-861.03.1—Submarine Cable. In each cable, provide insulated conductors cabled to a full circular section using non-hygroscopic fillers, where necessary, to fill out the section. Cover each layer of the conductors with a single serving of binder tape. Identify conductors in each layer by coloring or marking the outer surface of the insulation. Apply one (1) layer of binder tape over the cabled conductors followed by a homogeneous synthetic sheath conforming to the requirements of NEMA WC7, Part 4.4.2, Polyethylene, Black. Conform the thickness of the sheath in accordance with the requirements of Table 4-7. Apply cable armor over the sheath consisting of a single layer of galvanized plow steel wire, each wire covered with a layer of polyethylene. Apply a high-density polyethylene jacket over the armor. Conform the polyethylene jacket, jacket thickness, and armor jacket to NEMA WC70 and be sunlight and weather resistant. Submit any variations in cable construction or materials to the engineer for review and approval.

Provide approved non-hygroscopic filler material suitable for submarine cable application, such as jute, in the interstices between and over the insulated conductors to give the complete cable a

circular cross-section. Apply binder tape of approved suitable, flame-resistant, and moisture-resistant fabric material with a thickness not less than 10 mils over the multi conductor/filler assembly and overlapped not less than 10 percent of its width between turns.

907-861.03.2—Submission of Proposed Method of Installation. Submit, in detail, the proposed method for installing the submarine cables, submarine cable termination cabinets, and all other equipment, and obtain the approval of the engineer before any work is started.

907-861.03.3—Factory Tests of Submarine Cables. Test all cables at the factory in accordance with the test methods of ICEA/NEMA Standards for the types of cable and insulating materials specified and meet or exceed the minimum requirements and criteria for acceptance as set forth therein. Test to demonstrate the quality of the production run prior to assembly and fabrication of the submarine cables, the individual insulated conductors to be incorporated in the cables.

Conform the conductors and insulating compounds to meet the minimum physical and electrical requirements set forth in NEMA Publication No. WC-70. After each multi conductor cable is completely assembled and armored, subject the entire cable to tests for insulation resistance and high voltage. Perform high-voltage tests at the same voltage used on the individual wires and the insulation resistance cannot be less than 80 percent of the original values for the individual wires. Submit the test reports for approval prior to shipping any cable.

Submit to the engineer certified copies of all the factory test data for approval before accepting shipment of cable from the manufacturer. Include, in a tabulated form, the test data, a description of the material undergoing tests, a description of each test performed, the measured or observed results, and the value and limits required by the ICEA/NEMA Standard for acceptance. In addition submit to the engineer copies of a statement certifying that the cable delivered for use under this contract has passed the required factory inspections and tests and complies with all the requirements, including electrical, materials and construction, of the standards and specifications in the contract.

907-861.03.4—Submarine Cable Field Testing. Test the submarine cable system as described in the plans and special provisions. Replace and retest at no additional cost to the department any cable or component of the submarine cable system that does not pass the required testing. Obtain the submarine cables from one manufacturer that is experienced in producing submarine cable of similar types to those described.

907-861.03.5—Installation. Install new submarine cable across the channel at the location shown on the contract plans. Care shall be taken to prevent damage to existing submarine cables. Provide all labor, permits, and equipment sufficient to perform all work necessary to install and place in satisfactory operating condition submarine cables and terminating equipment for carrying the power, control, and ground across the navigable channel.

Provide certified diver(s) and equipment necessary to install and inspect (electrically and physically) the cables as required by the engineer.

Under this item, coordinate installation with the engineer, the cable manufacturer, and pertinent Federal, state and local agencies, including, but not limited to, the U.S. Coast Guard, and the Department of Natural Resources (DNR). Coordinate any channel obstructions with waterway agencies in accordance with all applicable laws, regulations and permits. Install submarine cables in accordance with USACE and DNR permits.

Install cables that cross the channel side by side without twists or loops. No cable will be permitted to cross the other. Route the cables to avoid unforeseen obstructions. Do not exceed the minimum bending radius of each cable at any time before, during, or after installation. Perform the cable installation without damaging the bridge structure or any existing substructure and as directed by the engineer. Exercise proper care so as not to overstress, score, nick, or cut the conductors, insulation, outer jacket or armor, or otherwise damage the cable. During the installation of the cables, arrange to have a representative of the cable manufacturer, experienced in submarine cable handling and installation procedures, on site to provide advice to the contractor and the engineer in these matters.

Take special care to prevent the new cable ends from being damaged or wet during the installation. Provide sealed cable ends from the cable manufacturer. Install all cables per all manufacturer's recommendations. Install cables as shown in the contract plans.

Allow cables to settle for a period of a minimum of 48 hours, after the last cable has been placed, before any rigid connections or attachments are made. Provide submarine cables of sufficient length to allow for slack in settlement and to allow for making permanent connections. Provide proper equipment for lifting or lowering the submarine cables at the abutments. Determine the proper type of lifting or lowering device for the cables, subject to approval by the engineer. Include considerations for the quantity and size of conductors in the submarine cable and distances involved.

907-861.04—Measurement. Submarine Cable will be measured for payment as a lump sum quantity.

907-861.05—Payment. Submarine Cable, measured as prescribed above, will be paid for at the contract lump sum price which price shall be full compensation for all excavation and backfilling required for installing the submarine cable; for all labor, materials, and equipment needed to perform the underwater installation in accordance with all requirements of DNR and USACE; furnishing, installing and testing the submarine cable and its termination cabinets; providing divers and underwater inspection; and for furnishing all labor, tools, equipment, software, materials, and incidentals necessary to complete the work.

Payment will be made under:

907-861-A: Submarine Cable - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-862-1 **CODE: (SP)**

DATE: 3/9/2012

SUBJECT: Lightning and Surge Protection

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-862, Lightning and Surge Protection is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-862 – LIGHTNING AND SURGE PROTECTION

907-862.01—Description. This special provision describes furnishing labor, tools, equipment and materials necessary for the installation and operation of a fully functional lighting protection and transient voltage surge-suppression (TVSS) system.

Comply with all local codes, all laws applying to electrical installations in effect and with the regulations of the latest NEC, where such regulations do not conflict with the laws in effect and with the requirements of the utility company.

It is the intention of the contract plans to call for completely finished work, fully tested and ready for operation. Furnish, deliver, and install any apparatus, appliance, materials, or work not shown on the plans but mentioned in the special provisions or vice versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, shall be furnished, delivered, and installed without additional expense to the department.

907-862.01.1—Related Provisions. Unless otherwise noted, work under this special provision shall conform to the requirements of the following special provisions:

- Electrical Work
- Electrical Service
- Auxiliary Electrical Equipment
- Control Console
- Motor Control Center
- PLC Cabinet and Programming
- Span Drives
- Limits and Sensors
- Submarine Cable
- Training, Manual and Spare Parts

907-862.01.2—Submittals. Submit the following for each component of the Lightning Protection and TVSS bid item:

- Submit Manufacturers shop drawings.
- Submit Product Data.
- Submit Manufacturer's installation instructions.
- Submit operation and maintenance data.

907-862.01.3—Regulatory Requirements. National Fire Protection Association, NFPA-780, Standard for the Installation of Lightning Protection Systems, 2008.

- ANSI/IEEE Standard 81 Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System.
- UL 96A Installation Requirements for Lighting Protection Systems.
- NFPA 70 - National Electric Code, NEC, Article 250, 2011.
- UL 467 - Grounding and Bonding Equipment.

907-862.02—Materials.

907-862.02.1—Lightning Protection. In general, use 316 stainless steel materials. In locations where system components are to be connected to aluminum surfaces, use tin plated or CU-AL marked fittings. Use Class I stainless steel air terminals with a threaded base. Height shall be no less than 18 inches for control house. Provide threaded stud base for air terminal and bolted clamp conductors. Provide main and down conductors of stranded stainless steel, 14 AWG minimum size strands, 133 CM overall. Provide bonding conductor of stranded stainless steel, 17 AWG minimum size strands, 28,000 CM overall. Bond connections between movable span and fixed pier and traffic gate arms to the operator base bonded with No. 4 type W or extra flexible welding cable.

Use a grounding electrode of minimum of 1-inch by 10-inch feed copper clad steel for all ground points including submarine earth grounding electrodes. In general, connect bonds and taps by exothermic weld. Mechanical, bolted connections are allowed at the air terminals, the flexible cable ends, sheet piles and on aluminum surfaces. Provide bonding plates for aluminum surfaces of tin plated or copper-aluminum alloy.

Design the static discharge assembly to safely interface with other bridge components without degrading, in any way, its structural integrity and while blending with the appearance of the structure. Design the system to withstand a wind force of at least 80 MPH.

Install a minimum of two (2) air terminals on the peak of the control house roof. Bond the terminals to a main conductor installed around the perimeter of the roof. Install two (2) down conductors, each from opposite corners and extending down to submarine ground rods. Encircle a bonding conductor around the control house windows, with the window frame bonded at the corners. Route main conductors between ground rods as shown on the plans. Bond the ground system to the lightning protection system with conductors sized per NFPA 780. Bond all metal structures, including traffic light structures, traffic and barrier gate assemblies, and camera poles and any external lighting fixture, metal traffic barrier and all handrails to the lightning protection main conductors. Bond the handrail and guardrail to the main conductors at regular intervals. Bond the electrical system ground to the lightning protection system at the MCC ground bus.

Exothermically weld all joints in the system. Use bolted connections where connections are accessible for inspection and maintenance.

907-862.02.2—Surge Suppression.

907-862.02.2.1—General. Furnish and install surge suppression equipment as described in this article and shown on the plans. Provide Transient Voltage Surge Suppressors (TVSS) as described herein for all motors, incoming power and any circuit that enter or leave the tender house's protected perimeter. The protected perimeter includes the operator level, entry-level room and machinery level room. Install motor and branch circuit protectors in a TVSS cabinet in the machinery level room.

907-862.02.2.2—Conformance. All materials and workmanship shall conform to the latest editions of the following standards and publications referenced in various parts of this article:

- ANSI/IEEE C62.1 Standard for Surge Arrestors for AC Power Circuits
- Underwriters Laboratories, UL 1449 Standard for Safety, Transient Voltage Surge Suppressors, Revised edition.
- UL 96A Installation Requirements For Lightning Protection Systems.

907-862.02.2.3—Suppressors for Motor Branch Circuits. Install transient voltage surge suppressors on each motor branch circuit entering or leaving the operator house's protected perimeter. Provide motor circuit suppressors rated for category A in a parallel shunt design, clamping each conductor to ground.

Motor circuit suppressors shall meet or exceed the following minimum criteria:

- Single impulse withstand rating: 25,000 A (8 x 20 µs waveform) plus power-follow per wire.
- Pulse lifetime rating (3,000 A – 8 x 20 µs plus power-follow): 1,000 occurrences.
- Minimum energy handling capability – 1,500 joules
- Worst case response time: 5 µs
- Maximum clamping voltage (voltage with input current of 3,000 A – 8 x 20 µs plus power-follow):

Normal Applied Circuit Voltage	Maximum Clamp
120V	300V
240V	550V
277V	1,000V
480V	2,000V

(Energy rating @10 x 1000 µs waveform plus power-follow.)

- UL listed and approved for the location in which they are installed.
- Provide visible indication of suppressor failure. Arrange shunt TVSS elements to fail open.

907-862.02.2.4—Suppressors for Control and Signal Circuit Protection. Provide control circuit suppressors that are multi-stage hybrid shunt-series-shunt design. Suppressors for balanced (two-conductor) circuits shall also clamp conductor to conductor when required by the nature of the circuit. Provide suppression devices for control circuit protection in single or multi-channel packages suitable for the circuitry to be protected with connectors or terminal blocks or strips suitable for the type of wiring being used.

Provide suppression for each conductor consisting of a high energy dissipater parallel (shunt to ground) first stage, a series surge current-limiting impedance second stage, and a voltage clamping parallel connected third stage. Resistive limiting elements may be used where the voltage drop across the series resistance has no effect on circuit operation. Inductive series elements may be used on other circuits to effectively pass DC or low frequency AC currents while limiting passage of fast risetime surge waveforms.

Minimum performance criteria (each circuit) shall be as follows:

- Maximum single impulse conductor-to-ground current withstand: 10,000 A (8 x 20 µs waveform) plus power-follow.
- Pulse lifetime rating category B worst-case current waveform (8 x 20 µs at 3,000 A plus power-follow): 1,000 occurrences
- Minimum energy handling capability – 500 joules per conductor
- Worst case response time: 5 µs
- Worst case (3,000 A at 8 x 20 µs) clamping voltage: 200 percent of normal operating voltage amplitude and polarized or bipolar as appropriate for each circuit type.
- Initial clamping voltage: 150 percent of normal operating voltage peak amplitude ± 5 percent.
- Capacitance for DC or low frequency AC circuits: Do not exceed 2,000 picofarads, measured line to ground at the rated diode breakdown voltage.
- Capacitance for audio, video, high frequency, or high baud rate circuits: Install suppressors designed for use on such lines. Capacitance of such units shall be equated to equivalent cable length based on the type of cabling used for the particular circuit. The sum of equivalent cable length of suppressors and actual cable length shall not exceed manufacturer's recommended maximum values for the system on which those devices are installed.

907-862.02.3—Incoming Main for Control and Signal Circuit Protection. Provide an incoming main surge protective device that meets the following minimum criteria:

- Installed in a NEMA 12 enclosure
- L-L, L-N, L-G and N-G protection modes
- 10 year warranty
- U.L. 1449 listed

- Peak surge current rating per phase of 480 kA.
- Indicator LEDs for normal and fault conditions for each phase.
- Audible alarm with enable disable switch.
- Surge Counter

907-862.03—Construction.

907-862.03.1—General. Protect the tender house by a lightning protection system installed in accordance with U.L. 96A except as expressly otherwise specified herein. Furnish and install system by a U.L. listed installer of lightning protection systems and provide a Master Label or UL Letter of Finding for the system.

Protect the operator house fully in accordance with UL 96A as though it were a separate structure. Pay special attention to routing the down leads from the lightning system as to maintain a minimum 6-foot spacing from the control desk and interior equipment bonding down leads.

Protect the moving bascule leaves and their supporting piers in accordance with UL 96A Class II. Treat the bascule leaves as structural steel framing under UL 96A Section 13 assuming that the perimeter grounding requirements apply when the bascule leaf is in the upright position. The down conductors from the bascule leaf to the balance of the structure will be No. 2/0 AWG type W extra flexible cable such as welding cable or locomotive/diesel cable, all other main and secondary cables shall be standard Class II conductors. Provide the connection between the flexing cable from the bascule leaf and the main down conductor on the pier to route surges through the flexing cable. Bond all machinery, fixed equipment, and metal parts within the bounds established by the back faces of the bascule leaf piers, and excluding the fender system, in accordance with UL 96A. Treat metal handrails above road level air terminals and bond with main conductors except the "two-way" path requirement of UL 96A Paragraph 7.1 will not apply. There shall be no requirement to bond to any embedded reinforcement bar. Where structural steel members of the bridge are to be connected, piercing of the steel member is not allowed.

Protect isolated electrical equipment (e.g., traffic gates) or support poles or structures for electrical apparatus (e.g., signal lights) in accordance with standard UL 96A practice utilizing individual ground terminals. Bond traffic and barrier gates with No. 2/0 AWG copper. Bond the gate arm to the gate operator housing with (No. 1 AWG) extra flexible tinned copper bonding strap 25 mm wide by 10 mm thick.

The unique nature of the bridge must be taken into account in the selection of materials and techniques. The highly corrosive environment requires that externally mounted conductors, air connectors, and ground connectors shall be corrosion resistant either inherently (e.g., series 300 stainless steel or bronze construction) or by protection using plating or coating acceptable to the UL and the engineer. All conductors and ground terminal components within five feet above mean high water shall be inherently corrosion resistant sufficient to provide a minimum thirty year service life.

Access to the system will be restricted after the installation is completed and routine maintenance will be minimal. Install the system in a manner to assure long term reliability. Weld connections to the bascule leaf structure and other fixed metal parts, cable splices, and connections to ground terminal components. Restrict bolted connections to removable items (e.g., motors) and to the flexing cables from the bascule leafs to permit cable replacement. Crimp type connectors will not be acceptable in any part of the lightning protection system. Conductor guards shall be non-metallic.

Conductor or ground terminal exposure to the water only (e.g., "reservoir grounding") will not be an acceptable ground connection. Accomplish grounding in the submarine earth in accordance with UL 96A Paragraph 8.6 or 8.8 as applicable except that ground rod is used. Ground terminal components must be buried and anchored in a manner to provide the required service life. Furnish a diver and the necessary diving equipment for use of the UL Inspector, the engineer, or his representative in making inspections of the grounding installation. Upon completion of the installation, furnish the Master Label issued by Underwriters Laboratory for this system, thus certifying that this system complies with all UL requirements.

The desired primary bond to the TVSS system is to be at the TVSS equipment cabinets on the equipment (lower) floor.

907-862.03.2—Surge Suppressors.

907-862.03.2.1—Bonding and Grounding Conductors and Materials. Use conductors for individual surge suppressor bonding specified in UL 96A for the lightning protection circuit unless otherwise specified. Make connections as specified in UL 96A unless otherwise specified. Aluminum conductors are not acceptable.

907-862.03.2.2—Segregation of Wiring. Classify all system wiring into protected and non-protected categories. Wiring on the exposed side of suppression devices is considered unprotected. Surge suppressor grounding and bonding conductors also fall into this category. All wiring between surge suppressors and protected equipment is considered protected. Wiring that is wholly within a protected cluster and thereby exempted from surge suppression requirements is also considered protected.

Provide a minimum of three (3) inches of separation between parallel runs of protected and unprotected wiring in control panels, terminal cabinets, terminal boards, and other locations. Do not bundle protected and unprotected wiring together or route through the same wireway. Where bundles of protected and unprotected wiring cross, cross them at right angles with a minimum of one (1) inch of separation or a ferrous shield between the conductors. No unprotected wiring is permitted with the protected perimeter of the tender house or any other system that is protected as a cluster.

907-862.03.2.3—Installation of Suppressors. Mount, install, and ground all suppressors per the manufacturer's requirements. Give special attention to grounding requirements and minimum conductor sizes. Install individual suppressors as close as possible to the equipment to be protected consistent with available space. Where space permits and no code restrictions apply,

install suppressors within the same cabinet as the protected equipment. Install bonding jumpers not exceeding two (2) inches in length between the chassis and suppressor ground terminals. Use bolted connections with star washers to insure electrical and mechanical integrity of connections to the equipment chassis. Install suppressors in a neat, logical manner. Lead dress shall be consistent with recommended industry practices for the system on which these devices are installed.

Keep bonding between ground terminals for power and control or signal line suppressors serving a particular item or cluster of equipment as short as possible. Where practical, install suppressors in a common location for the cluster with the ground terminals bonded closely together. For installations requiring separation between the various suppressor grounds and equipment chassis within an equipment cluster, use the following table to determine bonding conductor requirements (distances are measured between most distant suppressor or chassis grounds within the cluster):

Bonding Distance	**Material**
0-10 feet	No. 6 AWG bare copper (solid) or 1½-inch copper strip 0.051 inch thick (min.)
10-50 feet	57,400 CM main conductor or 3-inch copper strip 0.051 inch thick (min.)
Over 50 feet	115,000 CM main conductor or 6-inch copper strip 0.051 inch thick (min.)

For the tender house cluster, mount all suppressors except power service protectors in a cabinet assembly at the protection window in the protection perimeter. Where cabinets are used to house surge suppressors, use painted steel backboards to serve as a low impedance ground plane for bonding surge suppressor leads together. Bond suppressors with ground terminals not inherently bonded to the ground plane through their mounting to this plane using a conductor from the table above. Drill and tap ground planes and backboards to accept brass or series 300 stainless steel machine screws or bolts. Remove any paint in the area of the bond and use star washers to attach.

Where multi-channel surge suppressor devices are used, provide a minimum of 20 percent of the channels as spares. For example, if four channel modules are installed, one channel will be the spare. If eight (8) channel modules are installed, two (2) channels will be spares.

907-862.03.2.4—Transient Voltage Surge Suppression System Performance Criteria. Transient voltage surge suppression including grounding and bonding as required by this specification shall effectively protect the electrical systems to which it is applied against lightning and other surge transients throughout the useful life of the system. Design surge suppression devices and install in such a manner that normal operation of the system is not impaired due to the installation of such devices.

Calculations for suppressor pulse lifetime rating must assume the devices are installed in areas of medium exposure when such devices are installed in ANSI/IEEE 62.41 category A or B locations. Devices in category C locations shall be considered to be in an area of high exposure. Frequency of surge occurrence and surge amplitudes shall be as outlined in this standard with a

required minimum suppressor lifetime of fifteen (15) years. Surge current amplitudes and energy dissipation values used for life test and calculation purposes must include the power-follow currents appropriate to the circuit in which they are installed.

Protect the electrical system by dealing with each group of related devices as a "cluster" of equipment and protecting all metallic circuits that enter and leave the cluster. The cluster may be as large as the tender house or as small as an individual equipment cabinet. For purposes of establishing maximum size, all equipment within a protected cluster falls within a circular area of not greater than 25 feet in radius around a common point. Group all metallic circuits entering and leaving the equipment cluster together at a common point or "window" not larger than four (4) by eight (8) feet in dimension and protected with one exception: treat the tender house as a single continuous cluster with a window not larger than eight (8) by eight (8) feet and equipment which is located more than 25 feet from the window and circuits which extend beyond the 25 feet radius to serve devices within the building shall not require protection provided the following conditions are met:

- Circuitry is enclosed within metal raceways. Newly installed raceway must be metallic with the following exceptions:
- Lightning and surge suppression bonding conductors shall be bare or in non-metallic tubing only.
- The circuit between the main service protector and the control panel shall be in non-metallic conduit to provide a minimum impedance path for any transients that may reach the power bus from field circuits.
- No wiring within the raceways containing such circuits extends beyond the confines of the building or cluster.
- No connection is made between this wiring and conduit ground outside of the house's protected perimeter.
- All devices connecting to such circuits shall have no connections to conduit or other grounds or other power sources outside the house's protected perimeter.
- All equipment chassis within the house's protected perimeter shall be effectively isolated from stray grounds and bonded to a ground bar at the protection window for the house.

Connect the ground terminals of the suppressors at the window and any remotely located suppressors within the house (e.g. marine radio antenna, main service entrance protector) to this bar using a short, direct route. The bonding conductor between the control desk, motor control center (MCC), all suppressors, and the ground bar must be minimum UL 96A Class II main conductors installed in accordance with the requirements stated above for the lightning protection system. Coordinate the routing of these conductors with the installation of the lightning protection system so as to attempt to maintain minimum 6 feet spacing from the lightning down leads and prevent the necessity of cross-bonding before the ground bar. Route the bonding conductor from the control desk to the MCC and thence to the ground bar. Route all other bonding conductors direct to the ground bar without interconnection except at the ground bar. Nothing herein shall necessitate isolating raceway grounding. Around all raceways at each cabinet entered; field conduit entering the protection window from outside the house perimeter must be bonded to the ground bar in accordance with the lightning protection requirements. The tender house ground bar shall be two-way bonded as specified in UL 96A Paragraph 7.1 (for air

terminals) to the two main down conductors of the lightning protection system. The bonding conductors must be at least equal in size to the down conductors. Bonding connections between the ground bar and down conductors shall be thermo-welded; bolted connections are not acceptable in this circuit.

External to the tender house, isolate equipment chassis within a protected cluster from stray grounds and bond them to a ground bar at the suppressor location for the cluster. Connect the ground terminals of the TVSS protecting the equipment cluster to this bar using a short, direct route. The ground bar for each equipment cluster must interconnect with the electrical "green wire" grounds serving equipment within the cluster.

907-862.04—Measurement. Lightning and Surge Protection will be measured as a per lump sum quantity.

907-862.05—Payment. Lightning and Surge Protection, measured as prescribed above, will be paid for at the contract lump sum price which price shall be full compensation for furnishing and installing the lightning and surge protection equipment for the bascule span; and for furnishing all labor, tools, testing equipment, software, materials, and incidentals necessary to complete the work.

Payment will be made under:

907-862-A Lightning and Surge Protection - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-863-1 **CODE: (SP)**

DATE: 7/11/2012

SUBJECT: Training, Manuals and Spare Parts

PROJECT: BR-0110-01(028) / 105550302 -- Harrison County

Section 907-863, Training, Manuals and Spare Parts is added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-863 – TRAINING, MANUALS AND SPARE PARTS

907-863.01—Description. This special provision shall consist of testing, training and manuals for the movable bridge electrical and mechanical systems installed on the bridge. Testing shall include factory, preliminary and final acceptances. Manuals shall be supplied for both operations and maintenance. Training shall include separate sessions for both the operator and maintenance personnel.

907-863.01.1—Related Provisions. Unless otherwise noted, all work under this special provision shall conform to the requirements of the following special provisions:

- Electrical Work
- Electrical Service
- Auxiliary Electrical Equipment
- Control Console
- Motor Control Center
- PLC Cabinet and Programming
- Span Drives and Motors
- Limits and Sensors
- Submarine Cable
- Lightning and Surge Protection

907-863.02—Materials.

907-863.02.1—Manuals.

907-863.02.1.1—Operator Manuals. Furnish six (6) hard copy operations manuals and four (4) .pdf copies on CD or DVD to the department to be used for operator reference and the training of future operators. Include the following sections, and/or chapters in the operator's manual at a minimum.

1. TABLE OF CONTENTS
   Identify the title of each chapter.

2. CONDENSED OPERATOR INSTRUCTION
   Provide a condensed set of instructions the operator with simple, one (1) to four (4) word, descriptions of each step (for example lower near on-coming gate). Write separate instructions for manual and automatic operations. With each set of instructions, provide a console layout with the switches and pushbuttons sequence labeled with a number that is associated with the instructions. Provide separate sheets for manual open, manual close, automatic open and automatic close.
3. DETAILED OPERATOR INSTRUCTION
   Write a detailed set of operator instructions that describes every step in the sequence for both manual and automatic operations. Describe, in detail, each step of the operation. Steps in this sequence should include any visual and audio checks of roadway or waterway prior to making a movement.
4. BYPASS INSTRUCTIONS
   Describe how and when to use each bypass switch. Emphasize the dangers of using a bypass and the importance fixing the problem.
5. ALARM LIST
   Include all alarms with their definition.
6. EMERGENCY CALL LIST
   Include a list of local municipality emergency contacts, phone numbers and addresses, department contacts and numbers and the contractor's emergency call number. Consult the department for the key contacts.

907-863.02.1.2—Maintenance Manuals. Furnish six (6) hard copy maintenance manuals and four (4) .pdf copies on CD or DVD to the Department for reference and the training of future maintenance technicians. Include the following sections, and/or chapters in the operator's manual at a minimum.

1. TABLE OF CONTENTS
   Identify the title of each chapter.
2. CONDENSED OPERATOR INSTRUCTION
   Provide a condensed set of instructions the operator with simple, one (1) to four (4) word, descriptions of each step (for example lower near on-coming gate). Write separate instructions for manual and automatic operations. With each set of instructions, provide a console layout with the switches and pushbuttons sequence labeled with a number that is associated with the instructions. Provide separate sheets for manual open, manual close, automatic open and automatic close.
3. DETAILED OPERATOR INSTRUCTION
   Write a detailed set of operator instructions that describes every step in the sequence for both manual and automatic operations. Describe in detail each step of the operation. Steps in this sequence should include any visual and audio checks of roadway or waterway prior to making a movement.
4. BYPASS INSTRUCTIONS
   Describe how and when to use each bypass switch. Emphasize the dangers of using a bypass and the importance fixing the problem.
5. ALARM LIST
   Include all alarms with their definition.

6. EMERGENCY CALL LIST
   Include a list of local municipality emergency contacts, phone numbers and addresses, department contacts and numbers and the contractor's emergency call number. Consult the department for the key contacts to be put on the list.
7. VIDEO AND CAMERA INSTRUCTIONS
   Include instructions for setting up presets on cameras, recording video and burning it to DVD.
8. ALARM AND DATA PRINTING AND COPYING INSTRUCTIONS
   Include instructions for printing and copying alarms to DVD.
9. SETPOINT ADJUSTMENTS
   Describe how to adjust setpoints on the operator interface. Include a description of each setpoint, the as-built setting and the range.
10. ELECTRICAL SCHEMATICS
    Fold 11-inch by 17-inch final as-built schematics.
11. HYDRAULIC/MECHANICAL DRAWINGS
    Fold 11-inch by 17-inch final as-built schematics.
12. MOTOR MEGGER READINGS
    Include all motor readings in a table with a column for as-built and a column to be used yearly for the next 20 years.
13. SPARE PARTS LIST
    Furnish a complete list of each spare part, including, their manufacturer and part number and the quantity supplied.
14. COMPLETE PARTS LIST
    Furnish a complete parts list that describes every electrical, mechanical or hydraulic component furnished. Include cutsheets and instruction manuals for all components. Divide the parts into chapters with similar components. Include a cover sheet for each chapter with all part descriptions, their numbers and manufacturer included. A separate binder is recommended for the complete parts list.

907-863.02.2—Spare Parts.

907-863.02.2.1—General. Furnish the following spare parts:

- A minimum two (2) limit and proximity switches of each type installed, including limit lever arms.
- A minimum of one (1) operating coil for every ten (10) of each size contactor installed.
- A minimum of one (1) relay for every ten (10) of each kind and size of control, timing, or overload relay installed.
- A minimum of three (3) heaters for every ten (10) thermal overload relays of each size.
- A minimum of three (3) spare fuses of each size and type used throughout the bridge
- A minimum of ten (10) spare indicator lamps of every type used. Include lamp extractor(s).
- A minimum of one (1) PLC card for every five (5) of each type installed, including power supplies, I/O cards and communication modules.
- A minimum of one (1) power supply, electronic module and/or converter for every five (5) of each type installed.

- One (1) spare Inclinometer
- One (1) complete camera assembly with cables, lens, lens filters, transient suppressors, power supplies, manuals and accessories.
- Other spare parts as called out in individual sections.
- One (1) spare traffic gate arm (complete with lights, and striping) in proper length
- One (1) spare traffic gate arm fiberglass end extension. (if part of standard gate arm)
- One (1) spare gate operator motor and gearbox for each type of gate installed.
- For interior and walkway lights, ten (10) spare lamps of each size and type used.
- For flood lights – one (1) spare lamp of each size and type used.
- For Navigational lights – two (2) spare bulbs of each size, type and color used.
- One (1) spare ballast of each size and type used.

Provide spare parts in sealed, uniform-sized cartons, with typed and clearly varnished labels to indicate their contents, and store them in a lockable box. Also, provide a directory of permanent type describing the parts. The directory must state the name of each part, the manufacturer's number, and the rating of the device for which the part is a spare. Mark spare parts to correspond with their respective item numbers as indicated on the elementary wiring diagram. Plastic laminate and store in the same cabinet the schematic diagrams for the control console.

907-863.02.2.2—Mechanical Spare Parts.

907-863.02.2.2.1—Spare Lubricant. Furnish the bridge with an appropriate amount of proper lubricant. Store the lubricant in steel containers at room temperature. Store, at the site, the following amounts of additional lubricant:

Gear Reducer Oil:	55 gallons
Open Gear Grease:	20 pounds
Bearing Grease:	20 pounds
Gear Coupling Lubricant:	5 pounds

Keep the lubricant for each type of machinery component separately in clearly marked containers. Take all measure necessary to prevent lubricant contamination.

907-863.02.2.2.2—Spare Parts and Tools. Provide the following spare parts and tools to the department, along with all spare parts required in other articles. Spare parts and tools are considered incidental to the component to which they apply and will be paid for as such.

- Two (2) wrenches, drop forged steel, of a standard tool manufacturer, for all fasteners larger than 1½ inches.
- One (1) set of seals for all speed reducer shafts.
- One (1) tool box of suitable size for the wrenches provided.
- One (1) breather for each reducer provided.

907-863.02.2.3—Spare Parts for Rear Locks. Supply spare parts for the rear lock hydraulic system as required in the plans or herein.

Provide one (1) spare of the following items:

- Hydraulic cylinder with quick disconnect fittings.
- Hydraulic filter element
- Pressure gauge
- Hydraulic hoses, one of each length

907-863.03—Construction.

907-863.03.1—Manuals. Bind all manuals in white three-ring binders. Use plastic dividers with tabs to divide each chapter. Use reinforced edge sheets for all copies for binder holes. Number all pages with the chapter and page (for example II-4).

Label the edge of each binder with a type written label with the title of manual and the bridge name. Label the front cover with a type written sheet indicating the title, the bridge name, structure number, project and date.

907-863.03.2—Training.

907-863.03.2.1—Operator Training. Provide Operator training in two (2) 8-hour sessions held at the bridge. Design each session for up to six (6) people. Provide a syllabus, a copy of the operator instructions, a pad of paper and pen to each trainee.

1. INTRODUCTION
   Start each session shall start with a brief description of the work performed and the features of the bridge. Following the description, open the bridge as a demonstration. Provide a tour of near side piers and machinery rooms.
2. OPERATOR INSTRUCTIONS
   Explain the operation of the bridge using the instructions as an aide. Discuss and demonstrate each mode of operation. Demonstrate how to use the HMI operator station including how to interpret and acknowledge the alarms.
3. TRAINEE OPENINGS
   Each trainee will be required to open the bridge at least four (4) times: two (2) of the four (4) openings under normal automatic mode; one (1) opening using manual mode; and the last operation using a bypass. During the bypass operation, create a simple scenario that would require the use of a bypass. The scenarios shall be simple and should not risk damage to equipment. Before using the bypass, investigate the problem to determine if it is safe to operate. Record each opening with time, date, operator, and a witness for a record of the training.
4. SUMMARY
   At the end of the day, summarize the training and emphasize the use of indications and the operator interface to diagnose a problem.

907-863.03.2.2—Maintenance Training. Provide Maintenance training in two (2) 8-hour sessions. Design one (1) session for the classroom and one (1) session at the bridge for up to

eight (8) people. Provide a syllabus, a copy of the operator instructions, a pad of paper and pen to each trainee.

CLASSROOM

1. INTRODUCTION
   Start each session shall start with a brief description of the work performed and the features of the bridge.
2. OPERATOR INSTRUCTIONS
   Explain the operation of the bridge using the instructions as an aide.
3. MECHANICAL
   Include an overview of the mechanical gearing, brakes and hydraulic rear lock systems. Provide a lubrication schedule and instructions on how to properly lubricate each item.
4. ELECTRICAL
   Explain how to read and use the electrical schematics to locate problems.
5. PLC
   Provide a brief description of a PLC and how to interpret a rung of logic. Include a demonstration on how to access the online programming.
6. VIDEO STORAGE
   Provide an overview of the video camera control and storage system.

BRIDGE

1. BRIDGE TOUR
   Prior to the tour, open the bridge to demonstrate the operation. Tour the near side pier, roadway and machinery rooms.
2. TRAINEE OPENINGS
   Each trainee will be required to open the bridge at least one time in automatic mode.
3. MECHANICAL/HYDRAULIC
   Demonstrate how to lubricate the bridge, isolate hydraulic valves and how to maintain and repair the mechanical and hydraulic equipment on the bridge.
4. ELECTRICAL
   Demonstrate where and how to isolate power, adjust limits, adjust cameras, connect to the PLC and print reports.
5. TROUBLESHOOTING AIDES
   Explain and demonstrate control system aides such as indicator lights, alarms and data logs. Create at least four scenarios that prevent bridge operation and have the trainees use the aides to identify and repair the problem.

907-863.03.2.3—Submittals. Submit PDF sample copies of each manual and a training syllabus for approval prior to any training.

907-863.04—Measurement. Training, Manuals and Spare Parts will be measured as a lump sum quantity.

907-863.05—Payment. Training, Manuals and Spare Parts, measured as prescribed above, will be paid for at the contract lump sum price which price shall be full compensation for furnishing manuals and spare parts and providing training to operators and maintenance personnel.

Payment will be made under:

907-863-A Training, Manuals and Spare Parts	- lump sum

S E C T I O N 9 0 5 - P R O P O S A L

Date _____

Mississippi Transportation Commission
Jackson, Mississippi

Sirs: The following proposal is made on behalf of _____
_____ of _____
_____
for constructing the following designated project(s) within the time(s) hereinafter specified.

The plans are composed of drawings and blue prints on file in the offices of the Mississippi Department of Transportation, Jackson, Mississippi.

The Specifications are the current Standard Specifications of the Mississippi Department of Transportation approved by the Federal Highway Administration, except where superseded or amended by the plans, Special Provisions and Notice(s) to Bidders attached hereto and made a part thereof.

I (We) certify that I (we) possess a copy of said Standard and Supplemental Specifications.

Evidence of my (our) authority to submit the Proposal is hereby furnished. The proposal is made without collusion on the part of any person, firm or corporation. I (We) certify that I (we) have carefully examined the Plans, the Specifications, including the Special Provisions and Notice(s) to Bidders, herein, and have personally examined the site of the work. On the basis of the Specifications, Special Provisions, Notice(s) to Bidders, and Plans, I (we) propose to furnish all necessary machinery, tools, apparatus and other means of construction and do all the work and furnish all the materials in the manner specified. I (We) understand that the quantities mentioned herein are approximate only and are subject to either increase or decrease, and hereby propose to perform any increased or decreased quantities of work at the unit prices bid, in accordance with the above.

Attached hereto is a certified check, cashier's check or Proposal Guaranty Bond in the amount as required in the Advertisement (or, by law).

INSTRUCTION TO BIDDERS: Alternate and Optional Items on Bid Schedule.

1. Two or more items entered opposite a single unit quantity WITHOUT DEFINITE DESIGNATION AS "ALTERNATE ITEMS" are considered as "OPTIONAL ITEMS". Bidders may or may not indicate on bids the Optional Item proposed to be furnished or performed WITHOUT PREJUDICE IN REGARD TO IRREGULARITY OF BIDS.

2. Items classified on the bid schedule as "ALTERNATE ITEMS" and/or "ALTERNATE TYPES OF CONSTRUCTION" must be preselected and indicated on bids. However, "Alternate Types of Construction" may include Optional Items to be treated as set out in Paragraph 1, above.

3. Optional items not preselected and indicated on the bid schedule MUST be designated in accordance with Subsection 102.06 prior to or at the time of execution of the contract.

4. Optional and Alternate items designated must be used throughout the project.

I (We) further propose to perform all "force account or extra work" that may be required of me (us) on the basis provided in the Specifications and to give such work my (our) personal attention in order to see that it is economically performed.

S E C T I O N 9 0 5 -- P R O P O S A L (CONTINUED)

I (We) further propose to execute the attached contract agreement (Section 902) as soon as the work is awarded to me (us), and to begin and complete the work within the time limit(s) provided for in the Specifications and Advertisement. I (We) also propose to execute the attached contract bond (Section 903) in an amount not less than one hundred (100) percent of the total of my (our) part, but also to guarantee the excellence of both workmanship and materials until the work is finally accepted.

I (We) enclose a certified check, cashier's check or bid bond for **five percent (5%) of total bid** and hereby agree that in case of my (our) failure to execute the contract and furnish bond within Ten (10) days after notice of award, the amount of this check (bid bond) will be forfeited to the State of Mississippi as liquidated damages arising out of my (our) failure to execute the contract as proposed. It is understood that in case I am (we are) not awarded the work, the check will be returned as provided in the Specifications.

Respectfully Submitted,

DATE _____

_____
Contractor

BY _____
Signature

TITLE _____

ADDRESS _____

CITY, STATE, ZIP _____

PHONE _____

FAX _____

E-MAIL _____

(To be filled in if a corporation)

Our corporation is chartered under the Laws of the State of _____ and the names, titles and business addresses of the executives are as follows:

President	Address
Secretary	Address
Treasurer	Address

The following is my (our) itemized proposal.

Rehabilitation of the Bascule Bridge on I-110, known as Federal Aid Project No. BR-0110-01(028) / 105550302 in Harrison County.

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
					Roadway Items
0010	618-A001		1	Lump Sum	Maintenance of Traffic
0020	619-D1001		28	Square Feet	Standard Roadside Construction Signs, Less than 10 Square Feet
0030	619-D2001		752	Square Feet	Standard Roadside Construction Signs, 10 Square Feet or More
0040	619-E1001		1	Each	Flashing Arrow Panel, Type C
0050	619-G4005		120	Linear Feet	Barricades, Type III, Double Faced
0060	619-G5001		66	Each	Free Standing Plastic Drums
0070	619-G7001		11	Each	Warning Lights, Type "B"
0080	620-A001		1	Lump Sum	Mobilization
0090	907-619-E3001		10	Each	Changeable Message Sign
					Bridge Items
0100	810-A004	(S)	14,000	Pounds	Structural Steel
0110	907-836-A001	(S)	1	Lump Sum	Span Balancing
0120	907-837-A002	(S)	500	Each	Balance Plates
0130	907-840-A001	(S)	1	Lump Sum	Machinery Room Enclosure
0140	907-841-A001	(S)	1	Lump Sum	Replace Windows and Doors
0150	907-842-A001	(S)	1	Lump Sum	Plumbing Work
0160	907-844-A001	(S)	1	Lump Sum	Building Amenities
0170	907-845-A001	(S)	1	Lump Sum	Painting
0180	907-850-A001	(S)	1	Lump Sum	Mechanical Work
0190	907-851-A002	(S)	1	Lump Sum	Leaf Alignment
0200	907-852-A001	(S)	1	Lump Sum	Rear Locks
0210	907-853-A001	(S)	1	Lump Sum	Electrical Work
0220	907-854-A002	(S)	1	Lump Sum	Electrical Service
0230	907-855-A001	(S)	1	Lump Sum	Auxiliary Electrical Equipment
0240	907-856-A001	(S)	1	Lump Sum	Control Console
0250	907-857-A001	(S)	1	Lump Sum	Motor Control Center
0260	907-858-A001	(S)	1	Lump Sum	PLC Cabinet and Programming
0270	907-859-A001	(S)	1	Lump Sum	Span Drives and Motors
0280	907-860-A001	(S)	1	Lump Sum	Limits and Sensors
0290	907-861-A001	(S)	1	Lump Sum	Submarine Cables
0300	907-862-A001	(S)	1	Lump Sum	Lightning and Surge Protection
0310	907-863-A001	(S)	1	Lump Sum	Training, Manuals and Spare Parts

CONDITIONS FOR COMBINATION BID

If a bidder elects to submit a combined bid for two or more of the contracts listed for this month's letting, the bidder must complete and execute these sheets of the proposal in each of the individual proposals to constitute a combination bid. In addition to this requirement, each individual contract shall be completed, executed and submitted in the usual specified manner.

Failure to execute this Combination Bid Proposal in each of the contracts combined will be just cause for each proposal to be received and evaluated as a separate bid.

* *

COMBINATION BID PROPOSAL

I. This proposal is tendered as one part of a Combination Bid Proposal utilizing option ___* of Subsection 102.11 on the following contracts:

* Option to be shown as either (a), (b), or (c).

	Project No.	County		Project No.	County
1.	______	______	6.	______	______
2.	______	______	7.	______	______
3.	______	______	8.	______	______
4.	______	______	9.	______	______
5.	______	______	10.	______	______

A. If option (a) has been selected, then go to II, and sign Combination Bid Proposal.

B. If option (b) has been selected, then complete the following, go to II, and sign Combination Bid Proposal.

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
1. _____	_____ _____	_____ _____	_____ _____	_____ _____	
2. _____	_____ _____	_____ _____	_____ _____	_____ _____	
3. _____	_____ _____	_____ _____	_____ _____	_____ _____	
4. _____	_____ _____	_____ _____	_____ _____	_____ _____	
5. _____	_____ _____	_____ _____	_____ _____	_____ _____	
6. _____	_____ _____	_____ _____	_____ _____	_____ _____	
7. _____	_____ _____	_____ _____	_____ _____	_____ _____	
8. _____	_____ _____	_____ _____	_____ _____	_____ _____	

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
9. _____	_____ _____	_____ _____	_____ _____	_____ _____	
10. _____	_____ _____	_____ _____	_____ _____	_____ _____	

C. If option (c) has been selected, then initial and complete one of the following, go to II. and sign Combination Bid Proposal.

_____ I (We) desire to be awarded work not to exceed a total monetary value of $ _____.

_____ I (We) desire to be awarded work not to exceed _____ number of contracts.

II. It is understood that the Mississippi Transportation Commission not only reserves the right to reject any and all proposals, but also the right to award contracts upon the basis of lowest separate bids or combination bids most advantageous to the State.

It is further understood and agreed that the Combination Bid Proposal is for comparison of bids only and that each contract shall operate in every respect as a separate contract in accordance with its proposal and contract documents.

I (We), the undersigned, agree to complete each contract on or before its specified completion date.

SIGNED _____

_____

_____

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)

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. **BR-0110-01(028) / 105550302**,

in **Harrison** County(ies), Mississippi, has not either

directly or indirectly entered into any agreement, participated in any collusion; or otherwise taken any action in restraint of free competitive bidding in connection with this contract; nor have any of its corporate officers or principal owners.

Except as noted hereafter, it is further certified that said legal entity and its corporate officers, principal owners, managers, auditors and others in a position of administering federal funds:

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

CERTIFICATION
(Execute in duplicate)

I, _____,
(Name of person signing certification)

individually, and in my capacity as _____ of
(Title)

_____ do hereby certify under
(Name of Firm, Partnership, or Corporation)

penalty of perjury under the laws of the United States and the State of Mississippi that _____

_____, Bidder
(Name of Firm, Partnership, or Corporation)

on Project No. **BR-0110-01(028) / 105550302**,

in **Harrison** County(ies), Mississippi, has not either

directly or indirectly entered into any agreement, participated in any collusion; or otherwise taken any action in restraint of free competitive bidding in connection with this contract; nor have any of its corporate officers or principal owners.

Except as noted hereafter, it is further certified that said legal entity and its corporate officers, principal owners, managers, auditors and others in a position of administering federal funds:

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

S E C T I O N 9 0 2

CONTRACT FOR **BR-0110-01(028) / 105550302**

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

STATE OF MISSISSIPPI,

COUNTY OF HINDS

This contract entered into by and between the Mississippi Transportation Commission on one hand, and the undersigned contractor, on the other witnesseth;

That, in consideration of the payment by the Mississippi Transportation Commission of the prices set out in the proposal hereto attached, to the undersigned contractor, such payment to be made in the manner and at the time of times specified in the specifications and the special provisions, if any, the undersigned contractor hereby agrees to accept the prices stated in the proposal in full compensation for the furnishing of all materials and equipment and the executing of all the work contemplated in this contract.

It is understood and agreed that the advertising according to law, the Advertisement, the instructions to bidders, the proposal for the contract, the specifications, the revisions of the specifications, the special provisions, and also the plans for the work herein contemplated, said plans showing more particularly the details of the work to be done, shall be held to be, and are hereby made a part of this contract by specific reference thereto and with like effect as if each and all of said instruments had been set out fully herein in words and figures.

It is further agreed that for the same consideration the undersigned contractor shall be responsible for all loss or damage arising out of the nature of the work aforesaid; or from the action of the elements and unforeseen obstructions or difficulties which may be encountered in the prosecution of the same and for all risks of every description connected with the work, exceptions being those specifically set out in the contract; and for faithfully completing the whole work in good and workmanlike manner according to the approved Plans, Specifications, Special Provisions, Notice(s) to Bidders and requirements of the Mississippi Department of Transportation.

It is further agreed that the work shall be done under the direct supervision and to the complete satisfaction of the Executive Director of the Mississippi Department of Transportation, or his authorized representatives, and when Federal Funds are involved subject to inspection at all times and approval by the Federal Highway Administration, or its agents as the case may be, or the agents of any other Agency whose funds are involved in accordance with those Acts of the Legislature of the State of Mississippi approved by the Governor and such rules and regulations issued pursuant thereto by the Mississippi Transportation Commission and the authorized Federal Agencies.

The Contractor agrees that all labor as outlined in the Special Provisions may be secured from list furnished by

It is agreed and understood that each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and this contract shall be read and enforced as though it were included herein, and, if through mere mistake or otherwise any such provision is not inserted, then upon the application of either party hereto, the contract shall forthwith be physically amended to make such insertion.

The Contractor agrees that he has read each and every clause of this Contract, and fully understands the meaning of same and that he will comply with all the terms, covenants and agreements therein set forth.

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

_____
Contractor (s)

By _____ MISSISSIPPI TRANSPORTATION COMMISSION

Title _____ By _____
Signed and sealed in the presence of: Executive Director
(names and addresses of witnesses)

_____ _____
Secretary to the Commission

Award authorized by the Mississippi Transportation Commission in session on the ____ day of _____, _____, Minute Book No. _____, Page No. _____.

Revised 8/06/2003

S E C T I O N 9 0 3
PERFORMANCE AND PAYMENT BOND

CONTRACT BOND FOR: **BR-0110-01(028) / 105550302**

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

STATE OF MISSISSIPPI,

COUNTY OF HINDS

Know all men by these presents: that we, _____
(Contractor)

_____ Principal, a _____

residing at _____ in the State of _____

and _____
(Surety)

residing at _____ in the State of _____,

authorized to do business in the State of Mississippi, under the laws thereof, as surety, are held and firmly bound unto the State of Mississippi in the sum of _____

_____

($_____) Dollars, lawful money of the United States of America, to be paid to it for which payment well and truly to be made, we bind ourselves, our heirs, administrators, successors, or assigns jointly and severally by these presents.

Signed and sealed this the _____ day of _____ A.D. _____.

The conditions of this bond are such, that whereas the said _____

_____

principal, has (have) entered into a contract with the Mississippi Transportation Commission, bearing the date of _____ day of _____ A.D. _____ hereto annexed, for the construction of certain projects(s) in the State of Mississippi as mentioned in said contract in accordance with the Contract Documents therefor, on file in the offices of the Mississippi Department of Transportation, Jackson, Mississippi.

Now therefore, if the above bounden _____

_____ in all things shall stand to and abide by and well and truly observe, do keep and perform all and singular the terms, covenants, conditions, guarantees and agreements in said contract, contained on his (their) part to be observed, done, kept and performed and each of them, at the time and in the manner and form and furnish all of the material and equipment specified in said contract in strict accordance with the terms of said contract which said plans, specifications and special provisions are included in and form a part of said contract and shall maintain the said work contemplated until its final completion and acceptance as specified in Subsection 109.11 of the approved specifications, and save harmless said Mississippi Transportation Commission from any loss or damage arising out of or occasioned by the negligence, wrongful or criminal act, overcharge, fraud, or any other loss or damage whatsoever, on the part of said principal (s), his (their) agents, servants, or employees in

the performance of said work or in any manner connected therewith, and shall be liable and responsible in a civil action instituted by the State at the instance of the Mississippi Transportation Commission or any officer of the State authorized in such cases, for double any amount in money or property, the State may lose or be overcharged or otherwise defrauded of, by reason of wrongful or criminal act, if any, of the Contractor(s), his (their) agents or employees, and shall promptly pay the said agents, servants and employees and all persons furnishing labor, material, equipment or supplies therefor, including premiums incurred, for Surety Bonds, Liability Insurance, and Workmen's Compensation Insurance; with the additional obligation that such Contractor shall promptly make payment of all taxes, licenses, assessments, contributions, damages, any liquidated damages which may arise prior to any termination of said principal's contract, any liquidated damages which may arise after termination of the said principal's contract due to default on the part of said principal, penalties and interest thereon, when and as the same may be due this state, or any county, municipality, board, department, commission or political subdivision: in the course of the performance of said work and in accordance with Sections 31-5-51 et seq. Mississippi Code of 1972, and other State statutes applicable thereto, and shall carry out to the letter and to the satisfaction of the Executive Director of the Mississippi Department of Transportation, all, each and every one of the stipulations, obligations, conditions, covenants and agreements and terms of said contract in accordance with the terms thereof and all of the expense and cost and attorney's fee that may be incurred in the enforcement of the performance of said contract, or in the enforcement of the conditions and obligations of this bond, then this obligation shall be null and void, otherwise to be and remain in full force and virtue.

Witness our signatures and seals this the _____ day of _____ A.D. _____.

_____	_____
(Contractors) Principal	Surety
By _____	By _____
	(Signature) Attorney in Fact
	Address _____
	_____
Title _____	_____
(Contractor's Seal)	(Printed) MS Agent
	_____
	(Signature) MS Agent
	Address _____
	_____
	_____
	(Surety Seal)
	_____
	Mississippi Insurance ID Number

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____
Contractor

_____
Address

_____
City, State ZIP

as Principal, hereinafter called the Principal, and _____
Surety

a corporation duly organized under the laws of the state of _____

as Surety, hereinafter called the Surety, are held and firmly bound unto **State of Mississippi, Jackson, Mississippi**

As Obligee, hereinafter called Obligee, in the sum of **Five Per Cent (5%) of Amount Bid**

Dollars ($ _____)

for the payment of which sum will and truly to be made, the said Principal and said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for **Rehabilitation of the Bascule Bridge on I-110, known as Federal Aid Project No. BR-0110-01(028) / 105550302 in Harrison County.**

NOW THEREFORE, the condition of this obligation is such that if the aforesaid Principal shall be awarded the contract, the said Principal will, within the time required, enter into a formal contract and give a good and sufficient bond to secure the performance of the terms and conditions of the contract, then this obligation to be void; otherwise the Principal and Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee legally contracts with another party to perform the work if the latter amount be in excess of the former, but in no event shall liability hereunder exceed the penal sum hereof.

Signed and sealed this _____ day of _____ , 20___

_____
(Principal) (Seal)

_____ By: _____
(Witness) (Name) (Title)

_____
(Surety) (Seal)

_____ By: _____
(Witness) (Attorney-in-Fact)

_____
MS Agent

_____
Mississippi Insurance ID Number

OCR-485
REV. 3/08

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: **BR-0110-01(028) / 105550302**
County: **Harrison**

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 **signed** and 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.